Original Article

Implementation Science: Application of Evidence-Based Practice Models to Improve Healthcare Quality

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Key words

implementation science, evidence-based practice, model, framework, implementation strategies, model selection

ABSTRACT

Background: Translating research into practice is complex for clinicians, yet essential for high quality patient care. The field of implementation science evolved to address this gap by developing theoretical approaches to guide adoption and sustained implementation of practice changes. Clinicians commonly lack knowledge, time, and resources of how evidence-based practice (EBP) models can guide implementation, contributing to the knowledge-to-practice gap.

Aim: This paper aimed to equip clinicians and other healthcare professionals with implementation science knowledge, confidence, and models to facilitate EBP change in their local setting and ultimately improve healthcare quality, safety, and population health outcomes.

Methods: The field of implementation science is introduced, followed by application of three select models. Models are applied to a clinical scenario to emphasize contextual factors, process, implementation strategies, and outcome evaluation. Key attributes, strengths, opportunities, and utilities of each model are presented, along with general resources for selecting and using published criteria to best fit clinical needs. Partnerships between implementation scientists and clinicians are highlighted to facilitate the uptake of evidence into practice.

Linking Evidence to Action: Knowledge of implementation science can help clinicians adopt high-quality evidence into their practices. Application-oriented approaches can guide clinicians through the EBP processes. Clinicians can partner with researchers in advancing implementation science to continue to accelerate the adoption of evidence and reduce the knowledge-to-action gap.

INTRODUCTION

The research-to-practice process often occurs over years or decades, initially detailed as a 17-year gap (Balas & Boren, 2000), which continues to persist in current practice (Borsky et al., 2018). This gap often results in the overuse, underuse, or misuse of medical treatments when the care provided is not evidence-based and can adversely impact healthcare safety, quality, and costs (Borsky et al., 2018; Grol, Wensing, Eccles, & Davis, 2013). Nursing has been instrumental in leading efforts to bridge the research-to-practice gap through research, theory development, clinical exemplars, intensive evidence-based training programs, and production of a plethora of resources. Importantly, nursing has also contributed to the growing body of intraprofessional science dedicated to building knowledge about successful processes for evidence adoption, including which factors influence, delay, or accelerate the successful and sustained implementation of evidence into routine clinical practices. This scientific field is known as *implementation science*. Implementation science facilitates the adoption and update of evidence into practice by defining the organizational, system, clinician, and patient/caregiver factors and utilizing specific implementation strategies (Eccles & Mittman, 2006).

Researchers have demonstrated that use of implementation science knowledge can facilitate adoption of evidence into routine clinical practices and improve patient care and outcomes (Braithwaite, Marks, & Taylor, 2014; Powell et al., 2019). Despite the growing field and knowledge about what works and how to promote practice change, transfer of this knowledge to clinicians remains limited. Clinicians report that evidence is rarely

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integrated into daily clinical decision-making (Weng et al., 2013). Clinicians also report having low to moderate confidence in the implementation process (Barrimore, Cameron, Young, Hickman, & Campbell, 2020; Tucker, Zadvinskis, & Connor, 2020).

This paper aimed to equip clinicians and other stakeholders with implementation science knowledge and the confidence to facilitate practice change in their local setting to ultimately improve healthcare quality, safety, and population health. Implementation science is introduced, with the main emphasis of the paper focused uniquely on harnessing three implementation theoretical approaches (theories, models, & frameworks) to accelerate the uptake of evidence-based practices (EBPs) in real-world clinical settings. We present key attributes, strengths, and opportunities of three established nursing models/frameworks (MF) that are evidence-based and widely used to provide a systematic approach to implementation. We apply each to a clinical scenario to highlight the MF features, intentions, processes, implementation strategies, and importance of evaluation data (process and outcome). We conclude with resources on selecting the best MF for a clinician's work setting.

Objectives

1. Compare three MF for promoting uptake of EBP in health care.
2. Apply each MF to a real-world scenario and identify implementation strategies to illustrate how to promote uptake of EBP.
3. Discuss resources for selecting an MF relevant to a local setting and other clinician strategies to advance adoption of EBP in health care.

BACKGROUND

Over the past two decades, researchers, clinicians, and policymakers have prioritized attention and funding to mitigate challenges in the adoption and uptake of the evidence in routine practices. Multiple MF have emerged to facilitate the uptake of EBP by frontline users and policymakers to improve healthcare quality, safety, and outcomes. One way to categorize the aims of the different theoretical approaches used in implementation science MF includes (a) process models, describing how to translate evidence into practice; (b) determinant frameworks, classic theories, and implementation theories, which explain factors that influence the implementation process; and (c) evaluation frameworks, used to evaluate implementation initiatives (Nilsen, 2015).

Selecting an approach for guiding the adoption and uptake of an EBP centers on the best fit for the setting, the user, and the proposed practice change being considered. Regardless of the approach, key considerations include the organization and system, clinician, practice change, patient and family, and external factors. The organization and system category includes the contextual factors of culture, leadership, communication and networks, resources, champions and mentors, evaluation, and monitoring and feedback (Li, Jeffs, Barwick, & Stevens, 2018). Clinician factors include knowledge, skills, confidence/self-efficacy, stage of change, and other attributes (Nilsen & Bernhardsson, 2019). The EBP change includes a number of attributes, such as strength and quality of the evidence, relative advantages and fit for a local setting, and cost (Nilsen & Bernhardsson, 2019; Rogers, 2003). Patient and family factors center around their values, preferences, experiences, resources, and goals (Wensing & Grol, 2019). Lastly, external factors include regulations, peer pressure, networking with other organizations, funding, and other resources.

Despite emerging knowledge and theory to guide implementation efforts, clinicians often do not apply implementation science when initiating an EBP change. Reluctance to integrate knowledge from the field of implementation science risks the development of a "secondary gap," whereby clinical teams recognize the evidence that needs to be implemented into practice yet neglect evidence regarding optimal approaches for the actual implementation of that practice change. Given their clinical demands, clinicians may lack resources, knowledge of emerging implementation science, and time to review multiple models to select and apply what best fits their setting and practice. To guide clinicians in the implementation process, we present three specific MF for guiding EBP implementation and demonstrate application of the MF to a realistic clinical scenario. The three MF selected are not exhaustive; instead, these three were selected based on the authors' contributions to the original or later development of each MF to provide a systematic and structured approach to implementation of EBPs.

SELECTED MF FOR IMPLEMENTATION

The three selected MF are as follows: (a) the Iowa Model "Revised" Evidence-Based Practice to Promote Excellence in Health Care (Iowa Model) along with the companion Iowa Implementation for Sustainability Framework (Implementation Framework); (b) the Advancing Research & Clinical practice through close Collaboration (ARCC) Model; and (c) the Integrated Promoting Action on Research Implementation in Health Services (i-PARIHS) Framework. Each MF is first described with its unique attributes and how it promotes implementation of an EBP change, followed by the application to a clinical scenario (Table 1).

Iowa Model & Implementation Framework

The Iowa Model is an EBP process model that provides clinicians with a pragmatic step-by-step process and feedback loops for leading EBP change (Figure S1). Grounded

Table 1. Clinical Case Scenario

Within a medical-surgical unit at your hospital, the average patient length of stay is consistently above national benchmarks for similar hospitals and unit type. A substantial body of evidence supports use of early and regular physical mobility programs for hospitalized patients. Implementation of mobility programs have demonstrated decreased hospital length of stay and decreased hospital costs, without any associated increases in falls or other adverse events. The unit currently does not have a mobility program, and the only mobilization that occurs is usually patient or family initiated just before discharge. Your supervisor has indicated that she would like you to initiate an evidence-based practice project aimed at increasing mobility among patients on your unit. Your organization and unit have implemented evidence-based projects before with moderate success and sustainability. You know that the staff are knowledgeable about the benefits of mobility, but they lack experience and don't feel prepared to carry out the practice change. Staff are anxious about potential risks of falls and don't want to cause patients pain. However, staff know the unit length of stay data and are motivated to make improvement.

in a pioneering Quality Assurance Model Using Research, QAMUR Model (Watson, Bulechek, & McCloskey, 1987), the Iowa Model has been regularly updated to incorporate advancing EBP knowledge, user feedback, and emerging implementation science (Iowa Model Collaborative, 2017). Supplementing the Iowa Model is the Implementation Framework, a phased typology of implementation strategies (Cullen & Adams, 2012; Cullen, Edmonds, Reisinger, Hanrahan, & Wagner, 2020). The Iowa Model and Implementation Framework demonstrate broad use (over 8,000 requests to use & 800 citations, respectively) and global reach (requests from 54 countries & four translations). Both are grounded in the diffusion of innovations theory (Rogers, 2003), which facilitates integration with implementation models and other frameworks such as ARCC, i-PARIHS, and the Johns Hopkins Model (Dang & Dearholt, 2017).

The Iowa Model and Implementation Framework (Figures S1 & S2) were designed for frontline clinicians and academic partners. Further details and resources are available to guide novice to expert users (Cullen et al., 2018). An EBP Evaluation Framework and Precision Implementation Approach™, which facilitates the use of local data to drive targeted context-specific selection of implementation strategies for adoption and sustainability, is further described elsewhere (Cullen, Hanrahan, Tucker, & Gallagher-Ford, 2019). Steps of the Iowa Model align with other EBP process models. Therefore, tools and resources are broadly useful across MF, methods (including quality improvement), and settings.

Advancing Research & Clinical practice through close Collaboration (ARCC) Model

The ARCC Model, a system-wide implementation and sustainability EBP framework, was conceptualized in 1999 in order to unify research with clinical practice within an academic medical center to ultimately improve healthcare quality and safety, population health outcomes, and costs (Melnyk & Fineout-Overholt, 2002). Early in the model's conceptualization, research with advanced practice nurses and point-of-care nurses identified several barriers and facilitators to evidence-based care, including mentorship in EBP, which emerged as a critical factor in the ARCC Model. The first step in the model is an organizational assessment of the culture and readiness for EBP (see Figure S3). Facilitators and barriers to EBP are identified with a plan to mitigate barriers and leverage facilitators. A critical mass of EBP mentors who work with frontline clinicians on the implementation of evidence-based care in hospitals and healthcare systems is then created. Through an intensive 5-day educational and skills-building program, EBP mentors acquire advanced knowledge and skills in EBP and learn how to create cultures and environments that support it. Mentors also are responsible for carefully tracking the outcomes of EBP changes that are made with their guidance. Several studies have supported that when this model is implemented, clinicians' knowledge and beliefs about the value of EBP and their ability to implement it increase, which results in greater implementation of evidence-based care and improved outcomes, both for patients and clinicians (Gorsuch, Gallagher-Ford, Thomas, Melnyk, & Connor, 2020; Levin, Fineout-Overholt, Melnyk, Barnes, & Vetter, 2011; Melnyk, Fineout-Overholt, Giggleman, & Choy, 2017; Wallen et al., 2010).

The ARCC implementation component of the model has further evolved, guided by a number of implementation science resources, and includes an Evidence-Based Practice Implementation and Sustainability Toolkit (Helene Fuld Health Trust National Institute for Evidence-based Practice in Nursing and Healthcare, 2020) that guides an EBP organizational culture and initiative from inception to hardwiring and ongoing reevaluation. Valid and reliable tools (e.g., the Organizational Culture and Readiness Scale for EBP, the EBP Beliefs and EBP Implementation Scale; Melnyk, Fineout-Overholt, & Mays, 2008) to measure key concepts in the ARCC Model are also available from the Helene Fuld Health Trust National Institute for Evidence-Based Practice (see https://fuld.nursing.osu.edu/).

i-PARIHS Framework

The integrated Promoting Action on Research Implementation in Health Services (i-PARIHS) is a conceptual framework that represents the dynamic interplay of factors that influence successful implementation

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(Harvey & Kitson, 2016; Figure S4). i-PARIHS holds an underlying philosophy that implementing research into healthcare practice is complex, unpredictable, and nonlinear. Therefore, the i-PARIHS Framework argues that facilitation is needed as the active ingredient that integrates action around the innovation and the recipients within their local, organizational, and wider health system context to enable successful implementation. The i-PARIHS Framework is an evolution of the original PARIHS Framework that was developed in 1998 based on the practical experience of developers (Kitson, Harvey, & McCormack, 1998). Over the past two decades, the framework has been tested, evaluated, and refined, resulting in the i-PARIHS Framework. The i-PARIHS Framework specifies core constructs and sub-constructs that influence successful implementation and is explicitly underpinned by relevant theories of innovation, behavioral and organizational change, and improvement (Harvey & Kitson, 2016). The PARIHS and i-PARIHS Frameworks have been widely used and within varied implementation projects (Bergström et al., 2020; Hunter et al., 2020).

Key Attributes of Selected MF

Each of the three MF has key attributes, strengths, and aims that can guide selection for implementation of EBPs (Table 2). Each MF provides a systematic approach to EBP, with the Iowa Model offering a step-by-step or process-based approach, which may be appealing for the novice clinician seeking to implement a practice change. The ARCC Model utilizes a system-based approach for building an EBP culture through developing mentors; focusing on improving EBP knowledge, beliefs, and skills; and linking initiatives to important staff, clinical, and organizational outcomes. Finally, the i-PARIHS Framework's strengths include a focus on recognizing the complexity of EBP, integrating contextual factors of the practice change, and embedding a facilitation process and facilitators as the key active ingredient of implementation.

Each MF has unique features and benefits that should be evaluated for the best fit for an organization, individual, or group. The best fit may depend on the nature of the setting, healthcare team, and practice change. For example, a staff nurse interested in addressing a nurse-driven practice change may prefer a clear path with specific steps of EBP and associated interventions and thus may choose the Iowa Model for the step-by-step approach to ease into following the model. Nurses may work with leadership to find a mentor to guide them through the process and subsequent steps. In contrast, a leader interested in changing the culture of an organization may choose to apply the ARCC Model given its focus on organizational culture, readiness, and training mentors. This model could be paired with the Iowa Model for implementing a specific EBP initiative in one unit. In addition, the i-PARIHS Framework might be selected for

Table 2. Comparison of Models for Implementation of EBP

	ARCC	Iowa Model	i-PARIHS
Key attributes	• Assessments of organizational culture • Assessment of readiness for change (barriers & facilitators) • Use of mentors • Build EBP knowledge, beliefs, and skills • Use of ARCC implementation strategies • Focus on key outcomes	• Builds on Rogers' innovation theory • Alignment with organization priorities • Team-based • Step-by-step process • Decision points • Feedback loops • Phased implementation • Specific implementation strategies • Evaluation • Dissemination	• Emphasizes context at three levels—local, organizational, and external health system • Facilitation as the active ingredient Acknowledgements • complexity • Establishes goals upfront • Highlights teams, stakeholders • Minimizes variation • Explicitly underpinned by relevant theories of innovation, behavioral and organizational change and improvement
Strengths	• Assessment of culture and organization readiness • Mentors	• Easy to follow road map • Supports the nonlinear process • Large number of implementation strategies • Free tools for each step • Engages team and organizational leaders • Supports decision-making	• Identifies an implementation approach of facilitation • Can be used for planning, guiding, and evaluation • Can be tailored and adapted to local context
Opportunities	• Implementation strategies clarity • EBP process clarity	• Policy and external influences	• Practical support for operationalizing facilitation • Step-by-step guidance for its application

an EBP initiative that includes multiple disciplines as key stakeholders, recognizes a complicated problem, addresses multiple contextual issues, and requires strong facilitation for success. This framework can also be paired with the Iowa Model to focus on one initiative and progress through the EBP steps while embedding the key elements of the i-PARIHS Framework to ensure successful implementation and achievement of outcomes.

APPLICATION OF EACH MF TO A CLINICAL CASE STUDY

To illustrate how these MF can be used to guide a specific project, we introduce a clinical case scenario (Table 1) focused on an evidence-based mobility initiative for falls prevention in a hospital unit and highlight model applications to this scenario in Table 3.

Iowa Model Application to Clinical Scenario

Following steps (in italics) of the Iowa Model, the EBP process would begin with the *identification of triggering issues*. In this case, the triggering issue was the potential risk for falls, and the philosophy of care for the unit was patients being able to maintain functional status with optimal mobility and return home. From the pre-assessment information a *purpose statement* regarding evidence-based interventions to reduce falls for a specific area or group of patients is developed to guide project scope. The first decision point is to determine *whether the topic is a priority* for the organization to assure that the topic aligns with the organization's goals and resources. In this case, patient falls are an organizational priority because of the impact on length of stay. The *team is formed* to include the local unit leader, a core group of interprofessional team members (e.g., physical therapist, pharmacist, nurses), and representatives for patients (e.g., family, caregiver). The team will then *assemble, appraise, and synthesize evidence*, and a more specific intervention may emerge (e.g., mobility). The next decision point for the team to determine is if *there is sufficient evidence*. *Design and pilot of the practice change* (e.g., a mobility protocol) comes next and includes the complex steps of evaluation and implementation. The KABOB (**K**nowledge [e.g., falls risks], **A**ttitudes [e.g., lack of access to assistive devices], **B**ehaviors [e.g., risk assessment communicated], **O**utcomes [e.g., falls rate], and **B**alancing measures [e.g., decannulation]) EBP evaluation framework uses both process and outcome measures. Baseline process data are used to design the practice change and to select implementation strategies based on the local needs (i.e., Precision Implementation Approach™). The Implementation Framework provides users with strategies in each of four phases of implementation (Figure S2). Post-pilot data are then used to determine if outcomes (e.g., reduced falls) are achieved as expected and to problem solve, using process data, whether they are not. At the last decision point, the team decides whether the *change is appropriate for adoption in practice* and then works to hardwire or *integrate and sustain the practice change*. Finally, *results are disseminated*.

ARCC Model Application to Clinical Scenario

Applying the ARCC Model to a mobility initiative for falls prevention would begin with ensuring there are leadership support and a strong EBP mentor to lead the initiative. The scope of the initiative needs to be determined by leadership—that is, start with one unit or decide on widespread rollout. The level of leader involvement will be influenced by this established scope. The mentor's EBP skills and knowledge may need strengthening (booster training) to be most effective. The mentor would then work with leadership to assess barriers and facilitators to changing mobility practices among all key stakeholders. The facilitators (e.g., strong physical therapy support) would be leveraged (e.g., made co-leader of the initiative), and barriers (e.g., clinician resistance) would be mitigated (provide opportunities for open forums to discuss evidence and how staff can be engaged). Data would be presented to all staff on rates of falls and falls with injuries and how these compare with national benchmarks and financial implications. Evaluation includes all team members' knowledge, beliefs, and skills specific to falls prevention and mobility promotion, and this information would be used to create education and training along with other resources (Table 3). A number of implementation strategies would be implemented (Table 3), and other EBP mentors would be trained and brought on to help facilitate the falls reduction initiative through increasing mobility across units if part of the plan. Outcome data would be collected and used to guide further rollout, re-infusion, and alternative approaches. Evaluation is ongoing.

i-PARIHS Framework Application to Clinical Scenario

Aligning the clinical case scenario to i-PARIHS would focus on facilitation being the active ingredient that drives implementation. Prior to implementation, the facilitator would assess characteristics of the evidence-based mobility program to be implemented, including its relative advantage over alternative mobility programs and its degree of fit with existing clinical procedures and organizational values. The facilitator would also assess characteristics of the recipients relevant to implementation, such as time available for them to devote to implementation and their level of skills and knowledge regarding the mobility program. The facilitator would additionally assess potential contextual influences on implementation, including leadership support and policy drivers. Facilitation of implementation activities will involve a team of stakeholders of the mobility program from multiple perspectives (e.g., patients, leadership). The facilitator would work with the team to specify implementation goals (e.g., targeted decreases in length of stay and number of falls), including both clinical

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Table 3. Application of Iowa, ARCC, and i-PARIHS Models to Evidence-Based Mobility Initiative for Falls Prevention Case Scenario

	ARCC	Iowa (steps in *italics*)	i-PARIHS
Pre-assessment	Assess culture and readiness to change practices regarding patient falls Ensure trained EBP mentors to lead project Ensure leadership buy-in and resource allocation Evaluate barriers and facilitators to fall reduction practice changes	*Identify the triggering issue*—patient falls—and *state project purpose*—EBP interventions for falls Assess to determine *is this topic a priority for the organization*? Alignment of falls reduction with strategic priorities, risks, leadership support, team commitment, resources, staffing, feasibility, data available	Facilitator assesses underlying characteristics of the innovation (evidence-based mobility program), recipients (medical–surgical unit staff, as well as other relevant stakeholders including patient/family/caregiver representatives and organizational leadership), and context (local, organizational, and external health system levels)
Team	Leader of setting Interdisciplinary (e.g., nurse, MD, pharmacist, PT, SW, OT) EBP mentors	*Form a team* of local unit leader; core group of interprofessional team members, plus representatives of patient/caregiver *Assemble, appraise, and synthesize evidence* related to falls interventions and team determines *is there sufficient evidence*?	Representation from each discipline within the unit to be taking part in the facilitated implementation of the mobility program, as well as from other relevant stakeholders (e.g., patients, leadership) impacting or impacted by the implementation.
Key processes and/or steps	Create plan to leverage facilitators and mitigate barriers Provide EBP mentor additional training and resources Build EBP beliefs, knowledge, and skills Use ARCC EBP Implementation & Sustainability Toolkit to guide the mobility promotion practice change (validated in the literature appraisal) project • Use data • Education and training of staff • Team meetings to share evidence • Reminders and communication tools • Toolkit of patient tools for optimal mobility promotion • Engage patients/families in process • EMR prompts • EMR protocol • Audit and feedback • RCA for each fall • Reevaluate periodically latest evidence and fidelity to mobility protocol	Develop a plan to *design and pilot the practice change*, a mobility protocol, based on baseline data. Select implementation strategies in each of four phases: • Create awareness and interest • Highlight advantages • Distribute key evidence • Build knowledge and commitment • Change champion • Education • Integrate practice change with other EBP • Promote action and adoption • Reminders • Positive reinforcement • Progress reports • Troubleshooting • Pursue integration and sustained use • Individualized data feedback • Trends • Audit and feedback • Celebration	Facilitation iterates through the steps of: Clarifying the implementation plan for the mobility program, based on i-PARIHS constructs Engaging team members, leadership, and other stakeholders impacting and/or impacted by the implementation of the mobility program • Assessing the extent to which the mobility program is compatible with existing processes, team member beliefs, and local/organizational/health system-level policy • Measuring current length of stay, falls, and patient/provider satisfaction • Taking action to adapt the mobility program to enhance its feasibility under the identified contextual constraints • Implementing the mobility program while using the i-PARIHS Facilitation Checklist to monitor progress and changes in characteristics of the recipients/context
Evaluation elements	Monitor outcomes, that is, rates of patient falls and falls with injuries, and changes in mobility practices Staff knowledge, beliefs, and skills related to fall prevention practices Costs to organization for each patient fall and savings from the program	Use KABOB (knowledge, attitudes, behaviors, outcomes, and balancing measures) EBP Evaluation Framework Pre-pilot process data used to design practice change and select strategies Post-pilot evaluation process and outcomes data used to evaluate impact and problem solve Team determines whether *change is appropriate for adoption in practice* and makes plans to *integrate and sustain the practice change* then *disseminates results*	• Review changes in the measures of interest, both clinical outcomes (e.g., length of stay, falls) and implementation outcomes (e.g., patient/provider satisfaction, provider understanding of mobilization's importance, frequency with which patients are mobilized), initially 6 months after implementation begins • Share interim results with leadership and other stakeholders to collaboratively devise changes needed in continuing efforts to implement the mobility program

and implementation outcomes of interest. Also specified would be timelines for regularly reviewing both data on the measures and any contextual changes to the characteristics of one or more of the mobility programs, the recipients, and the context. The facilitator would coordinate the team's implementation effort by iterating through the following four steps: (a) clarifying and engaging; (b) assessing and measuring; (c) taking action and implementing; and (d) reviewing and sharing. For coordinating these iterative steps (further details shown in Table 3), the facilitator would flexibly employ project management and improvement skills, team and process skills, and influencing and negotiating skills. Throughout implementation, when and how to employ these skills would be guided by the i-PARIHS Facilitation Checklist (Harvey & Kitson, 2015).

DISCUSSION

The three MF described and presented here were developed by nurses. Yet each is applicable to and used by many disciplines, as they have broad relevance. It is not surprising that nurses are leaders in development of these MF given their role on interdisciplinary teams and their important 24/7 presence in health care that often charges them with leading EBP implementation efforts.

The three MF presented in this paper overlap in attributes and purpose yet have unique features that clinicians can consider when selecting the approach best suited for their organizations and local setting. Each model provides a different approach for the EBP process and implementation within clinical settings. Despite these different approaches, all models share key elements that are based on evidence to lead successful implementation. Key elements include use of a champion, leader, facilitator, or mentor; an organizational and contextual assessment; support for the practice change; evaluation of the strength of the evidence; selection of relevant evidence-based implementation strategies; and strong evaluation of outcomes.

It is important to note that the MF presented in this paper are not fully inclusive or representative of all the available theories, models, and frameworks for implementation. Indeed, a multitude of these exist within organizational and change theories, as well as those specific to the field of implementation science. Within the categories of theoretical approaches described here, there are multiple MF to provide an evidence-based and systematic approach to implementation (Nilsen, 2015). Although the listing of MF within these categories may not be exhaustive of all relevant approaches to a practice change, these categories and examples do provide perspective on the breadth and depth of MF available to guide implementation and further underscore the need to use a systematic approach for implementation efforts.

Selection of a MF for EBP implementation is not a "one size fits all," and selection should not be based solely on the intended intervention or change (Moullin, Sabater-Hernandez, Fernandez-Llimos, & Benrimoj, 2015). Rather, leaders seeking to implement an EBP change should consider components of the MF, degree of fit with the culture of the organization and local resources, and the innovation itself. Selection is best done proactively to provide a systematic and evidence-based or theory-based approach to the implementation step within the EBP process. An additional benefit to having a primary MF for an organization is the ability to create a shared understanding and create a common language to facilitate communication. Notably, the MF should be interprofessional, as most implementation efforts involve an interdisciplinary team.

Often, one MF may be a good fit, or specific components of a different MF may be incorporated based on the local need and organizational assessment. Because of the proliferation of MF for implementation in recent years, there are now several resources freely available to guide selection of an implementation approach (Dissemination & Implementation Models in Health Research Practice, 2020; Gawlinski & Rutledge, 2008; Implementation Science Exchange, 2020; Mitchell, Fisher, Hastings, Silverman, & Wallen, 2010).

Successful EBP requires an evidence-based approach to implementation. Use of an established MF for implementation provides a structure to implementation efforts and increases the likelihood of project success and sustainability over time. Failure to utilize these approaches has the potential to create a "secondary gap" in knowledge translation within clinical settings. Ultimately, when we have the evidence to support a practice change, we must pair that with established evidence regarding effective approaches for implementation to provide meaningful advances in EBP across clinical settings. **WVN**

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article at the publisher's web site:

Figure S1. The Iowa Model Revised.
Figure S2. The Iowa Model Implementation Framework.
Figure S3. The ARCC© Model.
Figure S4. i-PARIHS Model.