INnovation, QUality Improvement, Research, and Evidence-Based Practice (INQUIRE)

A Navigation Model for Change and Discovery

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ABSTRACT
Background: Despite scholarly articles and pathway models delineating quality improvement (QI), evidence-based practice (EBP), research, and innovation, guidance is lacking when determining the project method. A practical, step-by-step approach is needed to support project navigation.
Purpose: To describe development and evaluation of a decision-making pathway model.
Methods: The INQUIRE Model was developed using an iterative approach and was evaluated with 23 national conference attendees. The evaluation included 4 Likert-type items ranging from 1 (strongly disagree) to 7 (strongly agree).
Results: The model guides users through project planning steps based on an identified trigger (eg, problem, opportunity, and challenge) to ultimately select a project method that aligns with the project scope and availability of a solution. Model evaluation found identification of the project method improved by 14%, scanning for a solution by 8%, avoiding missed steps by 36%, and building a team by 10%.
Conclusion: Findings suggest INQUIRE can enhance project planning and method (eg, QI, EBP, research, and innovation) selection. Organizations should evaluate project planning current state to identify the potential benefit of model incorporation.
Keywords: consultation, decision-making, health care, organizational innovation, problem-solving

Health care professionals are often unsure of the best approach for solving problems. The differences among problem-solving methods such as quality improvement (QI), evidence-based practice (EBP), research, and in-

novation can be confusing despite a wealth of information about each method.[1] QI, EBP, and research have been described as interdependent within the "continuum of clinical scholarship."[2] Quality improvement is considered a local, context-dependent process improvement method that rapidly addresses a problem to improve outcomes.[3,4] An EBP approach results in applying evidence, including research, clinician expertise, and patient preferences, to clinical practice.[5,6] While EBP and QI are focused on improving outcomes, research is focused on generation of knowledge and advancement of science.[3] Research is a systematic and rigorous investigation involving development, testing, and evaluation resulting in generalizable findings.[4] Innovation can be added to the "continuum of clinical scholarship" to generate new solutions to solve health care problems. Innovation is appropriate in the absence of evidence, when there is a mismatch between available evidence and the environment, or after failure of an evidence-based solution.[7]

Each method—QI, EBP, research, and innovation—is unique in scope, intent, and needed resources. EBP is informed by research and QI, and opportunities for research are informed by QI and EBP.[5] Determining the most appropriate method to solve health care problems can be challenging and ambiguity can lead to poorly designed studies, lack of consideration for human subjects protection, noncompliance with regulatory policies,[8] and lack of funding.[2]

Limited decision-making pathways are available for selecting the best problem-solving method. For example, the I3 Model was developed to differentiate between inquiry (includes research and EBP), improvement, and innovation using questions to guide user decision-making, such as "Why are we doing it this way?"[9] Another decision-making pathway, the Clinical Inquiry Process Diagram, leads users to determine the available evidence and current practice to decide between performance improvement, EBP, and research methods.[10] Although the I3 Model and the Clinical Process Diagram are comprehensive, inclusion of multiple steps for each method is cumbersome for users. EBP models, such as the EBP Process Model[11] and the Iowa Model of Evidence-Based Practice to Promote Quality Care,[12] also include decision points to guide users. However, these models are limited in scope to only 2 project methods and provide limited decision-making guidance. For example, after the literature appraisal step, the EBP Process Model has users decide between a QI or research method.[11] Considering the strengths and weaknesses of existing options for determining the best project method, a practical guiding pathway that differentiates between all 4 methods is needed.

To better understand current and ideal future state for project method navigation, we conducted an appreciative inquiry[13] with a team of experts in quality and safety employed at a large academic health center. The appreciative inquiry identified inefficient and ineffective elements existing in current state. In addition, several barriers were identified including ineffective options for translating evidence into practice, use of assumptions rather than data to direct projects, inefficient use of resources, and poor understanding of project management. For the ideal future state, 3 priorities were identified: aligning project purpose/scope with organizational priorities, delineating among project methods, and engaging content experts with skills and experience matching project needs.

Based on review of existing pathways and models combined with findings from the appreciative inquiry, a need emerged for a more streamlined and systematic approach to identifying a project method. A new pathway guide was created that incorporated translation of known solutions, innovation in the absence of an available solution, and identification of targets for novel research. These elements were configured in a model with the potential to improve the efficiency and efficacy of navigating a pathway to project method determination. This model was designed for users of varied backgrounds and expertise while helping assure that organizations are not wasting resources creating solutions that may already exist. The objectives were to describe the (1) development and (2) evaluation of a project decision-making pathway model, known as INQUIRE, that includes the options of innovation, QI, research, and EBP.

METHODS
Model development
An interprofessional team (also known as the INQUIRE team) was formed to create a decision-making pathway for selecting methods of innovation, QI, research, and EBP. Team members were subject experts in clinical quality and patient safety, environmental health and safety, infection prevention, and process improvement within an adult academic health center in the Midwest. The team met monthly over 10 months and the work occurred in 4 phases. An iterative approach was used throughout development to make adaptations based on model pilot testing and feedback.

Phase 1
The team reviewed existing pathway models and frameworks, such as the I3 Model,[9] and Agile Implementation,[14] discussing the strengths, weaknesses, and opportunities. Overlapping steps among models/frameworks included: identification of a problem (also described as an opportunity, question, or trigger), problem match to an organizational priority, search for a solution, and availability of a solution to match the problem. The first INQUIRE draft was developed using process mapping and incorporated overlapping steps starting with a project trigger and leading to the associated method, such

as the research process or Agile Implementation. Trigger was defined as curiosity prompted by discordance between current and ideal states. As the meetings continued, a major focus was to clearly delineate decision-making for each individual method (innovation, QI, research, and EBP).

Phase 2
The draft model was refined, resulting in division between methods based on the availability of a solution to match the identified trigger. The process map was used to further stimulate discussion and decision-making for each step within the model. For example, the pathway led to implementation approaches (EBP vs QI) when a body of evidence or best practice was available. Innovation/research was delineated when evidence was not available or inadequate.

Phase 3
The INQUIRE team tested the model using a virtual table top format with 3 case studies based on past projects. Each team member agreed on the method appropriate for each case study. However, during discussion, team members could be convinced to select a different method depending on changes in the context. For example, QI was selected as the best method for the infection prevention case study. The case study focused on a "back to basics" approach aimed to hardwire existing best practices using infection bundle audits, infection event reporting, and recognition. As the team deliberated on the case study, they considered potential future needs, such as technology innovations, to support the back to basics program. This led the team to recognize that one trigger could result in 2 or more project methods. As the team debriefed, the need for better deci-

sion guidance between QI and EBP emerged. The team adapted the model, further clarifying implementation as a process change (QI) or a practice change (EBP).

The clinical nurse specialist (CNS) team was selected as change agents and early adopters within the organization as the first group outside of the INQUIRE team to test the model. INQUIRE team members presented the model and facilitated model testing during a weekly CNS meeting. CNSs were provided the same case studies used in the initial testing to identify the most appropriate project method using the INQUIRE Model. After the exercise, the presenters facilitated a debrief and evaluation. Similar to INQUIRE team testing, agreement was reached on the project method for each scenario. Anecdotal benefits from using the model were a deeper understanding of the 4 project methods, avoiding missed project steps, and identification of existing solutions.

Phase 4
A collaborative discussion with a group of academic nursing professors and an executive health care leader led to the final model version. The model purpose, visual representation, and individual steps were presented. Feedback identified that the model was overly detailed and complex, distracting from the intention described when presented. After an in-depth discussion, the INQUIRE team removed the detailed steps for executing each method (eg, implementation plan and evaluation plan) to focus on the decision-making portion of the model that connected all 4 methods together cohesively, as shown in the Figure. The final version allowed for a simplified, straightforward approach to project navigation and better generalizability for localization to
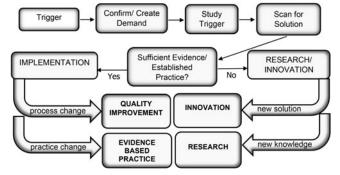

Figure. INQUIRE Model. © 2022 Indiana University Health. INQUIRE Model. All rights reserved.

various project models/frameworks. For example, if a user identifies that EBP is the best fit for their project, they can choose to connect and follow the Iowa Model[12] or the ARCC Model,[15] depending on what model their organization uses.

Pilot testing

The final version of the INQUIRE Pathway Model was disseminated as a workshop presentation at the National Association of Clinical Nurse Specialists (NACNS) 2022 Annual Conference in Baltimore, Maryland. Workshop attendees were invited to evaluate the functionality, usability, and benefit of the model after model presentation and application to one of the case studies from the initial testing. The study was reviewed and approved by the local institutional review board. At the end of the workshop, interested participants scanned a QR code linked to an electronic evaluation. The investigator-developed INQUIRE evaluation included 4 Likert-type items ranging from 1 (strongly disagree) to 7 (strongly agree). Participants were instructed to complete the items by first thinking about the last project they completed and second to consider what they would be able to do based on the workshop exercises using INQUIRE. Items included: (1) I was able to (would be able to) identify the project method that matched best with my project scope/purpose; (2) I was able to (would be able to) scan for solutions to prevent recreating the wheel while trying to solve my problem; (3) I avoided (would avoid) missing important steps during project planning and/or implementation; and (4) I was able (would be able) to pull together a team to meet project needs.

RESULTS
Final pathway model design

The final *IN*novation, *QU*ality *I*mprovement, *R*esearch, and *E*vidence-based practice (IN-QUIRE) Pathway Model starts with an identified trigger, confirms/creates demand for the trigger, studies the trigger, scans for a solution, and determines whether there is sufficient evidence or an established practice that can be implemented to solve for the identified trigger. As users progress through the pathway model, options for finding resolution become more apparent.

Step 1 in the model is identifying a *trigger*. This step helps users clarify their question of inquiry, specify stakeholders, estimate a timeline to res-

olution, and identify available resources. Step 2 is an alignment check to *confirm* that the identified trigger and possible solutions are aligned with the organizational strategic plan. On occasion, evidence may be a need to emphasize the need to explore the trigger. Strategies such as SBAR (situation, background, assessment, recommendation) can be helpful in further defining the trigger.[16] Step 3, *studying the trigger,* identifies the current state problem in context of the environment, which can be completed using instruments and strategies such as the 5 Why's,[17] Appreciative Inquiry,[13] the Institute for Healthcare Improvement (IHI) Cause & Effect Diagram,[18] or IHI Driver Diagram.[19] Step 4, *scanning for a solution,* identifies evidence-based practices or established practices that have led to positive outcomes in the local context. The scan may involve activities such as a brief literature search, review of regulatory/industry guidelines, or identification of best practices within or outside the organization. Step 5 is determining whether there is *sufficient evidence or an established practice* to answer the question/trigger. When sufficient evidence or an established practice is available, users move to implementation. Implementation is delineated by determining whether the solution involves a process change (QI) or practice change (EBP). When sufficient evidence or an established practice is not available, users move to the innovation/research. Innovation/research is further delineated based on desired outcome. Innovation generates a new solution; research generates new knowledge.

Pilot results

A total of 23 workshop attendees participated in the evaluation. Identification of the project method improved by 14% (5.7-6.5) when comparing the mean score from what participants did in their last project to what they would do based on workshop learnings. Scanning for a solution improved by 8% (5.9-6.4). Avoiding missed steps improved by 36% (4.7-6.4). Building a team improved by 10% (5.9-6.5). The overall mean score improved by 16% for all items (22.2-25.8).

DISCUSSION

The INQUIRE Pathway Model provides a practical, step-by-step approach for users to follow from initial identification of a trigger through selection of a best method for answering the

question and arriving at a solution. Pilot findings indicate that the model improved the overall project planning and decision-making. Feedback from users in the developmental and evaluation phases highlighted the unique function of INQUIRE to align steps in a strategic approach that connects users to specific project methods consistent with the question being asked.

Findings from INQUIRE development and testing are similar to other model evaluations. For example, users evaluating Iowa and I3 Models perceived the models to be useful and usable.[9,12] Iowa Model users were also provided opportunity to identify problems within the overall model and steps, providing opportunity to refine based on user feedback.[12] Also consistent with INQUIRE, the Quality, Implementation, and Evaluation (QIE) Model provides a foundational structure for practice initiatives and allows for flexibility of the process to local organizational context.[20] In contrast, models such as the I3 Model[9] have been developed for clinician users, where the INQUIRE scope encompasses clinical and nonclinical users.

The INQUIRE development process was highly collaborative and incorporated interprofessional clinical and nonclinical staff, which facilitated integration of specialized knowledge and expertise throughout multiple design iterations and adaptations. Upon initial formation, team members were encouraged to be curious, freely innovate, and openly share their ideas toward a common purpose. A collaborative culture emerged as team members worked together building trust, which led to the emergence of a team that demonstrated high-level psychological safety, outstanding commitment to the team mission, and individual and collective openness to failure. Multiple testing iterations with diverse users challenged the team to adapt the pathway model structure and elements in the development and evaluation phases.

Implications

Appreciative inquiry challenges experienced in the local health care setting are likely shared in other organizational contexts. Organizations need a systematic process to avoid wasting time and resources when a health care trigger is identified. INQUIRE evaluation findings suggest that the model can improve project navigation, thus influencing overall project efficiency and associated health care outcomes. Organizations should

evaluate the current state of project decision-making and existing gaps to identify potential benefits of incorporating a navigation model, such as INQUIRE. An INQUIRE Toolkit was developed to aid users in model application. The toolkit provides a project worksheet (see Supplemental Digital Content Appendix A, available at: http://links.lww.com/JNCQ/B137) for users leading their own projects and a consultation template (see Supplemental Digital Content Appendix B, available at: http://links.lww.com/JNCQ/B138) for users serving as a project mentor or coach. INQUIRE tools facilitate project decision-making through a series of questions and optional resources to use within each step in the model.

Limitations and future research

Model evaluation findings should be considered in the context of a few limitations. First, the model evaluation was completed with expert change agents (ie, CNSs) and conclusions cannot be drawn about the perceptions of novice health care staff. Future efforts should examine the perspectives of health care staff newly leading projects in health care while applying INQUIRE. Second, the evaluation was completed using scenarios with limited application of the model in real time. Opportunity exists moving forward for application and testing of the model to real-life clinical and nonclinical triggers in the local environment. Specifically, research is needed to examine the validity, usability, and benefit of the model from the perspective of health care project leads and consultants. Third, the evaluation was focused on user perceptions and health care outcomes were not measured. As the model is applied to future health care triggers, associated benefits should be measured such as patient, staff, and organizational outcomes.

CONCLUSION

The INQUIRE Pathway Model provides a strategic approach to project navigation in health care, with pilot findings indicating potential for improvement in project planning and method selection. A diverse and highly engaged team of experts was necessary to innovate and iterate to successfully select the final model that fit the vision and purpose. Health care organizations need a systematic process to avoid project planning waste and INQUIRE enables flexibility to organizational context and application using the

model toolkit. Future research is needed to evaluate the model using real-life health care triggers and associated outcomes.

REFERENCES

1. Fulton JS. The unique and independent practice of nursing. *Clin Nurse Spec*. 2007;21(1):5-6. doi:10.1097/00002800-200701000-00002
2. Carter EJ, Mastro K, Vose C, Rivera R, Larson EL. Clarifying the conundrum: evidence-based practice, quality improvement, or research? The clinical scholarship continuum. *J Nurs Adm*. 2017;47(5):266-270. doi:10.1097/NNA.0000000000000477
3. Baker JD. Nursing research, quality improvement, and evidence-based practice: the key to perioperative nursing practice. *AORN J*. 2017;105(1):3-5. doi:10.1016/j.aorn.2016.11.020
4. Olsen DP, Smania MA. Determining when an activity is or is not research. *Am J Nurs*. 2016;116(10):55-60. doi:10.1097/01.NAJ.0000503304.52756.9a
5. Newhouse RP. Diffusing confusion among evidence-based practice, quality improvement, and research. *J Nurs Adm*. 2007;37(10):432-435. doi:10.1097/01.NNA.0000285156.58903.d3
6. Ackerman MH, Porter-O'Grady T, Malloch K, Melnyk BM. Innovation-based practice (IBP) versus evidence-based practice (EBP): a new perspective that assesses and differentiates evidence and innovation. *Worldviews Evid Based Nurs*. 2018;15(3):159-160. doi:10.1111/wvn.12292
7. Holden RJ, Boustani MA, Azar J. Agile innovation to transform healthcare: Innovating in complex adaptive systems is an everyday process, not a light bulb event. *BMJ Innov*. 2021;7:499-505. doi:10.1136/bmjinnov-2020-000574
8. Newhouse RP, Pettit JC, Poe S, Rocco L. The slippery slope: differentiating between quality improvement and research. *J Nurs Adm*. 2006;36(4):211-219. doi:10.1097/00005110-200604000-00011
9. Hagle M, Dwyer D, Gettrust L, Lusk D, Peterson K, Tennies S. Development and implementation of a model for research, evidence-based practice, quality improvement, and innovation. *J Nurs Care Qual*. 2020;35(2):102-107. doi:10.1097/NCQ.0000000000000422
10. Brown RE. *The Clinical Inquiry Process Diagram*. VCU Libraries Faculty and Staff Publications; 2020.
11. Mick J. Addition of a decision point in evidence-based practice process steps to distinguish EBP, research and quality improvement methodologies. *Worldviews Evid Based Nurs*. 2015;12(3):179-181. doi:10.1111/wvn.12084
12. Iowa Model Collaborative; Buckwalter KC, Cullen L, Hanrahan K, et al. Iowa Model of evidence-based practice: revisions and validation. *Worldviews Evid Based Nurs*. 2017;14(3):175-182. doi:10.1111/wvn.12223
13. Champlain College. 5-D cycle of appreciative inquiry. Accessed November 11, 2022. appreciativeinquiry.champlain.edu
14. Boustani M, Azar J, Solid C. *Agile Implementation*. Morgan James Publishing; 2020.
15. Rycroft-Malone J, Bucknall T, eds. *Models and Frameworks for Implementing Evidence-Based Practice: Linking Evidence to Action*. Wiley-Blackwell; 2010.
16. Institute for Healthcare Improvement. SBAR tool: situation-background-assessment-recommendation. Published 2022. https://www.ihi.org/resources/Pages/Tools/SBARToolkit.aspx
17. Lean Interprise Institute. Clarifying the "5 Whys" problem-solving method. Published 2018. https://www.youtube.com/watch?v=SrlYkx41wEE
18. Institute for Healthcare Improvement. Cause and Effect Diagram. Published 2022. https://www.ihi.org/resources/Pages/Tools/CauseandEffectDiagram.aspx
19. Institute for Healthcare Improvement. Driver Diagram. Published 2022. https://www.ihi.org/resources/Pages/Tools/Driver-Diagram.asp
20. Talsma AN, McLaughlin M, Bathish M, Sirihorachai R, Kuttner R. The quality, implementation, and evaluation model: a clinical practice model for sustainable interventions. *West J Nurs Res*. 2014;36(7):929-946. doi:10.1177/0193945914537121

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