Implementation Science in Nutrition: Rationale, Frameworks and Introduction to the Society

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Presentation Outline

1. The Implementation Opportunity and Challenge

2. Definitions, Distinctions and Frameworks
   - Implementation
   - Implementation research and a classification scheme
   - Implementation science
   - Implementation knowledge

3. SISN’s Integrative Framework

4. The Society for Implementation Science in Nutrition
The Opportunity

60 countries and States of Maharashtra and Uttar Pradesh committed to SUN

Evolution of Countries and States committed to SUN

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>Launch</td>
</tr>
<tr>
<td>2011</td>
<td>19</td>
</tr>
<tr>
<td>2012</td>
<td>33</td>
</tr>
<tr>
<td>2013</td>
<td>41 + 1</td>
</tr>
<tr>
<td>2014</td>
<td>54 + 1</td>
</tr>
<tr>
<td>2015</td>
<td>56 + 1</td>
</tr>
<tr>
<td>2016</td>
<td>57 + 2</td>
</tr>
</tbody>
</table>

Image source: http://scalingupnutrition.org/
### Figure 2.3: Number of countries at various stages of progress against the global targets on nutrition

<table>
<thead>
<tr>
<th>Category</th>
<th>Missing data</th>
<th>Off course, little/no progress</th>
<th>Off course, some progress</th>
<th>On course, at risk</th>
<th>On course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stunting children under 5</td>
<td>79</td>
<td>15</td>
<td>58</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>Wasting children under 5</td>
<td>63</td>
<td>63</td>
<td></td>
<td></td>
<td>67</td>
</tr>
<tr>
<td>Overweight children under 5</td>
<td>84</td>
<td>24</td>
<td>22</td>
<td>26</td>
<td>37</td>
</tr>
<tr>
<td>Exclusive breastfeeding, &lt; 6 months</td>
<td>110</td>
<td>34</td>
<td>13</td>
<td></td>
<td>36</td>
</tr>
<tr>
<td>Anemia in women aged 15–49 years</td>
<td>8</td>
<td></td>
<td>182</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Adult overweight + obesity (BMI ≥ 25)</td>
<td>3</td>
<td></td>
<td>190</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult obesity (BMI ≥ 30)</td>
<td>3</td>
<td></td>
<td>190</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult diabetes (raised blood glucose)</td>
<td>3</td>
<td></td>
<td>185</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

Source: Global Nutrition Report 2016
Figure 1: Median coverage and distribution by country of selected nutrition sensitive and specific interventions and behaviors.

The Quality of Health Care Delivered to Adults in the United States

Table 4. Adherence to Quality Indicators, According to Mode.

<table>
<thead>
<tr>
<th>Mode</th>
<th>No. of Indicators</th>
<th>No. of Participants Eligible</th>
<th>Total No. of Times Indicator Eligibility Was Met</th>
<th>Percentage of Recommended Care Received (95% CI)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Encounter or other intervention</td>
<td>30</td>
<td>2843</td>
<td>4,329</td>
<td>73.4 (71.5–75.3)</td>
</tr>
<tr>
<td>Medication</td>
<td>95</td>
<td>2964</td>
<td>8,389</td>
<td>68.6 (67.0–70.3)</td>
</tr>
<tr>
<td>Immunization</td>
<td>8</td>
<td>6700</td>
<td>9,748</td>
<td>65.7 (64.3–67.0)</td>
</tr>
<tr>
<td>Physical examination</td>
<td>67</td>
<td>6217</td>
<td>19,428</td>
<td>62.9 (61.8–64.0)</td>
</tr>
<tr>
<td>Laboratory testing or radiography</td>
<td>131</td>
<td>5352</td>
<td>18,605</td>
<td>61.7 (60.4–63.0)</td>
</tr>
<tr>
<td>Surgery</td>
<td>21</td>
<td>244</td>
<td>312</td>
<td>56.9 (51.3–62.5)</td>
</tr>
<tr>
<td>History</td>
<td>64</td>
<td>6711</td>
<td>36,032</td>
<td>43.4 (42.4–44.3)</td>
</tr>
<tr>
<td>Counseling or education</td>
<td>23</td>
<td>2838</td>
<td>3,806</td>
<td>18.3 (16.7–20.0)</td>
</tr>
</tbody>
</table>
An Example: What factors might affect the effectiveness of a national micronutrient powder intervention?

A short list:
• Govt approval/registration
• Procurement
• Partner support
• Logistics/distribution
• Inventory management
• Mother’s concerns
• Grandmother’s concerns
• Household supplies
• Caregiver knowledge & compliance
• Health worker counseling quality
• Training of health workers
• Broader SBCC initiatives
• etc.
The Reason for the Challenge

Nutrition Interventions

The Black Box of Implementation

Nutrition Outcomes

The Reason for the Challenge

Nutrition Interventions

The Black Box of Implementation

Nutrition Outcomes

www.implementnutrition.org
The Black Box of Implementation

Nutrition Interventions

- Vitamin & Mineral Powder
- Exclusive Breastfeeding
- WASH (Water, Sanitation, Hygiene)

Nutrition Outcomes

- Nutritional Status

The Reason for the Challenge

Enabling Environment:
- Government
- Funders
- Civil Society
- Private Sector

Implementing Organizations:
- Clients
- Households
- Communities
- Frontline Workers
- Supervisors
- Managers
Why We Need Careful Definitions and Thoughtful Frameworks for Implementation Science

“*If all we have is a hammer, everything looks like a nail*”

• Conventional notions of “implementation” may not include all the relevant decisions and processes that affect programmatic effectiveness, scale and quality

• Conventional notions of “research” may not meet the needs of implementers, in terms of the questions, methods, timeliness and dissemination

“If we keep doing what we are doing, we’ll keep getting what we’re getting”

“We can not solve our problems with the same level of thinking that created them” Einstein

Hammer image source: https://stlong.files.wordpress.com/2011/06/hammer_nail.jpg
‘Information dissemination alone (research literature, mailings, promulgation of practice guidelines) is an ineffective implementation method, and training (no matter how well done) by itself is an ineffective implementation method.” (Fixsen 2005)

“The ‘train-and-hope’ approach to implementation does not appear to work.”

(Stokes & Baer, 1977)

“We are faced with the paradox of non-evidence-based implementation of evidence-based programs.”

(Drake, Gorman & Torrey, 2002)
Some Sobering Statistics and Quotes About Research
“We know what to do but we don’t know how to do it”

• “Health research is conducted with the expectation that it advances knowledge and eventually translates into improved health systems and population health. However, research findings are often caught in the know-do gap: they are not acted upon in a timely way or not applied at all.” (Graham et al., 2018)

• At NIH: $30 billion each year on basic and efficacy research.
• At the Agency for Healthcare Research and Quality( in 2010): $270 million on research relevant to health quality, dissemination, and outcomes.

“For each dollar spent in discovery, mere pennies are spent learning how interventions known to be effective can be better disseminated.” (Glasgow et al., 2012)
Some Sobering Statistics and Quotes About Research

“We know what to do but we don’t know how to do it”

- 97% of child health research (2000-4) funded by NIH and BMGF focused on mechanistic research and development of new technologies, with only 3% related to delivery of existing interventions. (Leroy et al., AJPH 97(2), 2007)

  But child mortality can be reduced by 62% through coverage of existing interventions (Lancet Child Survival Series, 2003)

- 97% of intervention evaluations in Lancet Paper 3 (2008) were small-scale trials testing the efficacy of interventions, with only 3% testing effectiveness at larger scale

  But stunting can be reduced by 36% through high coverage of existing interventions (Bhutta et al., 2008)
Some Conventional Practices in Implementation and Research

**Nutrition Interventions**

- Vitamin & Mineral Powder
- WASH (Water, Sanitation, and Hygiene)
- Nutrition Outcomes
  - Efficacy and Effectiveness Trials
  - Nutritional Status

The Black Box of Implementation
1. Frameworks: RTP, Translational, Dissemination and Implementation
   A. CDC-Inspired Frameworks
      • DHAP/RTP (Collins 2006, Lyles PRS 2006, Neumann REP 2000)
      • CDC DVP/ISF/QIF/QIT (Wandersman 2008 ISF; Saul 2008, 10 challenges; Meyers 2012)
      • CDC/DHAP/RTP vs CDC/DVP/ISF (Collins, 2012, a comparison)
   B. The Implementation Process (Durlak, 500 studies of factors affecting implementation)
   C. Dissemination & Implementation Models (Tabak, 60 models)
   D. Consolidated Implementation Frameworks (CFIR, Aarons – conceptual, generic)

2. Capacity (individual, organizational, community) (Flaspohler et al., 2008)


4. Reporting Guidelines
   A. D/I Research (comprehensive) (Neta, Glasgow et al.)
   B. Implementation Strategies (Proctor; Gold; Leeman)
   C. Complex Behavioral Interventions (Michie)
   D. Implementation Outcomes (Proctor)

5. D&I Terminology and Constructs Measurement (Rabin)(GEM/NCI)
Implementation involves systematic and planned efforts within a system (or organization) to introduce and institutionalize a policy, plan, program, intervention, guideline, innovation or practice and ensure its intended effects and impacts.”

(adapted from WHO/TDR Implementation Research Toolkit, 2014)
Opening the Black Box of Implementation (Five Domains)

1. Objects of Implementation
   - Nutrition-specific interventions
   - Nutrition-sensitive interventions
   - Emergency nutrition responses
   - National multisectoral agendas
   - NGO projects (usually sub-national)
   - Implementation innovations

2. Implementing Organization(s)
   Frontline workers, supervisors and managers

3. Enabling Environment:
   Government, funders, civil society, private sector

4. Individuals, households and communities

5. Implementation Processes
   Scoping & Initiation
   Planning & Design
   Implementing
   Sustaining

Adapted from Damschroeder et al., Implementation Science 4:50, 2009
Conceptual Frameworks as Entry Points for Deeper Analysis: Parallels with the UNICEF Nutrition Strategy
A More Detailed Framework for HHFS

[Diagram of a more detailed framework for household food security]

Food availability:
- Household food production
- Regional and global food production
  - Food system infrastructure (transport, storage)

Food access*:
- Household wealth
- Food and non-food prices
- Social security
- Women’s agency
  - Food system infrastructure (marketing, exchange)

Food utilisation:
- Ownership of cooking or food storage facilities
- Cultural food practices and household food preferences
- Knowledge of nutritional requirements
- Household nutritional requirements
  - Time availability

Food system environment:
- Biophysical environment (land, climate, energy, water, biodiversity)
- Socioeconomic environment (labour, capital, markets, income, equity, ethics, science, technology)
- Political environment (government, institutions, policies)
- Demographic environment (age, sex, physical status, activity, lifestyle, genetic characteristics)
SISN’s Five Domains of Implementation: More Detailed Frameworks

1. Objects of Implementation

Intervention/Innovation/Guideline/Practice/Policy

Perceived and Actual:
source, evidence, advantage, adaptability, trialability, complexity, design quality and packaging, cost

Knowledge About:
• Core components
• Peripheral components

2. Implementing Organizations

Organizational Characteristics:
• Leadership, commitment, readiness, management, competing pressures and priorities, incentives, compatibility with mission, capacity and resources to adopt, adapt, implement, support, monitor and adjust, accountabilities

Objects (adapted)
• Core components
• Peripheral components

Staff (frontline, supervisors and managers):
• Knowledge, skills, beliefs, motivation and incentives, workload, self-efficacy, stage of change, values, intellect, competence, learning style, openness, access to materials and resources, accountabilities

3. Enabling Environment and Stakeholder Dynamics:

Government and donor policies, practices, resources & regulations, peer/network influences, national, societal & cultural influences, accountabilities

4. Individuals, households and communities:

Needs, resources, capacities, social, cultural, behavioral, economic, political factors

5. Implementation Processes

1. Initiating, Scoping & Engaging
• assessing fit and readiness with opinion leaders, formal leaders, champions, facilitators, partners

2. Planning & Designing
• Theory of Change / PIP
• Formative research
• Design & adaptation
• Implementation strategy

3. Implementing, Iterative Improvements & Scaling Up
• components, sequence, intensity
• duration, quality improvement,
• process evaluation, operations
• research, special studies
• decisions and adjustments

4. Commitment, Support, Financing & Sustainability
• continuous advocacy, networking, engagement, strategizing, vigilance, reporting and documentation

Implementation Outcomes
Client Outcomes

Adapted from Damschroeder et al., Implementation Science 4:50, 2009
Conceptual Frameworks as Entry Points for Deeper Analysis: Parallels with the UNICEF Nutrition Strategy
Implementation Science as a Triple A Cycle

Assess Implementation
Strengths, Weaknesses,
Opportunities & Threats

Advocate, Adjust &
Act to Improve
Implementation

Access, Analyze
& Adapt Potential
Solutions
SISN’s Five Domains of Implementation in Detail

1. Objects of Implementation
   - Intervention/Innovation / Guideline/Practice / Policy
   - Perceived and Actual:
     - source, evidence, advantage, adaptability, trialability, complexity, design quality and packaging, cost

2. Implementing Organizations
   - Organizational Characteristics:
     - Leadership, commitment, readiness, management, competing pressures and priorities, incentives, compatibility with mission, capacity and resources to adopt, adapt, implement, support, monitor and adjust, accountabilities
   - Objects (adapted)
     - Core components
     - Peripheral components
   - Staff (frontline, supervisors and managers):
     - Knowledge, skills, beliefs, motivation and incentives, workload, self-efficacy, stage of change, values, intellect, competence, learning style, openness, access to materials and resources, accountabilities

3. Enabling Environment and Stakeholder Dynamics:
   - Government and donor policies, practices, resources & regulations, peer/network influences, national, societal & cultural influences, accountabilities

4. Individuals, households and communities:
   - Needs, resources, capacities, social, cultural, behavioral, economic, political factors

5. Implementation Processes
   - 1. Initiating, Scoping & Engaging
     - assessing fit and readiness with opinion leaders, formal leaders, champions, facilitators, partners
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     - continuous advocacy, networking, engagement, strategizing, vigilance, reporting and documentation

Adapted from Damschroeder et al., Implementation Science 4:50, 2009

www.implementnutrition.org
Implementation Research (IR)

**Implementation Research refers to “a variety of methods of assessment, inquiry and formal research whose purpose is to systematically assess, build on strengths and address potential weaknesses within and between each of the five domains that affect implementation.”**

(Adapted from WHO/TDR Implementation Research Toolkit, 2014)
A Classification Scheme of Implementation Research

<table>
<thead>
<tr>
<th>Diverse Objects of Implementation</th>
<th>1. Initiating and Scoping</th>
<th>2. Planning and Design</th>
<th>3. Implementing, Iterative Improvement and Scaling Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutrition-specific interventions</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Nutrition-sensitive actions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operationalizing a national multisectoral nutrition agenda</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGO projects (typically sub-national)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implementation Innovations</td>
<td></td>
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</tr>
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<td>NGO projects (typically sub-national)</td>
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</tr>
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<td>Implementation innovations</td>
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</tbody>
</table>
## A Few Examples of IR in the Published Literature

<table>
<thead>
<tr>
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<td></td>
</tr>
<tr>
<td>Implementation innovations</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
Part III

An Integrative Framework for Implementation Science
Implementation Research refers to “a variety of methods of assessment, inquiry and formal research whose purpose is to systematically assess, build on strengths and address potential weaknesses within and between each of the five domains that affect implementation.”

**A Problem with this Construction:**

Given the complexity of implementation, and...

……the many, many weaknesses in the five domains, and....

……the inability for implementers to wait for ‘research findings’

- It is NOT feasible to “systematically assess and address (ALL) potential weaknesses within and between each of the five domains during all phases of the implementation process”

**The Practical Solution: A Broad Definition of Implementation Science**

“… an interdisciplinary body of theory, knowledge, frameworks, tools and approaches whose purpose is to strengthen implementation quality and impact.”

It is NOT just new empirical research – it is “the science of implementation.”
A great deal is already known about implementation, such that many of the most common mistakes could be prevented by applying current knowledge rather than undertaking new investigations;

Much of this current knowledge has already been packaged into practical tools, frameworks and guidelines that can be adapted and used in a variety of settings;

The greatest “gap” lies in knowledge utilization, rather than in generating new knowledge. This knowledge utilization gap exists in nutrition, health, education and most other sectors, and it exists in high income countries as well as low and middle income countries;

The most urgent need in nutrition implementation is to close this knowledge utilization gap by making these practical tools, frameworks and guidelines more readily accessible, through various forms of capacity building, technical assistance, coaching, knowledge brokering and dissemination. This is a research agenda in itself.
Three Categories of Implementation Knowledge

CKE: Contextual Knowledge and Experience (often tacit)

The knowledge and experience of actors in a given country used in everyday decision when planning and implementing programs, including:
- Stakeholder relations, histories and dynamics,
- Capacity strengths and weaknesses,
- What has or has not worked, where, when, how, why
- Formal and informal administrative procedures, etc.

CIR: Contextual Implementation Research

Practical inquiries embedded in and connected to implementation in a given country, such as:
- formative research,
- stakeholder analysis,
- opinion leader research,
- rapid assessments,
- operations research,
- special studies,
- process evaluation,
- costing studies,
- Delphi studies,
- various forms of quality improvement or quality assurance, etc.

GKE: Global Knowledge and Experience

Published or unpublished findings, frameworks, tools and guidelines from:
- implementation research in other countries
- implementation experience in other countries

and

Experiential knowledge of practitioners from other countries
Recognizing Three Categories of Knowledge and Connecting Key Actors in the Triple A Cycle

CKE = contextual knowledge and experience
CIR = contextual implementation research
GKE = global knowledge and experience
SISN’s Integrative Framework for IS in Nutrition: Part 1: Using Existing Knowledge

The Goal
Collaboratively Assess, Build on Strengths and Address Weaknesses in The Five Domains in a Timely Manner During All Phases of Planning and Implementation

Implementation Science: Existing and Emerging Knowledge About Implementation

Frameworks, Tools, Guidelines

Capacity Building, Technical Assistance, Knowledge Brokering, Coaching

The Five Domains That Affect Implementation

1. Objects of Implementation
   - Nutrition-specific interventions
   - Nutrition-sensitive interventions
   - National multi-sectoral agendas
   - NGO projects (usually sub-national)
   - Implementation innovations

2. Implementing Organization(s)
   - Frontline workers, supervisors and managers

3. Enabling Environment
   - Government, funders, civil society, private sector

4. Individuals, households and communities

5. Implementation Processes
   - Initiation, Planning, Implementation, Sustaining
SISN’s Integrative Framework for IS in Nutrition: Part 2: Creating and Using New Knowledge

1. Contextual, Tacit and Experiential Knowledge (CKE)
   - Contextual Implementation Research (CIR)
   - Implementation Science: Existing and Emerging Knowledge About Implementation

2. Contextual Implementation Research (CIR)
   - Frameworks, Tools, Guidelines
   - Capacity Building, Technical Assistance, Knowledge Brokering, Coaching

3. Formal and Rigorously Evaluated Implementation Trials, Proofs of Concept & Evaluation of Innovative Implementation Practices (from the same or different settings) (GKE)

The Goal
Collaboratively Assess, Build on Strengths and Address Weaknesses in The Five Domains in a Timely Manner During All Phases of Planning and Implementation

The Five Domains That Affect Implementation

1. Objects of Implementation
   - Nutrition-specific interventions
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4. Individuals, households and communities

5. Implementation Processes
   - Initiation, Planning, Implementation, Sustaining
How This Differs from Conventional Practices and Business as Usual

This Framework Cautions Against:

• Focusing on generating new knowledge while neglecting the utilization of existing knowledge
• Privileging scientific knowledge while overlooking the value of contextual, experiential and tacit knowledge
• Emphasizing rigorous trials while neglecting the diverse methods for contextual inquiries
• Emphasizing research on certain objects of implementation (such as nutrition-specific interventions) and neglecting others (such as nutrition-sensitive actions, national multisectoral agendas and implementation innovations)
• Conducting research on field-level implementation processes while neglecting the problems and bottlenecks at the other three stages in the implementation cycle
• Strengthening capacity of implementing organizations and staff (through training) while neglecting critical bottlenecks in the other four domains.
**SISN Vision:** A world where actions to improve nutrition are designed and implemented with the best available scientific knowledge and practical experience.

**The Five Imperatives**

- Implementation as Learning & Adaptation
- Implementation Capacities
- Implementation Decision Spectrum
- Implementation Knowledge Portfolio
- Institutional Landscape

**Goal 1.** Advance the theory, methods and conduct of implementation science in nutrition

**Goal 2.** Strengthen the capacities and support for implementation science

**Goal 3.** Create and maintain an innovative and effective implementation science knowledge management system

**Goal 4.** Ensure that SISN’s members are inclusive of all stakeholder categories required for its mission

**Goal 5.** Ensure that SISN is well-governed, well-managed, appropriately resourced, accountable and sustainable
# Current SISN Priorities and Activities

<table>
<thead>
<tr>
<th>Priority</th>
<th>Description</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Disseminate guidance on IS/IR <strong>principles</strong> and <strong>research methods</strong></td>
<td>Webinars, journal articles</td>
</tr>
<tr>
<td>2.</td>
<td>Identify and disseminate case studies of implementation science in nutrition via webinars, briefs, publications, curricula, workshops...</td>
<td>Ongoing; <strong>collab welcome</strong></td>
</tr>
<tr>
<td>3.</td>
<td>Develop IS/IR training materials and curricula</td>
<td>Planned for 2018/19; <strong>collab welcome</strong></td>
</tr>
<tr>
<td>4.</td>
<td>Funded opportunities for short- and medium-term implementation science capacity development</td>
<td><strong>not yet; collab welcome</strong></td>
</tr>
<tr>
<td>5.</td>
<td>Increase awareness, funding and use of IR in SUN countries</td>
<td>Planned for 2018/19</td>
</tr>
<tr>
<td>6.</td>
<td>Develop curated toolkits to strengthen a variety of implementation tasks</td>
<td>Planned for 2018/19</td>
</tr>
<tr>
<td>7.</td>
<td>Guidance for deploying innovative mechanisms for technical assistance, knowledge brokering and coaching to facilitate evidence/knowledge uptake</td>
<td>Planned for 2018/19</td>
</tr>
<tr>
<td>8.</td>
<td>Collaboration in Kenya and Uganda (on anemia control programs) to prospectively learn, document and share lessons on IS/IR</td>
<td>Ongoing</td>
</tr>
<tr>
<td>9.</td>
<td>SISN membership, Nominations and Elections for the Board in 2018, Working Group members, Core funding</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>
1. The high level commitment to nutrition now creates an urgent need for large-scale implementation and impact

2. Business-as-usual implementation and business-as-usual research is not sufficient: Both must change. Good examples already exist.

3. The “Integrative Framework” presented here provides a way to improve the quality of implementation in a practical and timely fashion, by systematizing, integrating and utilizing diverse forms of knowledge at all stages of the implementation process

4. SISN provides a mechanism for implementers, researchers and other parties to collaborate in this effort
SISN

- Check out our website: www.implementnutrition.org
- E-mail us at: implementnutrition@gmail.com
- Follow us: @implementnutri

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References for Case Studies


References for Case Studies (continued)


