D&I Science: An Overview

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The Need & Premise

- Gap between what we know works and what is done (by organizations, public settings, policymakers)
  - Generating evidence (traditionally EBI) is not enough
- Use of public research funding—return on investment
- Improved impact on population health and health inequities
- New frame for getting implementation research funded
  - NIH, AHRQ, NCATS, SAMHSA, and multiple private funders
- From clinical care: A leaky pipeline

Source: IOM 2001
Definitions

**IMPLEMENTATION RESEARCH**

**NIH PAR 22-105:** Study of use of strategies to adopt and integrate evidence-based health interventions (EBI) into clinical and community settings to improve individual outcomes and benefit population health; seeks to understand the behavior of practitioners and support staff, organizations, consumers and family members, and policymakers in context as key influences on the adoption, implementation, and sustainability of evidence-based health interventions.

**Brownson et al. 2022:** Factors and strategies that lead to successful integration of EBIs within a particular setting. How to embed EBI in the real world and diverse settings.

**DISSEMINATION RESEARCH**

**NIH PAR 22-105:** Study of targeted distribution of information and intervention materials to a specific public health, clinical practice, or policy audience. The intent is to understand how best to communicate and integrate knowledge and the associated evidence-based interventions (EBI).

**Brownson et al. 2022:** Focus on processes and factors that lead to uptake, use, adoption of EBI.
Translational Pipeline

Does a program work?
Could a program work?
Making a program work?
Pre-intervention research
Efficacy studies
Effectiveness studies
Exploration
Preparation
Implementation
Implementation Research
Sustainment
Implementation Practice
Real-World Relevance
Time

Graphic has been tested with colorblindness filters to ensure readability.

* In some cases it may be appropriate to move forward with a hybrid Type 1 trial in the absence of effectiveness evidence (e.g., very strong efficacy, indirect evidence supportive of potential effectiveness in context of interest, and/or strong momentum supporting implementation in a health care context).

The What
• Feasibility
• Fidelity
• Penetration
• Acceptability
• Sustainability
• Costs

The How

Health Intervention, Program, or Tx

Health, Population Outcomes

Common Themes

1. Multiple translation phase (see EPIS Framework)
   - Decision to change, to (de-)adopt EBI
   - Preparation to start up implementation
   - Supporting implementation
   - Planning for sustainment

2. Attention to adaptation and tension with fidelity

3. Multilevel action and measurement

4. Cross-disciplinary and -sector

5. Development, design; ideally, co-creation

6. Need to think in systems: organization, process, actors

## Expanding evidence production & use

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Type One</th>
<th>Type Two</th>
<th>Type Three</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical data/relationship</td>
<td>Size and strength of preventable risk—disease relationship (measures of burden, etiologic research)</td>
<td>Relative effectiveness of public health intervention (inc. cost effectiveness)</td>
<td>Information on the adaptation and translation of an effective intervention</td>
</tr>
<tr>
<td>Common setting</td>
<td>Clinic or controlled community setting</td>
<td>Socially intact groups or community wide</td>
<td>Socially intact groups or community wide</td>
</tr>
<tr>
<td>Example</td>
<td>Smoking causes lung cancer</td>
<td>Price increases with a targeted media campaign reduce smoking rates</td>
<td>Understanding the political challenges of price increases or targeting media messages to particular audience segments</td>
</tr>
<tr>
<td>Quantity</td>
<td>More</td>
<td>Less</td>
<td>Less</td>
</tr>
<tr>
<td>Action</td>
<td>Something should be done</td>
<td>This particular intervention should be implemented</td>
<td>How an intervention should be implemented</td>
</tr>
</tbody>
</table>

How to do D&I Science: Theoretical Frameworks/Models

Types of frameworks/models: adapted from Nilsen et al. 2015, 10.1186/s13012-015-0242-0

Process models: Specify steps, phases in the process of doing something, e.g.,
- Research process, inc. partnering with practitioners, community
  (e.g., Nápoles & Stewart 2018, 10.1186/s12913-018-3521-z)
- Implementation process
- Intervention design process

Determinant or analytic models: Specify types of determinants that influence outcomes and the relationships between them

Evaluation: Specify aspects of a process that should be evaluated to determine success

D&I Models in Health website: https://dissemination-implementation.org
https://thecenterforimplementation.com/toolbox/cfir
And Outcomes: RE-AIM and PRISM with equity lens

Support representation in research/practice teams, implementers and participants

Co-create or adapt to align with community priorities

Consider trade-offs and unintended consequences

Be conscious of costs & feasibility to support inclusion

PRISM Contextual Domains

- Multi-level/Multi-sector Perspectives
- External Environment
- Multi-level Partner Characteristics
- Implementation & Sustainability Infrastructure

Assess historical and current structural drivers of inequity
Assess capacity and infrastructure needs and resources
Design a monitoring & evaluation system to assess equity
Consider representativeness of participants and settings
Ask who is not participating and why
Document and facilitate equity-enhancing adaptations

Intervention, Program or Policy

Implementation Strategies

RE-AIM Outcomes

- Reach – and representativeness of participants
- Effectiveness – overall and subgroup effects
- Adoption – which settings and staff participate/do not participate
- Implementation – fidelity, feasibility, cost, and adaptations
- Maintenance – sustainability

## Implementation Strategies
(a.k.a. implementation interventions)

<table>
<thead>
<tr>
<th>Category of strategies</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engage consumers</td>
<td>Use mass media; prepare consumers to be active participants</td>
</tr>
<tr>
<td>Use evaluative and iterative strategies</td>
<td>Audit and feedback; develop a formal implementation blueprint</td>
</tr>
<tr>
<td>Change infrastructure</td>
<td>Create or change credentialing and/or licensure standards; change physical structure/equipment</td>
</tr>
<tr>
<td>Adapt and tailor to the context</td>
<td>Promote adaptability; tailor strategies</td>
</tr>
<tr>
<td>Develop stakeholder interrelationships</td>
<td>Identify and prepare champions; build a coalition</td>
</tr>
<tr>
<td>Use financial strategies</td>
<td>Develop disincentives; use new payment schemes</td>
</tr>
<tr>
<td>Support practitioners</td>
<td>Remind practitioners; revise professional roles</td>
</tr>
<tr>
<td>Provide interactive assistance</td>
<td>Provide local technical assistance; provide supervision</td>
</tr>
<tr>
<td>Train and educate stakeholders</td>
<td>Use train-the-trainer strategies; develop educational materials</td>
</tr>
</tbody>
</table>

Use systematic **development, tailoring** process, e.g.,:
- Intervention Mapping
- Group Model Building
- Concept Mapping
- Conjoint Analysis


Clarity in specifying and reporting:
1. Name and define
2. Specify:
   - Actor
   - Action
   - Action target
   - Temporality
   - Dose
   - Implementation outcome
   - Justification


Swindle et al. 2019, [https://doi.org/10.1016/j.jneb.2019.03.001](https://doi.org/10.1016/j.jneb.2019.03.001); adapted from Powell et al and, Waltz et al of the Expert Recommendations for Implementing Change project.
Concluding Thoughts & Gaps

• Large amount of frameworks, measures, and methodological tools exist
  ➢ See resources on study designs, e.g., [https://vimeo.com/246994831](https://vimeo.com/246994831)

• Need more dissemination science

• More integration with research on healthcare settings:
  • Policy D&I
  • Community settings

• Call to the field to do better on health equity
Process model of implementation from a policy perspective depicting the process at one policy level
Based on the critical synthesis of IS and policy research

Policy Focused D&I Research

Policy in Implementation Science


Thank you!

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Implementation of Nutrition Incentive and Produce Prescription Programs in Brick and Mortar Retail Settings: A Narrative Review

Bailey Houghtaling, PhD, MSc, RDN
NOPREN Healthy Food Retail Work Group
November 28, 2023
About Us

Founded in 1973, the Gretchen Swanson Center for Nutrition (GSCN) is a national nonprofit research institute providing expertise in measurement and evaluation to help develop, enhance and expand programs focused on healthy eating and active living, improving food security and healthy food access, promoting local food systems and applying a health equity lens across all initiatives. The Gretchen Swanson Center works nationally and internationally, partnering with other nonprofits, academia, government and private foundations to conduct research, evaluation and scientific strategic planning.

Connect with us:

- Website: www.centerfornutrition.org
- LinkedIn: Gretchen Swanson Center for Nutrition
- Twitter: GretchenSwanson
Overview

- Nutrition Incentive (NI) and Produce Prescription (PPR) programs
- Objective
- Methods
- Results following 5 EPIS *Inner Context* Constructs
- Implications
Our Team

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The Nutrition Incentive Program Training, Technical Assistance, Evaluation, and Information Center (NTAE) is supported by Gus Schumacher Nutrition Incentive Program grant no. 2019-70030-30415/project accession no. 1020863 from the USDA National Institute of Food and Agriculture.
Nutrition Incentive (NI) Programs

- Financial incentive for fresh, frozen, or canned fruits and vegetables (FVs) to participants of the Supplemental Nutrition Assistance Program (SNAP)
- Aim to improve food security and FV intake
- Example: 1:1 match (spend $5, receive $5)
Produce Prescription (PPR) Programs

- Food is Medicine approach - engaged with the healthcare sector
- Eligible persons with low income and risk for diet-related chronic disease are screened for food insecurity and receive a prescription for fresh FVs
- Aim to increase FV intake and food security and reduce healthcare usage and associated costs
NI and PPR Programs in Brick-and-Mortar (B&M) Settings

- NI and PPR expansion in B&M retail settings is needed to increase reach
- ~95% of SNAP benefits were used at B&M retailers compared to less than 1% at farm direct sites (2021)
- Shoppers at B&M retail settings tend to be more diverse compared to farm direct sites


Methods

Narrative Review

- Co-author expertise in healthy food retail research and practice, implementation science, and NI and PPR

- Source identification:
  - 3 ongoing scoping reviews
  - Resource repository for NI and PPR practitioners
  - Internet and reference list searches, listservs, professional networks


Using the Exploration, Preparation, Implementation, and Sustainment (EPIS) Framework to Advance the Science and Practice of Healthy Food Retail

Bailey Houghtaling, PhD, RDN • Sarah Misyak, PhD, MPH • Elena Serrano, PhD • Denise Holston, PhD, RDN • Chelsea R. Singleton, PhD, MPH • Samantha M. Harden, PhD • Show all authors

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Methods

EPIS Framework

- 4 processes that align well with health promotion research and practice
- 16 determinants across 4 constructs
<table>
<thead>
<tr>
<th>EPIS Inner Context Definitions Pertaining to Brick-and-Mortar (B&amp;M) Retail Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leadership</strong></td>
</tr>
<tr>
<td>Characteristics or behaviors of B&amp;M leaders with store oversight and/or NI or PPR program implementation responsibilities that may determine NI or PPR program adoption, implementation, and sustainment.</td>
</tr>
<tr>
<td><strong>Organizational Characteristics</strong></td>
</tr>
<tr>
<td>B&amp;M retailer business models, structures/ processes, and/or inter-organizational networks that may determine NI or PPR program adoption, implementation, and sustainment.</td>
</tr>
<tr>
<td><strong>Quality and Fidelity Monitoring and Support</strong></td>
</tr>
<tr>
<td>Processes or procedures (e.g., implementation strategies) used to monitor and support the active delivery of NI or PPR program implementation in B&amp;M retail settings.</td>
</tr>
<tr>
<td><strong>Organizational Staffing Processes</strong></td>
</tr>
<tr>
<td>B&amp;M retail staff roles and procedures, in general or regarding NI or PPR implementation, that may determine adoption, implementation, and sustainment (e.g., staff training, turnover).</td>
</tr>
<tr>
<td><strong>Individual Characteristics</strong></td>
</tr>
<tr>
<td>B&amp;M retail staff characteristics (e.g., social and demographic) and their attitudes, beliefs, and perceptions that may determine NI or PPR program adoption, implementation, and sustainment.</td>
</tr>
</tbody>
</table>
Results
Source Characteristics

12 sources included that described barriers and facilitators to NI or PPR programs in the B&M retail setting
Results
Types of B&M retailers

- Grocery store chain
- Convenience store chain
- Independently owned grocery store
- Corner store/bodega/mom and pop
- Discount superstore
- Corporate retail pharmacy
- Trading post
Results:
Leadership

- Low buy-in among leadership described as a barrier for PPR programs (n=1 source)

- Supportive leadership described as a facilitator for NI programs (n=3 sources)
Results:
Organizational Characteristics – Barriers

- Capacity to stock FVs
- Manager concern about NI program logistics and eligible food procurement
- Varied depending on type of B&M setting (e.g., size, business model)
Results:
Organizational Characteristics – Facilitators
n=6 sources

- Alignment with current practices and business values and NI/PPR program
- Provision of resources or assistance with community partnerships
- Small B&M retailers have beneficial consumer relationships
Results: Quality and Fidelity Monitoring/Support - Barriers
n=10 sources

- Technology
  - Lack of technology systems (e.g., Point of Sale, Integrated Electronic Cash Registers) and high cost
  - Technical interruptions/issues
  - Differences in technology systems between implementing sites
- Lack of adequate partner support prevented retailer adoption

Results:
Quality and Fidelity Monitoring/Support
- Facilitators
  n=5 sources
- Provision of instructions, resources, or tailored support
- Technology support could be helpful for PPR programs
- National standard for items eligible for NI program redemption potentially beneficial


Results:
Organizational Staffing Processes - Barriers
n=7 sources

- Training (or lack thereof) commonly noted need, burden, or potential problem
  - Cashier errors
  - Misunderstanding/difficulty explaining nuances
  - Slowing down of check-out processes
- Staffing issues and high turnover

Results:
Organizational Staffing Processes - Facilitators
n=5 sources

- Positive views of training
  - Increased NI program buy-in
  - Improved NI/PPR program understanding and implementation
  - Enhanced awareness of healthy foods stocked

- Partnership with smaller chain or corner stores
  - More agency for training decisions

Results:
Individual Characteristics - Barriers
\( n=5 \) sources

- Limited knowledge about how to partner with NI program
- Perceptions about difficulty or time requirements
- Negative perceptions about redemption models in relation to priority communities
- Scant evidence base for NI and PPR programs
- Lower NI redemption rates than expected
- Language differences between retailers and NI program customers
Results:
Individual Characteristics - Facilitators n=7 sources

- Favorable views and interest in providing consumers with the positive benefits of NI/PPR programs
- Flexibility in the products eligible for redemption
Implications

**Practice:**
- EPIS-informed readiness checklist to be used by NI and PPR program practitioners.

**Research:**
- More research to understand the difference between small and large/corporate retail sites and their capacity and needs.
- Implementation science theories, models, and frameworks can help standardize evidence.

**Policy:**
- Program funding should include more resources to provide support to retailers – FV stocking, technology, implementation staff, training.
Included Sources


