

# Implementation Frameworks: An Analysis

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## Abstract

While the importance of implementation science is increasingly recognized, the growing field finds itself fragmented across disciplines. Researchers in different disciplines, with different traditions and interests, use varied language to describe common concepts or, conversely, use common language to describe different concepts. Making steps toward developing a “generalizable framework” is the intent of the analysis reported in this article. A unified field of implementation can contribute to improving the impact of innovations supported by evidence. This analysis utilizes the six components of the Active Implementation Frameworks (AIF), initially developed to reflect many disciplines, as a grounding from which other known implementation frameworks are examined. A qualitative content analysis of 23 implementation frameworks was conducted. Findings reveal more similarity than difference across frameworks; including a strong focus on the Implementation Drivers. Differences are seen in the variation of frameworks addressing Systemic Change or Implementation Teams. Implications for implementation practice are discussed.

*Keywords:* implementation science, implementation practice, implementation frameworks, synthesis, qualitative analysis

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## Implementation Frameworks: An Analysis

As the evidence-based movement has gained momentum and the gap between theory and practice has widened since the 1990s, implementation science has increasingly been recognized as a missing link in the science to service chain (Committee on Quality of Health Care in America, 2001; Nilsen, 2015). Implementation science has developed to support the full and effective use of innovations in individual fields (e.g., physical health, behavioral health, human services, etc.), and as a result, knowledge about evidence-based implementation has grown. Reviews of the literature have summarized what is known regarding diffusion, dissemination (Brownson et al., 2012; Greenhalgh et al., 2004b), and implementation (Fixsen et al., 2005).

Researchers and implementation practitioners now have access to more detailed and nuanced information to further the work of implementation science and practice. This information has been expressed in unique implementation frameworks developed across fields. In the past two decades, implementation science has seen the development of many frameworks designed to identify key variables that account for implementation outcomes.

The sheer number of frameworks now presents a challenge for implementation researchers and potential users of innovations (i.e., anything new) supported by research or other local evidence. Frameworks developed in individual fields can add confusion to the implementation field that has lacked coherence and definition. Researchers in different fields with different traditions and interests use different terminology to describe a common implementation concept or use common terminology to describe different implementation concepts (Brownson et al., 2012; Greenhalgh et al., 2004b; Fixsen et al., 2005).

The lack of agreed-upon terminology for concepts and the absence of commonly used measures of implementation variables hinder reviews and prevent quantitative meta-analyses. Winter (2006) states, “The implementation sub-discipline has been characterized by many different approaches representing different research strategies, evaluation standards, methodologies, concepts, and focal areas for research....The highly fragmented character of implementation research is not very conducive to theory accumulation” (p. 163). Similarly, Martinez et al. (2014) state that “Although many implementation science models

demonstrate considerable overlap, very few articles aid researchers in demystifying the literature landscape” (p. 2).

Nilsen (2015) notes that while implementation researchers largely agree on the broad ways implementation outcomes can be influenced, the naming of these ways are not as agreed upon. A common language and common effective implementation procedures must emerge across fields if the impact of research evidence on citizens and society is to improve (Kessler & Glasgow, 2011; Perl, 2011; Vernez et al., 2006). A parsimonious assumption is that the implementation process is universal. If this assumption is true, then it also is true that each unique framework emphasizes some aspects of the universal. Identifying fragments of the whole contained within unique frameworks may be one initial analysis step in establishing a generalizable and integrated implementation framework to serve the interests of all fields.

## **Active Implementation**

Given all that is known now about implementation across fields, a next move toward integration of the implementation field may be to promote a better understanding of the overlap across implementation frameworks. In the present study, the components of the Active Implementation Frameworks (AIF) are used as a reference to explore implementation frameworks across fields.

The AIF, as they exist today, were formed by practice-based (those doing the work of implementation) and research-based (those studying implementation) evidence. This evidence includes: The experience of groups doing and evaluating the work of implementation, organization and system changes that have been examined over the past five decades, qualitative study of experienced evidence-based program developers and successful users of innovations, comprehensive reviews of the diffusion, dissemination, and implementation evaluation literature, and the purposeful and proactive use of the components of the AIF in practice (Fixsen et al., 2019).

The AIF operationalize practices related to effective innovations, effective implementation and enabling contexts (Fixsen et al., 2015). The AIF are comprised of six components, each with sub-components to offer further operationalization,

that function in a highly integrated manner. A description of each component and sub-components follows here.

1. **Usable Innovations:** Operational descriptions of innovations that include a practical assessment of fidelity that is highly correlated with intended outcomes. An innovation is any new practice or program introduced into the organization or system.
  - a. ***Core Components of an Innovation:*** Critical features (elements that cannot be reduced or eliminated) of an innovation's design that are thought to be responsible for its effectiveness.
  - b. ***Adaptable Periphery:*** Components of an innovation that can be modified to fit provider preferences, organizational practices, and community needs, values, and norms without changing the positive outcomes of the innovation.
  - c. ***Innovation Theory:*** The innovation is based on a theory or model; may describe how an innovation produces change; may explain the impact of the innovation on outcomes; may provide shared meaning that is learned and experienced by practitioners as they use the innovation.
2. **Implementation Drivers:** Methods to assure the development of innovation-related competencies, organization changes, and engaged leadership that support high fidelity use of innovations in practice.
  - a. ***Systems Intervention:*** Effective communication across boundaries to align power groups with organizational use of an innovation; may include partnerships, inter-sector alliances, networking, state level advocacy, or multidisciplinary linkages to help the system support an organization's capacity to do what it is expected to do.
  - b. ***Facilitative Administration:*** Leaders' and managers' adjustments to remove obstacles and to promote the use of an innovation in an organization; may include changes in administrative practices such as

record keeping, productivity requirements, performance reviews, salaries, and other departures from standard practices; may include assuring access to high-quality training, technical assistance, and feedback on innovation use.

- c. ***Decision Support Data System (DSDS)***: Measuring formal and informal uses of an innovation in practice, the context in which the work is done, or process and innovation outcomes; may include regular data reports to staff, managers, and leaders so they can improve supports for use/implementation of an innovation and supports for practitioners.
- d. ***Technical Leadership***: Managers' support for and encouragement of practitioners' use of an innovation; may include clear communication of goals and incorporation of goals into work tasks; development of shared mission, consensus, commitment, and staff buy in.
- e. ***Adaptive Leadership***: Leaders and managers in an organization develop readiness, develop a learning orientation, or facilitate team participation and psychological safety; may include establishing a culture and climate conducive to experimentation and risk taking, breaking out of convergent thinking and the status quo, providing transformative, visionary, inspirational, enabling, engaging leadership with a focus on increasing agreement and accomplishing goals.
- f. ***Staff Selection***: Methods to recruit and hire new staff, or to select current staff members, to use an innovation; may include informing the practitioner about the innovation and asking for agreement to use it in practice, and; assessment of practitioner-related psychological factors, norms, values, philosophy, or professional credentials that correspond with using an innovation in practice.



- g. **Staff Training:** Approaches to ensure provider proficiencies in the skills necessary to use an innovation; may include enhancing practitioners' sense of self-efficacy or establishing common beliefs and expectations.
  - h. **Staff Coaching:** Resources offered to practitioners after use of an innovation begins; may include retraining, reflection, emotional support, or efforts to promote problem-solving to enhance practitioner's use of an innovation.
  - i. **Staff Fidelity:** Assessing a practitioners' use of an innovation as intended or as originally designed (also called adherence, compliance, integrity, dosage, faithful replication).
3. **Implementation Teams:** Groups that are highly skilled in the use of the Active Implementation Frameworks and affecting organization and system change.
- a. **Implementation Competencies of Teams:** Execution of implementation plans with fidelity to the plan, intensity, timeliness of task completion, and engagement of key individuals; may include reflection and feedback and making adjustments in activities to support the use/implementation of an innovation.
  - b. **Innovation Competencies of Teams:** The innovation-related expertise required to support the use and implementation of an innovation.
  - c. **Change Management Competencies of Teams:** Work at the community level to develop stakeholder or action groups to address service barriers, at the organizational level to facilitate the delivery of specific services, and/or at the individual level to develop opinion leaders; may include boundary spanners who engage in problem analysis, skill/team building, education, and systems analysis.
  - d. **Number of Team Members:** The number of people who are in a designated role of supporting the use/implementation of an innovation.

4. **Implementation Stages:** The exploration, installation, and initial implementation activities and outcomes that eventually lead to full implementation within a context.
  - a. **Exploration Stage:** Assessing existing organizational values, norms, culture, climate, existing resources, or other conditions that correspond with using an innovation in practice.
  - b. **Installation Stage:** When planning and practical details are in process, funding is committed, staffing is assured, and/or adequate training is arranged for first users of an innovation.
  - c. **Initial Implementation Stage:** A time when you monitor program quality and the quality of support provided to practitioners who are using an innovation for the first time; rectify problems; develop new communication channels.
  - d. **Full Implementation Stage:** A time when you embed an innovation in an organization; assure quality of delivery and outcomes as part of the daily work of an organization.
5. **Improvement Cycles:** Plan-Do-Study-Act Cycles and/or usability testing for purposeful problem solving and continual improvement. Process evaluation that accounts for the quality of use/implementation of an innovation and uses the data for improving processes and outcomes; includes using data as feedback to those who can improve (e.g., individual, leaders and managers, stakeholders); may include identifying and overcoming barriers; assuring all intended recipients receive the innovation as intended; generating enthusiasm and accomplishment in a learning organization.
6. **Systemic Change:** Change in structures and processes to create alignment and integration of roles (job descriptions, relationships within and across units) and functions (use of an innovation in the context of overall service delivery); may include using multiple modes of practice-policy (bottom up), policy-practice (top-

down), or other forms of communication (lateral, formal, informal, internal, external, one time, continuous) so that the implementation supports for the innovation maximize intended outcomes at scale.

Previous literature reviews, syntheses, and discussions of implementation frameworks have all had unique angles from which to critically review the literature (Hanson et al., 2016; Moulin et al., 2015; Nilsen, 2015). Given the multifaceted and complex nature of the implementation process (Nilsen, 2015), the current study works to examine many known implementation frameworks together. This study may benefit implementation researchers and practitioners alike as the field moves to concretize terminology and concepts, as well as formalize processes to engage in to ensure high quality implementation, sustainable program delivery and consumer outcomes.

The primary purpose of this study was to conduct a qualitative content analysis of implementation frameworks to descriptively explore the commonalities and differences in implementation concepts across frameworks. A secondary purpose was to examine frameworks originating from different fields to identify varying emphases. The analysis was carried out deductively with the Active Implementation Frameworks as a reference.

## **Methods and Analysis**

### **Sample of Implementation Frameworks**

The sample for analysis was derived from the two most comprehensive reviews of the literature that have identified existing implementation frameworks. Meyers et al. (2012) identified 25 implementation frameworks, and Tabak et al. (2012) identified 61 models for dissemination and implementation, 12 of which were classified as implementation frameworks. For an implementation framework to be included in the sample for the current study it must have (a) been cited in one of the two aforementioned reviews as an implementation framework, (b) the aim of explaining how to use research-based innovations to produce an intended outcome, and (c) source documents (i.e., publications) available online or in another manner suitable for analysis. The AIF were excluded from the sample as they served as the basis for the deductive codes utilized in this study.

Eighteen implementation frameworks identified in the Meyers et al. (2012) review and 10 implementation frameworks from the Tabak et al. (2012) review met the inclusion criteria. Five frameworks appeared in both lists resulting in 23 unique frameworks as the sample for this study. The 23 frameworks and accompanying 30 source documents are listed in Table 1. The 23 frameworks originated from several fields and were assigned to three broad categories: Health (H), Prevention (P), and Management (M). The purpose of linking frameworks with specific fields was to identify any distinct differences in how each field conceptualizes implementation. Frameworks were linked to fields based on the Meyers et al. (2012) review of implementation frameworks, the dissemination-implementation.org website, personal communication with three framework authors, and thorough reading of each source document.

**Table 1. Initial Description and Analysis of 23 Frameworks**

Framework Name and Source Documents	Usable Innovation	Systemic Change	Imp. Drivers	Imp. Stages	Imp. Team	Imp. Cycles	Percent commonalities with the AIF
<b>Domain: Health</b>							
1. Diffusion, dissemination, and sustainability of innovations in health care (Greenhalgh et al., 2004)	✓		✓	✓	✓		67%
2. Replicating Effective Programs Plus Framework (Kilbourne et al., 2007)	✓		✓	✓	✓		67%
3. 4E's Process Theory (Pronovost et al., 2008)			✓	✓		✓	50%
4. Prevention and health promotion programs (Durlak & DuPre, 2008)	✓		✓	✓			50%
5. Health promotion and disease prevention framework (Guldbrandsson, 2008)	✓	✓	✓	✓	✓	✓	100%
6. PRISM (Feldstein & Glasgow, 2008)	✓		✓	✓		✓	67%
7. Promoting Action on Research Implementation in Health Services (PARIHS; Rycroft-Malone, 2004; Kitson et al., 1998, 2008)	✓		✓	✓	✓		67%

Framework Name and Source Documents	Usable Innovation	Systemic Change	Imp. Drivers	Imp. Stages	Imp. Team	Imp. Cycles	Percent commonalities with the AIF
8. QUERI Framework (Stetler et al., 2008)			✓	✓		✓	50%
9. Consolidated Framework for Implementation Research (CFIR; Damschroder et al. 2009)	✓	✓	✓	✓	✓	✓	100%
10. Normalization Process Theory (May & Florin, 2003; Murray et al., 2010)	✓		✓	✓	✓	✓	83%
11. Conceptual Model of Evidence-Based Practice Implementation in Public Service Sectors (EPIS framework; Aarons et al 2011)	✓	✓	✓	✓	✓	✓	100%
<b>Domain: Prevention</b>							
1. Communities that Care (Hawkins et al., 2002)	✓		✓	✓	✓	✓	83%
2. Promoting School/Community- University Partnerships to Enhance Resilience (PROSPER; Spoth & Greenberg, 2005; Spoth et al., 2004)	✓		✓	✓	✓		67%
3. Community-based prevention services (Sandler et al., 2005)	✓		✓	✓			50%
4. School-based preventive and mental health promotion interventions (Greenberg et al., 2005)	✓	✓	✓	✓	✓	✓	100%

Framework Name and Source Documents	Usable Innovation	Systemic Change	Imp. Drivers	Imp. Stages	Imp. Team	Imp. Cycles	Percent commonalities with the AIF
5. Community-based programs for violence prevention and substance abuse prevention (Stith et al., 2006)	✓		✓	✓		✓	67%
6. Getting to Outcomes (GTO; Chinman et al., 2008)	✓		✓	✓	✓	✓	83%
7. Interactive Systems Framework (ISF; Wandersman & Florin, 2003; Wandersman et al., 2008)	✓		✓	✓		✓	67%
<b>Domain: Management</b>							
1. Sticky Knowledge (Elwyn et al., 2007; Szulanski, 1996)	✓		✓	✓			50%
2. Implementation Effectiveness Model (Klein & Sorra, 1996; Klein et al., 2001)	✓		✓	✓			50%
3. Framework to implement strategies in organizations (Okumus, 2003)	✓		✓				33%
4. Availability, Responsiveness, Continuity (ARC; Glisson & Schoenwald, 2005)	✓		✓	✓	✓	✓	83%
5. Organizational Theory of Innovation Implementation (Weiner et al., 2009)	✓		✓	✓			50%

## **Coding Process**

The current study utilized a directed approach of qualitative content analysis known as deductive category formulation and application (Forman & Damschroder, 2007; Hsieh & Shannon, 2005; Mayring, 2000). The study focused on codes that were first identified through a review and synthesis of the implementation evaluation literature that led to the creation of the Active Implementation Frameworks (AIF; Fixsen et al., 2005, 2009, 2016; Metz et al., 2014). An unconstrained (i.e., new categories may be created) list of codes was the basis for coding and analysis.

During a preliminary analysis of source documents included in this study by the first and third author, two coding categories emerged inductively and were labeled Recipient Fit and Practitioner Fit. These two new codes were further reflected upon, and after discussion among the coding team for the current study, were defined. Recipient Fit was defined as: Innovation choice includes consideration of recipient [client, patient] perspectives or feedback on factors such as patient-centeredness, native language, culture, age, gender, income, choices, seamless transition, service access, or burden. Practitioner Fit was defined as: Innovation choice includes consideration of practitioner characteristics such as age, race/ethnicity, education, training, primary discipline, amount of professional experience, adaptability, personal values and goals, dispositions, or attitudes. Both new codes were included as sub-components for the current study within the AIF component of Usable Innovations.

Three authors (Authors two, four, five) coded the sample of 30 source documents that represent 23 unique frameworks using NVivo 11. Six frameworks had two or more source documents. If at least one of the source documents representing a framework was found to be inclusive of one of the codes, then it was determined that the framework was inclusive of the code.

The unit of analysis was a theme (Polit & Beck, 2003), where each theme represents one sub-component of each of the six components of the AIF. For example, Staff Selection is one theme and is a sub-component of Implementation Drivers which is one component of the AIF. This decision was made to ensure that the unit of analysis was not too narrow (to fragment the data), and also not too broad to miss key commonalities across frameworks. Each of the six components of the AIF was coded for the presence of that component in a framework if at least one sub-component was coded within it. Each coder coded for correspondence with or exemplification of the identified themes. Given the aim of this study, the decision was made to limit the use of each code to once per source document to identify the presence of sub-components of each of the six components of the AIF, not the strength of that presence.



Inter-rater consistency was assessed by dividing the total number of agreements by the total number of codes used (i.e., both agreements and disagreements). The inter-rater consistency for the first two source documents examined was 89%. When inter-rater consistency was again assessed later in the coding process, Authors two and four had an average agreement of 81% across two source documents. For the source documents that were coded by more than one researcher, all discrepancies in coding were documented and discussed by the entire research team to come to a decision about the presence or absence of code-relevant information in the source document. Given that agreement across coders was ultimately found when discrepancies in coding occurred, the percent of inter-rater consistency was deemed suitable for the study to move forward with each of the three researchers coding different source documents.

After coding concluded, analysis of the coded source documents began by authors one and three. Analysis involved extracting quotes from NVivo 11 and importing them into Microsoft Excel. A close reading of all segments pertaining to each code was conducted and summaries of the data were produced and then shared with the whole research team for discussion.

## Results

### Most Common AIF Components

The results of coding each framework are shown in Table 1. Each of the six components of the AIF were coded for presence of that component if at least one sub-component was coded within it. The overlap of components of the AIF and the sample of frameworks studied ranged from 33% for one framework to 100% for four frameworks. The AIF components of Implementation Drivers, Implementation Stages, and Usable Innovations were most common across frameworks (100%, 96%, and 91% respectively), and Systemic Change was the least common (17%). Improvement Cycles and Implementation Teams appeared in 57% and 52% of the frameworks. Overall, there was 69% overlap in the 23 frameworks with the six components of the AIF.

Table 2 also shows the percent of frameworks within each field, i.e., Health, Prevention, and Management, that demonstrated the presence of components of the AIF. In Health, all eleven (100%) frameworks included content regarding Implementation Drivers and Implementation Stages, while only three (27%) included content regarding Systemic Change. In Prevention, all seven (100%) frameworks included content regarding Usable Innovation, Implementation Drivers, and Implementation Stages, while only one (14%) included content regarding Systemic Change. In Management, all five (100%) frameworks included content regarding Usable Innovations and Implementation Drivers, while none (0%) included content regarding Systemic Change.

Across the three fields Implementation Drivers are, at a high level, agreed upon as being a part of an implementation process. This presents a starting place for the implementation field to perhaps find traction from which to work as the collective moves towards finding commonality and cohesion. Quite opposite to the Implementation Drivers, Systemic Change was absent from most all frameworks across fields. This finding may mean that the concept from the AIF is ill-defined and thus identifying it within frameworks was difficult, or, that very few frameworks – regardless of the field of focus – incorporate changing structures or processes so that alignment in a context can support an innovation in practice.

### **AIF Sub-Components Across Frameworks**

Table 2 shows the percent of frameworks that were inclusive of sub-components of the AIF. The five sub-components of the AIF coded most frequently were: (i) Exploration Stage (91%), (ii) Staff Training (91%), (iii) Facilitative Administration (74%), (iv) Fidelity (74%), and (v) Decision Support Data System (70%). The three sub-components of the AIF coded least frequently were: (i) Team Number (of those on an Implementation Team) (9%), Competencies for Creating Change (of those on an Implementation Team) (26%), and Theory to define Innovations (26%).

Table 2 also examines the presence of AIF sub-components across fields. Within Usable Innovations, Health frameworks had a strong focus on Recipient Fit (82%) when compared with Prevention (57%) and Management (20%) frameworks. Within Implementation Drivers, Prevention frameworks focused the least on Staff Selection (17%) and Technical and Adaptive Leadership (29%) when compared with Health and Management. Within Implementation Teams, only one to two frameworks across all three fields included guidance on the Number of Team Members. Within Implementation Stages, Prevention frameworks focused the least on the Full Implementation Stage (29%) and Health and Management frameworks focused least on the Installation Stage (45%; 20%). An in-depth description of the analysis of AIF sub-components within the frameworks studied and across fields follows.

**Table 2. Percent of Frameworks Within and Across Domains that Include AIF Content**

<b>AIF Components and Sub-Components</b>	<b>Health (n=11)</b>	<b>Prevention (n=7)</b>	<b>Management (n=5)</b>	<b>All Frameworks (n=23)</b>
<b>A. Usable Innovation</b>	82%	100%	100%	91%
a. Theory	9%	57%	20%	26%
b. Core Components	73%	71%	20%	61%
c. Adaptable Periphery	45%	57%	0%	39%
d. Practitioner Fit	73%	29%	80%	61%
e. Recipient Fit	82%	57%	20%	61%
<b>B. Imp. Drivers</b>	100%	100%	100%	100%
a. System Intervention	55%	71%	20%	52%
b. Facilitative Administration	73%	57%	100%	74%
c. Decision Support Data System	82%	71%	40%	70%
d. Technical Leadership	64%	29%	80%	57%
e. Adaptive Leadership	45%	29%	40%	39%
f. Staff Selection	55%	14%	40%	39%
g. Staff Training	91%	100%	80%	91%
h. Staff Coaching	64%	71%	20%	57%
i. Staff Fidelity	73%	86%	60%	74%

<b>AIF Components and Sub-Components</b>	<b>Health (n=11)</b>	<b>Prevention (n=7)</b>	<b>Management (n=5)</b>	<b>All Frameworks (n=23)</b>
<b>C. Imp. Team</b>	64%	57%	20%	52%
a. Number	0%	14%	20%	9%
b. Competencies – Innovation	45%	43%	0%	35%
c. Competencies – Implementation	64%	43%	20%	48%
d. Competencies – Change Management	27%	29%	20%	26%
<b>D. Imp. Stages</b>	100%	100%	80%	96%
a. Exploration	100%	86%	80%	91%
b. Installation	45%	71%	20%	48%
c. Initial Implementation	73%	43%	40%	57%
d. Full Implementation	64%	29%	40%	48%
<b>E. Improvement Cycles</b>	64%	71%	20%	57%
<b>F. Systemic Change</b>	27%	14%	0%	17%

## *Usable Innovations*

**Recipient Fit.** Sixty-one percent of the frameworks include the need to consider Recipient Fit with the innovation. The Health field had the strongest focus on Recipient Fit (82%). It may be that the focus on patients specifically in the Health field was reflected in this finding. Coded information about patient or consumer fit with features of innovations included: Consumer concerns (Aarons et al., 2011; Murray et al., 2010), patient needs being accurately known and prioritized (Damschroder et al., 2009), patient-centeredness (Feldstein & Glasgow, 2008), matching an innovation to the community demographic to enhance community ownership and commitment (Hawkins et al., 2002), patient preferences and experiences (Kitson et al., 2008; Rycroft-Malone, 2004), and “fit of innovation with the customer needs and values” (Sandler et al., 2005).

**Practitioner Fit.** While 61% of all frameworks included information on Practitioner Fit with the innovation, only 29% of Prevention frameworks did. It may be that in Prevention contexts the fit of the practitioner with the innovation is less considered due to many prevention programs being “additional” duties to a practitioner’s position or role. Of those frameworks that did include Practitioner Fit, there was a fairly consistent message: Practitioner Fit with an innovation, at the least, encompasses fit with practitioner values, attitudes, and philosophy (Aarons et al., 2011; Damschroder et al., 2009; Greenhalgh et al., 2004a; Guldbrandsson, 2008; Klein & Sorra, 1996; Weiner, 2009).

**Core Components.** Sixty-one percent of all frameworks included description of Core Components of an innovation. Health (73%) and Prevention (71%) frameworks aligned more strongly with this sub-component than Management frameworks (20%). This difference across fields may be due to an ever-increasing focus on explicitly linking components of an innovation to outcomes. For Health and Prevention fields, this link from innovation to outcomes is critical to share with stakeholders and funders alike. It may be that Management-oriented innovations have less of this pressure and therefore the frameworks did not reflect this sub-component of the AIF.

Core Components were defined in similar ways by several frameworks. For example: “core elements demonstrated to be responsible for treatment outcome effects” (Aarons et al., 2011), “the essential and indispensable elements of the intervention” (Damschroder et al., 2009), “differentiating scripts, activities, or procedures that must be presented exactly as designed” (Greenberg et al., 2005), and “the irreducible elements of the innovation itself” (Greenhalgh et al., 2004a). Many frameworks also described the link between Core Components and positive outcomes (Kilbourne et al., 2007; Sandler et al., 2005; Wandersman et al., 2008).

**Adaptable Periphery.** Thirty-nine percent of frameworks included a description of the Adaptable Periphery. None of the Management frameworks were found to have this sub-component. Frameworks defined the Adaptable Periphery in similar ways overall. For example, Damschroder et al. (2009) stated “Adaptable elements, and systems related to the intervention and organization into which it is being implemented.” The rationale for adapting an innovation was, generally, to be responsive to the local implementation context: “to what extent the program can be adapted in order to fit differences in consumers, providers or service delivery settings while still effecting positive change” (Sandler et al., 2005). Frameworks ranged from specifying that the adaptable elements must be decided on ahead of implementation (Kilbourne et al., 2007), to specifying that adaptation can occur during implementation (Durlak & DuPre, 2008), to not specifying a time point at which adaptation occurs (Feldstein & Glasgow, 2008).

**Innovation Theory.** Twenty-six percent of frameworks included a description of the Innovation Theory. Across frameworks, definitions and descriptions of theory varied from a general mention to very specific comments. The most specific definition coded was “A program theory...explains how or why program activities address the determinants of a problem and generate observed or desired program outcomes” (Weiner, 2009).

Nine percent of Health, 57% of Prevention and 20% of Management frameworks had mention of theory. Perhaps of the greater number of Prevention frameworks focused on theory is in some way is due to the field itself – given that prevention innovations must rely on theory to identify what outcomes may be anticipated many years from when the initial innovation (i.e., intervention or program) occurs.

### *Implementation Drivers*

**Systems Intervention.** Fifty-two percent of all frameworks provided information related to Systems Intervention. Health (55%) and Prevention (71%) had a stronger focus here than Management (20%) frameworks. What was found in the frameworks demonstrated diverse ways that this sub-component was enacted.

Formal inter-organizational networks and ties, such as coalitions, may serve to increase an organization’s likelihood of adopting an innovation (Aarons et al., 2011; Chinman et al., 2008; Greenberg et al., 2005; Greenhalgh et al., 2004a; Hawkins et al., 2002; Wandersman & Florin, 2003). Other inter-organizational networks may be less defined in terms of who is involved and what the outcome is, but nonetheless may support implementation (Aarons et al., 2011).

An organization may be “networked with other external organizations” (Damschroder et al., 2009). Damschroder et al. (2009) stated that “organizations that support and promote external

boundary-spanning roles of their staff are more likely to implement new practices quickly.” Internally, intra-organizational networks can “facilitate the development of shared meanings and values in relation to the innovation”, and effective intra-organizational communication “enhances the success of implementation” (Greenhalgh et al., 2004a).

In emphasizing the power of individual networks to impact dissemination of new knowledge, Guldbrandsson (2008) states that the “structure and quality of the social networks an individual belongs to affect how innovations are spread.” From these findings it was observed that Systems Intervention may occur at both the organizational and individual level, and that both internal and external networks are important to the implementation process.

**Facilitative Administration.** Seventy-four percent of frameworks provided information related to Facilitative Administration. All Management frameworks included this sub-component, and between half (57%) and three-quarters (73%) of Prevention and Health frameworks, respectively, included it. With the focus of Management frameworks being internal to an organization or organizational processes, it makes sense that such a strong representation of this sub-component was found.

Facilitative Administration was described in complementary ways across frameworks: Ensuring the innovation is rewarded, supported, and expected (Damschroder et al., 2009; Stith et al., 2006), removing obstacles (Elwyn et al., 2007; Klein & Sorra, 1996; Stith et al., 2006; Weiner, 2009), making the innovation more routine (Elwyn et al., 2007; Murray et al., 2010; Okumus, 2003), addressing budgeting issues (Greenberg et al., 2005; Guldbrandsson, 2008), ensuring availability of needed resources (Greenberg et al., 2005; Klein & Sorra, 1996; Klein et al., 2001; Pronovost et al., 2008), and creating a supportive infrastructure (Stetler et al., 2008).

Two frameworks defined aspects of facilitation in coded segments. Kitson et al. (1998) stated: “The term describes the type of support required to help people change their attitudes, habits, skills, ways of thinking, and working.” Rycroft-Malone (2004) stated that facilitation is “the process of enabling (making easier) the implementation of evidence into practice.” The alignment across fields and frameworks alike with Facilitative Administration may also be a key touchpoint from which the field can gain traction, focusing on commonalities first, to then work to come to agreement on other less aligned concepts.

**Decision Support Data System (DSDS).** Seventy percent of frameworks referred to various aspects of the DSDS. Many Health (82%) and Prevention (71%), and fewer Management (40%) frameworks included information in this area. Potentially, the external forces (i.e., consumers and stakeholders who are not members of the organization) within the Health and

Prevention spaces may necessitate a greater focus on defining a DSDS and accompanying processes.

Some frameworks focused on evaluation strategies. In particular, Kilbourne et al. (2007) stated that more formal evaluation strategies may be considered to look at fidelity, implementation process, patient outcomes, and return on investment. Chinman et al. (2008) stated that data collection tools can be used to “help specify needs or better coordinate services.” Rycroft-Malone (2004) stated that data can be used to inform decision-making.

Some frameworks outlined using data during progress updates and to reflect on quality of implementation (Chinman et al., 2008; Damschroder et al., 2009; Greenberg et al., 2005; Greenhalgh et al., 2004a; Kitson et al., 2008; May & Finch, 2009; Okumus, 2003; Stetler et al., 2008). Hawkins et al. (2002) described many data sources that could be used to “monitor the implementation of the policies and programs...specific in the action plans.”

Rycroft-Malone (2004) and Sandler et al. (2005) discussed using data as evidence to assess whether changes to a practice are appropriate. Sandler et al. (2005) stated that for this to be done “effectively requires that processes are in place to continually gather data and evaluate the implications of the information.” Other examples of DSDS processes or practices included regular team debriefing about progress (Damschroder et al., 2009) and communication being key to monitoring the implementation process and providing feedback on progress (Okumus, 2003).

In discussing the outcome of reflecting on data, Feldstein and Glasgow (2008) noted that “positive initial results generally promote confidence and self-efficacy among staff,” Greenhalgh et al. (2004a) stated that “the innovation is more likely to be assimilated and sustained”, while Greenhalgh et al. (2004a) and Guldbrandsson (2008) both echoed that “accurate and timely information about the impact of the implementation process increases the chance of successful routinization.” Kitson et al. (1998) stated that successful implementation results in part from use of “appropriate monitoring and feedback mechanisms.”

We found rich information about data being used for evaluation, to reflect on implementation processes, to reflect on program delivery, and the outcomes of using data. With this richness, there is great potential here to use DSDS as a lever and starting place from which to dive deeply across fields to define the evaluation and data agenda within implementation practice.

**Technical Leadership.** Fifty-seven percent of all frameworks included information related to Technical Leadership. Most Management frameworks (80%), more than half of Prevention frameworks (64%) and fewer Health frameworks (29%) found alignment with this



concept as well. Stetler et al. (2008) named leadership actions as an implementation strategy that includes “role modeling, use of special language, facilitative networking, ongoing and explicit advocacy, and celebration of small wins.” Hawkins et al. (2002) identified that leaders need to establish a shared vision for the future. Aarons et al. (2011) identified that leadership support of an innovation may result in “continued buy in and use of specific practices,” and Feldstein and Glasgow (2008) echoed this by stating that “management support is a commonly described key success factor for practice improvement.”

Greenberg et al. (2005) and Okumus (2003) both noted, that leadership endorsement of the innovation “is viewed as a critical prerequisite for program success.” Klein et al. (2001) noted that the more committed leaders are to the innovation, the more likely they are to “invest in and to monitor the quality of implementation.” Damschroder et al. (2009) named the need to clearly communicate goals to staff, as well as leadership “commitment, involvement, and accountability.” Durlak and DuPre (2008) emphasized the need to formulate tasks, have leadership, program champions, as well as administrative support.

**Adaptive Leadership.** Thirty-nine percent of frameworks included information about Adaptive Leadership. Less than half of Health (45%), Prevention (29%) and Management (40%) frameworks found alignment with this concept. The main theme related to this kind of leadership that was threaded throughout the frameworks was the discussion of leadership creating a learning climate or learning orientation as a way to facilitate the implementation of an innovation (Aarons et al., 2011; Damschroder et al., 2009; Durlak & DuPre, 2008; Greenhalgh et al., 2004a; Guldbrandsson, 2008; Kitson et al., 2008; Rycroft-Malone, 2004; Szulanski, 1996). The lack of exemplification of Adaptive Leadership within frameworks across fields may be due to the concept itself being more difficult to concretely describe than other implementation concepts found in the AIF. Additionally, further examination of leadership within frameworks may uncover elements of Adaptive Leadership woven into the broader concept of leadership for implementation.

**Staff Selection.** Thirty-nine percent of frameworks included information regarding Staff Selection. Just around half of the Health (55%) and Management (40%) frameworks and less than a quarter of the Prevention (14%) frameworks saw alignment with this sub-component. This lack of emphasis on selecting staff may be due to a perception that when new staff are not hired for an innovation that there is no staff selection work to be done. There is in fact work that can be done to ensure staff that are selected from an internal pool are selected in a way that will bolster their success.

Various selection or recruitment criteria for those who will use the innovation or who will be a team member supporting the innovation were described: Knowledge (Aarons et al., 2011),

skills (Aarons et al., 2011; Stith et al., 2006), abilities (Aarons et al., 2011), characteristics related to being able to learn the innovation (Aarons et al., 2011), attitudes toward the innovation (Aarons et al., 2011; Damschroder et al., 2009; Kitson et al., 2008), value placed on the innovation (Damschroder et al., 2009), familiarity or skill with the innovation (Damschroder et al., 2009; Klein & Sorra, 1996), and formal training and education (Stith et al., 2006).

**Staff Training.** Ninety-one percent of all frameworks included information about Staff Training, with alignment being high across Health (91%), Prevention (100%) and Management (80%). Nearly all frameworks mentioned the need for and importance of training for staff who will be using an innovation. Some went deeper to describe the considerations associated with training, while others included a rationale for training. Some considerations associated with training included the cost (Aarons et al., 2011; Damschroder et al., 2009), the potential need to support staff until they become certified in the program (Aarons et al., 2011), clearly defining eligibility requirements for staff to be trained (i.e., prerequisite skills; Stith et al., 2006), and hiring all staff before scheduling a training (Stith et al., 2006).

Several rationales were presented for training, and all echoed the same theme: Training is needed so that staff are “knowledgeable and confident in their skills” (Durlak & DuPre, 2008; Greenberg et al., 2005). Many frameworks identified the desired outcomes of training. Kilbourne et al. (2007) stated that training is “essential in implementing and sustaining the intervention.” While Greenhalgh et al. (2004a) further specified that “When job changes are few and clear, high-quality training materials are available, and timely on-the-job training is provided, successful and sustained implementation is more likely.” Another framework called out staff training as being a critical element of successful implementation (Stith et al., 2006). Spoth and Greenberg et al. (2005) stated that training (among other Implementation Drivers) predicted fidelity during program use.

While training is one piece of the implementation process puzzle, the field has long recognized the limitations of training alone to produce changes in practitioner behavior. The importance of training should not be underemphasized when practitioners are expected to do something new and should also be accompanied by other Implementation Drivers to ensure behavior changes occur in practice and that they are supported and sustained.

**Staff Coaching.** Fifty-seven percent of frameworks included information about Staff Coaching. Twenty percent of Management frameworks and over half of Prevention (71%) and Health (64%) had some focus on coaching. The central theme across frameworks was the need for ongoing support for staff after an innovation has begun to be used (Aarons et al., 2011; Durlak & DuPre, 2008; Greenberg et al., 2005; Hawkins et al., 2002). Some frameworks outlined the goals of ongoing support. The goal may be to maintain providers’ motivation and commitment,

improve their skill levels where needed, support local problem solving efforts (Durlak & DuPre, 2008), remove barriers to implementation, or to develop procedures to monitor the implementation of each element and outcomes (Hawkins et al., 2002).

One framework described that the role of a facilitator is to coach and mentor a team through the change (Kitson et al., 2008). This speaks to coaching on a higher level – coaching for the implementation process, not just coaching for individual skill development with an innovation. Two frameworks provided a rationale for ongoing support. Aarons et al. (2011) stated that coaching improves innovation adherence, and Guldbrandsson (2008) stated that it is a combination of several implementation components, such as training, coaching, feedback, and consultation that leads to better results.

**Staff Fidelity.** Seventy-four percent of all frameworks included information related to Staff Fidelity. Prevention (86%) and Health (73%) frameworks had more of a focus on fidelity than Management (60%) frameworks. The frameworks that explicitly addressed fidelity used a variety of terms: Fidelity (Aarons et al., 2011; Damschroder et al., 2009; Greenberg et al., 2005; Kilbourne et al., 2007; Sandler et al., 2005; Spoth & Greenberg, 2005; Stith et al., 2006; Wandersman et al., 2008; Weiner, 2009), ideal performance (Chinman et al., 2008), consistency of delivery (Feldstein & Glasgow, 2008), consistency and quality of delivery (Aarons et al., 2011; Klein & Sorra, 1996; Klein et al., 2001; Weiner, 2009), program compliance (Guldbrandsson, 2008; Pronovost et al., 2008), interactional workability (May & Finch, 2009), and implementation according to a plan (Okumus, 2003).

The antecedents to high fidelity were described in a few ways. One way was identifying potential sources of variability in program use and then developing ways to minimize the effects of variability in order to enhance fidelity (Sandler et al., 2005). Spoth and Greenberg (2005) state that “training and TA, as well as community readiness” predict fidelity.

What results from high fidelity was also described. Aarons et al. (2011), Klein et al. (2001), Klein and Sorra (1996), and Weiner (2009) discussed that when a program is used with high fidelity by all targeted employees then it is likely to “be effective in its implementation sustainment.” Stith et al. (2006) relayed that “the literature suggests that fidelity leads to more positive program outcomes.” Monitoring fidelity (as one piece of implementation support) leads to adoption and implementation of innovations (Wandersman et al., 2008).

## ***Implementation Teams***

**Implementation Competencies of Teams.** Fifty-two percent of frameworks included some discussion of the Implementation Competencies of Teams. Less than half of the Prevention

(43%) and Management (20%) frameworks and 64% of Health frameworks included this as a focus. Damschroder et al. (2009) described the importance of planning in order to execute an implementation process so that the execution may be assessed. Greenberg et al. (2005) noted the need for “effective use of implementation techniques.” Chinman et al. (2008) described how technical assistance was utilized to guide communities through an implementation plan and process itself (i.e., provide information and assistance in how to use each GTO step). Echoing this, Guldbrandsson (2008) described “providing practical support to implement the method” and the general technical assistance process of “helping the recipient go from words to action.” Kilbourne et al. (2007) similarly described technical assistance of the implementation process.

Glisson and Schoenwald (2005) described the implementation of a continuous quality improvement process with community advisory groups and service providers leading the effort. This team collects data, interprets data, identifies the problem, and then recommends changes and monitors progress in solving the problem. Spoth and Greenberg (2005) also named community stakeholders as those who should be involved in “implementation, evaluation, and refinement if the intervention is to be successfully sustained in the community.” Similarly, Kitson et al. (1998, 2008) described change management and the need for support of the implementation process through the change.

**Innovation Competencies of Teams.** Thirty-five percent of frameworks include some discussion of the Innovation Competencies of Teams. Less than half of the Health (45%) and Prevention (43%) frameworks include this, and none of the Management frameworks include Innovation Competencies of Teams. Most of the few references to these competencies focused on program developers (Aarons et al., 2011; Greenhalgh et al., 2004a; Kilbourne et al., 2007). For example: “Some intervention developers are willing and able to support developing local expertise in their model, while others prefer to retain the training and fidelity support process” (Aarons et al., 2011).

The results described here about Implementation and Innovation competencies within teams seem to reflect the notion that those outside of a system are the ones to do this work – with outside technical assistance for an implementation process, and program developer assistance pertaining to the innovation itself. The fragmentation and external orientation of these supports is problematic given that developing implementation and program support within the local context may be central to ensuring the innovation is nurtured, grown, and sustained.

**Change Management Competencies of Teams.** Twenty-six percent of frameworks included some discussion of Change Management Competencies. Almost a third of the frameworks from each field included reference to Change Management (27% Health; 29% Prevention; 20% Management). Some examples included: The need to utilize implementation

leaders, champions, and opinion leaders (Damschroder et al., 2009; Hawkins et al., 2002), the need to have team members mirror those who will be served by the innovation (Damschroder et al., 2009; Hawkins et al., 2002), the need for broad system representation on the team in order to facilitate change (Kilbourne et al., 2007; Spoth & Greenberg, 2005), team use of continuous quality improvement processes (Glisson & Schoenwald, 2005), and the need for change agents to work to facilitate the implementation process (Guldbrandsson, 2008).

**Number of Team Members.** Nine percent of frameworks included some description of the Number of Team Members. Across fields, discussion of the Number ranged from 0% (Health) to 14% (Prevention), to 20% (Management) of frameworks. Chinman et al. (2008) described two people in a team. Glisson and Schoenwald (2005) identified MST therapists as being organized into teams of three to four clinicians and a supervisor.

There is a slim presence of the Change Management competency and Number of Team Members across all fields. This suggests that there either may be a need for more definition of what constitutes “change management” and rationale for why a specific number of team members is relevant to implementation support, or that most frameworks do not consider change management a competency of a team leading and supporting an implementation effort, and find that the number of team members does not need to be specified.

### *Stages of Implementation*

**Exploration Stage.** Ninety-one percent of frameworks included information related to the Exploration Stage of implementation and the need to assess the fit between an innovation and a community. Across fields the percent of frameworks that included the Exploration Stage was high, from 80% (Management) to 100% (Health). Exploration included a community identifying a concern about a targeted problem (Glisson & Schoenwald, 2005) based on an “awareness of an issue” (Aarons et al., 2011; Elwyn et al., 2007; Klein et al., 2001; Stith et al., 2006; Szulanski, 1996). Exploration discussions lead to identification of existing community programs and potential new innovations (Glisson & Schoenwald, 2005; Hawkins et al., 2002; Kilbourne et al., 2007; Szulanski, 1996; Wandersman et al., 2008), assessment of stakeholder perceptions of the evidence supporting the outcomes of a potential innovation (Damschroder et al., 2009), and identification of a local champion for the innovation (Stith et al., 2006). Exploration included gathering “local input into new programming” (Durlak & DuPre, 2008), assessing barriers to implementation (Kilbourne et al., 2007; Pronovost et al., 2008), and developing “a shared understanding about the benefits, dis-benefits, risks, and advantages of the new over the old” (Kitson et al., 2008) so that the organization is ready to implement (Stith et al., 2006).

The purpose of Exploration was described as assessing fit of a practice with an organization, its culture, the population it serves, and other programs being offered (Aarons et al., 2011; Glisson & Schoenwald, 2005; Greenberg et al., 2005; Greenhalgh et al., 2004a; Kilbourne et al., 2007; Sandler et al., 2005; Stetler et al., 2008; Wandersman & Florin, 2003), assessing organizational readiness for an innovation (Feldstein & Glasgow, 2008; Glisson & Schoenwald, 2005; Guldbbrandsson, 2008), assessing community readiness (Stith et al., 2006), assessing the strength of the evidence of an innovation (Feldstein & Glasgow, 2008; Kitson et al., 1998), and legitimizing an innovation (May & Finch, 2009).

The rationale for engaging in Exploration was described by several frameworks. Assessing fit of an innovation may “contribute to the likelihood that a practice is adopted or not” (Aarons et al., 2011), “An innovation that fits with the organization’s...ways of working is more likely to be assimilated” (Greenhalgh et al., 2004a), and “New methods that are concordant with prevailing individual, organizational and professional values, norms and working methods are easier to implement” (Guldbbrandsson, 2008).

Other frameworks described rationales for engaging in Exploration that centered on stakeholder buy-in for the innovation and perception of the innovation as being a key: Stakeholder perceptions in the local context will impact implementation effectiveness (Damschroder et al., 2009) as will employees’ perceptions of whether using a new innovation will be rewarded, supported, and expected within their organization (Klein & Sorra, 1996). This strong focus on Exploration tells us that within frameworks across fields there is recognition that this initial stage is important to the overall process of implementation.

**Installation Stage.** Forty-eight percent of all frameworks included discussion of the Installation Stage. Frameworks across fields varied in their inclusion of this Stage with 71% of Prevention, 45% of Health, and 20% of Management frameworks including it. Aarons et al. (2011) described a phase when “attention and resources must be given to preparing for active implementation through planning and development activities.” Damschroder et al. (2009) emphasized preparation in the process of implementation and stated that “tasks for implementing an intervention are developed in advance.” Guldbbrandsson (2008) echoed this and stated that a phase of implementation is to arrange and plan “what is needed to realize the idea.”

Kilbourne et al. (2007) described a “pre-implementation” stage that entails training and technical assistance, pilot testing the innovation, and preparing for the eventual implementation of the innovation. May and Finch (2009) named “the activation of a practice” and noted that this is when the materials and means by which the innovation “could be effectively operationalized in a clinical setting” are defined. Sandler et al. (2005) named a “prototype development and

testing phase” where a detailed service blueprint is created to “capture every aspect of how the service will be implemented.” Szulanski (1996) noted that the “implementation stage begins with the decision to proceed.”

Contracting or policy changes are also discussed during the Installation Stage (Aarons et al., 2011; Elwyn et al., 2007). Stith et al. (2006) described the need for “sufficient resources” that include “adequate and reliable funding, a stable staff and organization, sufficient training, administrative support, technical assistance, and program evaluation.” Funding for staff training and other materials (Aarons et al., 2011; Spoth & Greenberg, 2005), as well as “sufficient resources to sustain the program with fidelity” (Greenberg et al., 2005) were also noted as being needed.

Greenberg et al. (2005) identified the role of a project coordinator to “ensure the successful implementation and evaluation of the program.” This is a time to involve those who will be implementing the innovation in the setting in order to discuss any potential issues from the start and to garner buy-in (Guldbrandsson, 2008). Damschroder et al. (2009) noted that this is the time for “building local capacity for using the intervention.” Hawkins et al. (2002) called out community action plans that describe the innovation selected in a community, and then also describe work plans embedded within the action plans that lay out the “how” of the implementation work to come.

**Initial Implementation Stage.** Fifty-seven percent of frameworks provided information related to Initial Implementation. About three-quarters of Health frameworks (73%) and less than half of Prevention (43%) and Management (40%) frameworks included this stage. Szulanski (1996) described a “ramp-up stage” when transferred knowledge is first put to use and that this stage is predominantly concerned with “identifying and resolving unexpected problems.” Damschroder et al. (2009) described a phase where “quantitative and qualitative feedback about the progress and quality of implementation” is captured. They also emphasized the importance of establishing communication channels, such as, “regular personal and team debriefing about the time and experience.”

Kilbourne et al. (2007) emphasized a phase for refining an intervention based on the feedback of first-time users. They stated that during this phase an “intervention can be tested and information collected on feasibility, acceptance, and any problems with the overall package, so that the package can be refined based on their input.” Greenberg et al. (2005) and Durlak and DuPre (2008) highlighted the necessity of careful monitoring of program quality on an ongoing basis, once program implementation has begun. Durlak and DuPre (2008) further stated that early monitoring of implementation helps identify and rectify problems which are essential to “ensure better outcomes.” Hawkins et al. (2002) identified the role of “taskforce members” to

monitor the quality of program implementation and stated that their responsibility is to implement “process measures” so that the quality of implementation can be monitored.

**Full Implementation Stage.** Forty-eight percent of all frameworks included discussion related to Full Implementation. A third of Prevention (29%), 40% of Management, and 64% of Health frameworks included this stage. Greenberg et al. (2005) described a phase when steps are taken to integrate the program more broadly into the existing structure. Aarons et al. (2011) echoed this and described a phase when “plans and processes to support embedding the particular EBP in the system both ideologically and practically” are put in place. Some described Full Implementation as a phase of “routine embedding or normalization” (May & Finch, 2009; Murray et al., 2010; Szulanski, 1996) and “sustaining the program as institutionalized practice” (Sandler et al., 2005).

Guldbrandsson (2008) emphasized that integration of an EBP should occur in a way that continues to be a part of organizational activities regardless of reorganizations, personnel turnover, and political change. Stetler et al. (2008) described factors that enhance the integration and sustainability of interventions into routine practice. The authors stated that the changes due to the implementation of “interventions targeted at an organizational element act synergistically with the other elements...these changes collectively help to create and sustain new norms...The innovation gradually becomes a part of routine practice across the system, and ongoing, related efforts occur more naturally and are more easily sustained.” Feldstein and Glasgow (2008) went on to say that the extent to which innovations are adopted is an “important measure of how acceptable adopters find the interventions and of implementation infrastructure function.”

### *Improvement Cycles*

Fifty-seven percent of all frameworks included a description of improvement processes. Across fields, inclusion of this concept varied from 20% of Management frameworks to 64% (Health) and 71% (Prevention) of frameworks. The extent to which the three fields focus on Improvement Cycles mirrors findings from the Installation Stage. This component of the AIF and the Installation Stage sub-component are somewhat intertwined given that both emphasize collecting information about how an innovation is being enacted and making adjustments to improve.

Chinman et al. (2008) described how communities “continually use their evaluation data to improve.” Hawkins et al. (2002) described tools that are put in place for communities to “continuously monitor their progress.” Along these lines, Damschroder et al. (2009) highlighted testing interventions at a small scale to then improve or de-implement if warranted. Stith et al.



(2006) echoed the need for program evaluation to be done in an “ongoing manner” so that “practitioners maintain and monitor the quality of program implementation over time.”

Guldbrandsson (2008) described “stabilizing the implemented method” and that evaluating and adjusting is the way to maintain an innovation over time. Additionally, implementation process information and evaluation of such information then “increases the chances of a successful implementation.” Wandersman and Florin (2003) also stated that collecting and using information for quality improvement purposes increases “the probability of obtaining results.” May and Finch (2009) highlighted that “regular and organized procedures for monitoring and ongoing assessment of the process and impact of the new practice within an organizational context” are needed.

Other ways of utilizing improvement methods were: Using patient information as feedback to improve the program (Feldstein & Glasgow, 2008), developing “tools to monitor and continually improve” capacity to address a targeted problem (Glisson & Schoenwald, 2005), moving from standardizing care, creating checklists or other independent checks, then learning from mistakes – and repeating the process (Pronovost et al., 2008).

### *Systemic Change*

Seventeen percent of frameworks included some discussion about Systemic Change, with individual fields varying from 27% (Health) to 14% (Prevention), and no Management frameworks including this concept. Systemic Change offers a potential leverage point for the implementation field that could result in innovations being used with high quality and being supported across contexts in a sustained way. While the work of implementation is interactional across people and organizations, without influence and changes in bigger systems, innovations may wax and wane with shifts in local context. For deep and sustainable change, Systemic Change is needed.

A few frameworks described the “who or how” of Systemic Change: Class action lawsuits enacted by any party may be the force for systems change (Aarons et al., 2011); social networks may be a method for creating system change in that it is networks that “facilitate knowledge development and dissemination” (Guldbrandsson, 2008).

In order to achieve systems change, collaboration and active building of expertise across an array of organizations may be needed (Aarons et al., 2011). Damschroder et al. (2009) described systemic change as involving external strategies to spread programs. This may be through the use of regulations, policy, or external mandates, among other mechanisms. Greenberg et al.

(2005) described the act of institutionalizing the program in a setting in order to make it a permanent part of an organization's way of work.

## Discussion

This study explored 23 implementation frameworks in the Health, Prevention, and Management fields that were identified in two reviews of the literature (Meyers et al., 2012; Tabak et al., 2012) and utilized the Active Implementation Frameworks (Fixsen et al., 2019) as a reference for examining them using qualitative content analysis.

Implementation Drivers, Implementation Stages, and Usable Innovations were the most common AIF components across frameworks, and Systemic Change was least common. More specifically, the sub-components of the AIF that were coded most frequently across frameworks were: Exploration Stage, Staff Training, Facilitative Administration, Fidelity, and Decision Support Data System. In contrast, Number of Team Members, Change Management Competencies of Teams, and Innovation Theory were coded least frequently.

While the Exploration, or pre-implementation phase, is described by most frameworks, it is often the stage that can be overlooked in practice due to time, resource, or funding constraints. The pressure to “implement” and demonstrate outcomes within political or other funding cycles can hamper the thoughtful work that must be put in up front if we are to move a practice from Exploration to Full Implementation. We hope this study can be useful for funders and practitioners alike, particularly in identifying the stages of the implementation process and in prioritizing time spent in the Exploration Stage.

It is not surprising that Staff Training is front and center for all frameworks, and yet this sub-component is focused on the innovation itself, as opposed to the more organizational and systems implementation processes that are so critical to consider. The work within the implementation field toggles between the innovation, the activities required to deliver the innovation in practice, and the work that it takes to support the whole implementation process throughout various Stages. The distinction between the innovation and the implementation process is one that the field has begun to grapple with already. There are glimpses of this in discussion of innovation fidelity and in implementation fidelity – the latter term being used to describe the fidelity to the implementation process itself.

The need to look beyond the innovation itself and into organizational and system supports is reflected in Facilitative Administration. This component of the AIF was strongly represented across frameworks. The importance of the role of removing obstacles at the organizational or community level in order to support an innovation is clear.

The discussion of fidelity across frameworks included articulating the link between fidelity and outcomes. Even with this, the concept of Core Components is less present than Fidelity, generally, across frameworks. Additionally, Adaptable Periphery was discussed in fewer than 40% of frameworks. With the fidelity vs. adaptation debate being ever-present (Century & Cassata, 2016; Elliot & Mihalic, 2004), it would suit the field of implementation well to focus not only on fidelity, but also on planned, purposeful, and measurable adaptation, as well as the use of core components in practice (for an example, see Wiltsey Stirman et al. (2019) for a framework to report adaptations to programs in practice).

The lack of frameworks describing the Number of Team Members and the Change Management Competencies of those on an implementation team, and other sub-components of Implementation Teams, may be due to a lack of general evidence and discussion about implementation teams in the field. The AIF use practical experience and implementation literature to present a framework for describing and defining Implementation Teams. Outside of this, a deeper exploration into Implementation Teams across fields must be conducted in order to operationalize how many people constitute a team of this type, to further define for what purpose the team is being composed (i.e., to guide implementation, to guide clinical programming, etc.), and to incorporate into the team's work the complexity of the innovation or system in which it is being integrated.

Alongside operationalizing Implementation Teams and the competencies they hold, is a burgeoning discussion in the field about the competencies of implementation practitioners. With the growing number of opportunities for education and training in the field of implementation science, it has become highly relevant to define the competencies that are needed to conduct and support the activities described across implementation frameworks. For that purpose, multiple researchers and implementation practitioners have compiled various competency profiles for those supporting the work of implementation in practice (see Metz et al., 2017; Moore & Khan, 2020; Ovretveit & Tortolani, 2020; Schultes et al., 2020; Van Dyke, 2015).

The current examination of implementation frameworks across fields serves as a cursory look into how implementation is conceptualized from various vantage points. While Health and Prevention oriented frameworks include discussion of most all the AIF components, Management frameworks appear to focus much less on Usable Innovations, Teams, Systemic Change and Improvement Cycles. Within Usable Innovations, it is notable that Management frameworks do not discuss the Adaptable Periphery at all. It is perhaps unsurprising that Health frameworks have a strong focus on Recipient Fit when compared with Prevention and Management frameworks. Within Implementation Drivers, Prevention frameworks focus the least on Staff Selection and Technical Leadership, and Management frameworks focus the least on Staff Coaching. Within Implementation Teams, none of the frameworks include guidance on

Number of Team Members, and Management frameworks have the least focus on Competencies of Teams in general. Within Implementation Stages, Management frameworks focus the least on the Installation Stage, and Prevention frameworks the least on the Full Implementation Stage.

More exploration into the differences across fields that are seen here could be a next step in better understanding whether the implementation process is indeed universal. This analysis may draw the attention of practitioners and researchers in specific fields of study towards implementation concepts that are not emphasized in their field yet may be critical for ensuring effective implementation.

A starting place for coalescence has been identified in this analysis. There is alignment across frameworks and fields within the Implementation Drivers as a whole – several frameworks stating the need for various Drivers to be present in tandem to move the implementation work forward; Facilitative Administration specifically – the importance of the internal context to support innovations and new practices to get off the ground and to be sustained; and the Decision Support Data System – the importance and value placed on data and on reflecting with data to improve practice.

This key area of Implementation Drivers within the AIF lends itself well to being a seed for the implementation field. If there is agreement on many concepts within the Implementation Drivers, the link can then be made to other AIF components to determine if there is conceptual fit across fields and frameworks. For example, the Decision Support Data System links most closely to Improvement Cycles and to the Installation Stage. Concepts within Facilitative Administration can link to Systemic Change and Systems Administration. From these initial linkages, likely more connections can be made that the field could coalesce around. Deep discussion among framework developers, researchers and practitioners applying frameworks, those doing the work every day to enact programs that support consumers, and consumers and community stakeholders is needed if the field is to come together and germinate the seeds described here.

As with any study, there are several limitations to the current analysis. Inter-rater reliability was not assessed, though inter-rater consistency was. The simple coding scheme and the coder familiarity with the codes and AIF led the research team to believe that assessing consistency would be adequate for this study. Furthermore, due to using each code only once within each source document, it is possible that better or different exemplars of codes were overlooked. Another limitation is that the sample of frameworks was selected from the reviews of Tabak et al. (2012) and Meyers et al. (2012), which implies that this study cannot be seen as inclusive of all implementation frameworks developed and certainly not inclusive of any implementation framework produced after 2012.

## Conclusions

The results of this descriptive analysis point to several ways in which the field of implementation can continue to strengthen and paves the way towards coming to agreement on implementation theory, concepts, and terms so that we can begin to understand and best define the core components of implementation science and practice. This could then enable the field to study planned adaptations to core implementation processes. Core components of implementation may look different across contexts and domains, thus a strong – and more unified – theory of implementation must be the backbone from which our core components are derived.

Of the two major reviews of frameworks published in the same year (Meyers et al., 2012; Tabak et al., 2012), only five frameworks appeared in both publications. This modest overlap provides a glimpse into the conundrum currently facing implementation researchers and potential users of innovations supported by research evidence. The frameworks analyzed here represent 23 views of implementation and identify components considered important to using evidence in any setting. If the field of implementation science is to guide the next generation of research and practice, a coalescence must be near. The current study points to the possibility of a common set of concepts that may inform an approach to establishing common methods and then measures that can then inform rapid developments in implementation practice and science.

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