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Motahareh Tavakolikashi
Maine Medical Center

Et al.

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Using Design Thinking to Spread iPACE™: An Interprofessional Medical Education Innovation in an Academic Medical Center

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Authors

Motahareh Tavakolikashi, Sarah Hallen, Melissa I. Zelaya-Floyd, Patricia White, Kalli Varaklis, Thomas Van der Kloot, Andrew D. Perron, Elisabeth Wilson, and Robert Bing-You

APPLICATION OF BEST PRACTICES

Using Design Thinking to Spread iPACE™: an Interprofessional Medical Education Innovation in an Academic Medical Center

Motahareh Tavakolikashi,[1, 2, 3] Sarah Hallen, MD,[4, 5] Melissa I. Zelaya-Floyd, PhD,[2] Patricia White,[2] Kalli Varaklis, MD, MSEd,[2, 5, 6] Thomas Van der Kloot, MD,[5, 7] Andrew D. Perron, MD,[5, 8] Elisabeth Wilson, MD, MPH, MS-HPEd,[5, 9] Robert G. Bing-You, MD, MEd, MBA[2]

[1]Department of System Science and Industrial Engineering, Binghamton University, Binghamton, NY, [2]Department of Medical Education, Maine Medical Center, Portland, ME, [3]Center for Performance Improvement, MaineHealth, Portland, ME, [4]Division of Geriatrics, Maine Medical Center, Portland, ME, [5]Tufts University School of Medicine, Boston, MA, [6]Department of Obstetrics and Gynecology, Maine Medical Center, Portland, ME, [7]Department of Pulmonary and Critical Care Medicine, Maine Medical Center, Portland, ME, [8]Department of Emergency Medicine, Maine Medical Center, Portland, ME, [9]Department of Family Medicine, Maine Medical Center, Portland, ME

Problem Statement: The Interprofessional Partnership to Advance Care and Education (iPACE™) model and its core principles are spreading across the MaineHealth system. Thus, there is a need for a standardized approach that is adaptable and incorporates the requirements of diverse patient care settings.

Background: In 2017, the original iPACE™ model was designed and piloted on a new teaching unit for adult internal medicine at Maine Medical Center. Analysis of the pilot data showed improved teaming, care team experiences, interprofessional collaborations, and patient satisfaction. Because the pilot model will require adaptation to be successfully implemented in other disciplines, the authors sought a framework to facilitate implementation of core iPACE™ principles in diverse clinical care settings.

Application/ Recommendation: The Design Thinking (DT) framework was selected as a structured, standardized approach to accelerate innovation and implementation of the iPACE™ model in a new patient care setting. The DT framework consists of 6 consecutive process steps and iteration loops: Understand, Observe, Point of View, Ideate, Prototype, and Test. This paper outlines specific metrics and activities in each step, as well as opportunities for tailoring each step based on the care setting.

Keywords: design thinking, interprofessional team, clinical learning environment

PROBLEM STATEMENT

The Interprofessional Partnership to Advance Care and Education (iPACE™) model is composed of 7 core principles (Figure 1). These principles promote the creation an interprofessional, team-based care model in a clinical learning environment.. Adaptation of the iPACE model across diverse clinical care settings will require a structured, uniform approach that is sensitive to the needs of distinct patient populations and care teams. It also must ensure adherence to the foundational principles of the model.

Correspondence: Motahareh Tavakolikashi
Department of System Science and Industrial Engineering
Binghamton University, Binghamton, New York 13902
MTavakolik@mmc.org

BACKGROUND

In 2017, the iPACE™ model was originally piloted on a new inpatient teahing unit in adult internal medicine (IM) at Maine Medical Center (MMC). This project was in response to the Pursing Excellence in Clinical Learning Environments Initiative of the Accreditation Council for Graduate Medical Education (ACGME). The pilot was associated with improved teaming, care team experience, interprofessional education, and patient satisfaction (S. Hallen, MD et al., unpublished data, September 2019). In 2019, MMC was awarded a “Reimaging Residency” grant from

the American Medical Association (AMA) to adapt the iPACE™ model across different care settings, specialties, and institutions within the integrated MaineHealth system.

Implementation of the model for the pilot unit was the product of an iterative design process that incorporated recommendations from the literature[1-6] and input from a formal systems engineering analysis to meet the needs of the IM team and the patients they served. One key feature of this model adaptation was daily structured interprofessional bedside rounds, including all members of the care team, as well as the patient and their family. These daily rounds occurred each morning for several hours. While this structure may work for a general medicine service, it would be untenable and/or inappropriate for other settings (eg, procedure-oriented or outpatient settings). As the iPACE™ principles are adapted to other settings with differing workflows, a broader engineering approach will need to be considered.

Evidence

The Design Thinking (DT) method was developed in the late 1990s by David Kelly, the founder of the design consultancy IDEO.[7] DT is user-centered and can be implemented by interdisciplinary teams to solve complex problems and generate innovative solutions. This method consists of 6 consecutive process steps and iteration loops[8]: Understand, Observe, Point of View, Ideate, Prototype, and Test[9] (Figure 2).[10] Although each step in the model is the product of the previous actions, the process is not exclusively linear. For example, the Point of View step involves creating a "micro-theory"' of the underlying factors to be corrected by the design based on the previous steps of Understand (collecting data with the intent of becoming an expert in the problem) and Observe (identifying user needs). However, if a new need arises in Point of View, the DT framework encourages returning to the Observe or Understand step.

The DT framework has been instituted in many organizations to accelerate innovation and renew organizational culture. Most notably, Kaiser Permanente has used DT to deploy large-scale innovation projects to deliver health care.[11] In a recent systematic review, DT was also used to develop or redesign patient-facing, provider-facing, and caregiver- or family-facing interventions.[12]

In this project, the DT framework was selected to expand the iPACE™ model because it creates a standardized and structured approach while also allowing flexibility in the size, resources, patient population, team dynamics, and other unique characteristics of the patient care setting. This paper describes the innovative application of the DT framework to adapt the iPACE™ model to settings across MaineHealth.

Application/Recommendation

We are in the early stages of planning the implementation of the iPACE™ model in 3 patient care settings in which we are applying the DT framework. As described, the DT framework uses systems engineering techniques that were successfully implemented in the pilot. However, this framework will give us a more rigorous and robust approach to future design and execution of the model that has not been carried out before. We envision that as patient care settings interested in implementing the iPACE™ model are identified, the DT framework will be activated.

The process begins with the Understand Step, which involves gathering information about current best practices in interprofessional team–based care and learning models in similar patient care settings. This step includes discipline- or population-specific literature reviews (ie, team care in pediatrics). Next, the Observe step uses both qualitative and quantitative methods of data collection to capture information about current processes in patient care, current needs in the patient care setting, systemic barriers to implementing iPACE™, and other latent needs from the perspective of frontline members. To provide the data required for the DT framework and aid in iPACE™ dissemination, a baseline evaluation and implementation plan is created. Many of the included evaluation tools are also part of the metrics plan for the pilot.

The pre-implementation plan for data collection includes setting-specific financial and efficiency measures (eg, length of stay, readmission rate, average cost of stay for most frequent diagnoses); time studies of team members and patients; patient outcomes; data from patient-experience surveys; focus groups; and provider surveys. The provider surveys combine 3 different tools: Relational Coordination (RC), the Mini-Z, and questions adapted from the literature. RC is a validated, proprietary survey that will be used to measure team functionality by assessing the quality of the

PACE™: Interprofessional Partnership to Advance Care and Education

Preamble

The interprofessional team is a group of diverse professionals whose main objective is to provide **excellent patient centered care**, while **respectfully** learning from, with and about each other, **innovating** with one another, and **owning** their continuous improvement with passion and **integrity**.

Core Principles

- Interprofessional team-based patient centered care including the patient and their family (**one team**)
- Intentional, structured collaborative team practice (**one round**)
- Full care team involvement in formulating and communicating patient care plans (**one plan** that results in **one message**)
- Purposeful interprofessional team learning
- Patient and care team co-location to optimize teaming potential
- Promoting team members' full scope of practice and well-being
- Commitment to and participation of the full team in rapid cycle improvement

iPACE™ One Patient 1 Round Note Message Plan Aim One Team CONTINUOUS IMPROVEMENT
Interprofessional Partnership to Advance Care and Education

Figure 1. iPACE™ Preamble and Core Principles.

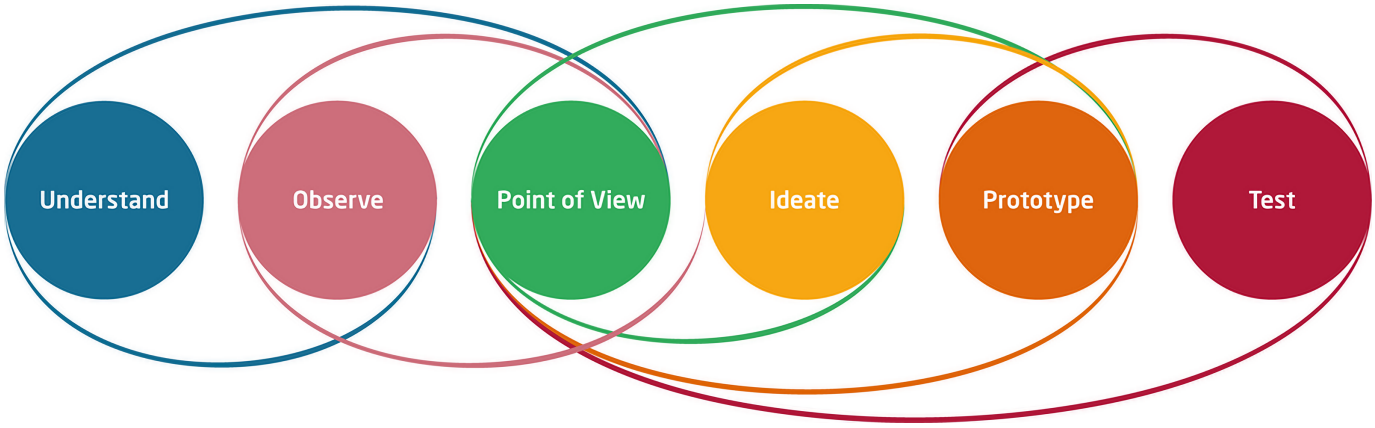

Figure 2. Design Thinking Process Model from the HPI Academy.[10]

communication and strength of the relationships between team members.[13] The Mini-Z is a validated 10-item tool that will be used to evaluate provider well-being by assessing perceptions of stress/burnout, workplace function/culture, and use of the electronic medical record.[14] Lastly, the perceived experience of the care team (including quality of education and care) will be assessed via survey questions adapted from the literature[15,16], ACGME milestone competencies for IM[17], and the bi-annual survey assessing the MMC institutional culture of safety.

To meet the needs of the clinical care setting, additional metrics can be added to the evaluation plan. These metrics include educational outcomes (eg, resident milestones, duty hour violations, teaming, Objective Structured Clinical Examinations [OSCEs]), faculty evaluations of residents) or clinical outcomes (eg, rates of hospital-acquired infections, medication errors, falls) specific to the patient population.

In the next step, Point of View, the foundational information and data will be analyzed and synthesized to create a narrative of the current state of the setting. The resultant story, or "micro-theory," will be presented as needs statements or requirements for model development (ie, "To allow for nurses to attend interprofessional rounds, they should occur after 7:30, based on known needs"). Then, in the Ideate step, potential solutions that are aligned with the iPACE™ principles will be generated in one or more brainstorming sessions with the interprofessional team, based on the solution generation sessions, systems engineering experts design and provide various interprofessional team-care models.

The next step is Prototype, which involves iPACE™ structure and refinement for the patient care setting. At this step, workflows will be designed by the implementing care team, including rounding structure/scripting and schedule; team documentation and communication plans (that include the patient and family); and content and structure of interprofessional educational activities. The iPACE™ team will assist with this step by providing templates, scheduling tools, educational materials, and an iPACE™-related orientation that can be adapted and customized to fit their needs. For the Prototype step, the Principle Adaptation and Evaluation Worksheet was developed to promote the design of structures that follow the model principles (Appendix 1). The worksheet will also allow for evaluating adherence to the developed model over time.

Finally, once a prototype has been fully developed, it will be implemented in the Testing step. This step will involve rapid improvement cycles, based on feedback from the team, to further refine the structure to meet the needs of the patient care setting.

After model adaptation has occurred and the Testing phase completed, post-implementation outcome measures will be gathered to assess the effect of the adapted iPACE™ model on unit performance. Table 1 presents the DT framework, a description of each step, the application to the iPACE™ model expansion, and an example of outcomes for each step. Following the seventh iPACE™ principle (Figure 1), process and feedback loops are developed in the model to allow for continuous improvements. These include, but are not limited to, routine meetings with the interprofessional team (including learners), utilizing the existing meetings for lean daily management and quality improvement, and establishing a steering committee.

CONCLUSION

Systems engineering techniques were used to develop a structure for implementing iPACE™ during its pilot phase for one service and its patient population. However, strict adherence to this protocol process in diverse settings would significantly limit acceptability of the iPACE™ model. The DT framework allows for each patient care setting to adapt and adhere to the iPACE™ principles while creating a workable implementation model. The Principle Adaptation and Model Evaluation Worksheet provides a framework for the iPACE™ leadership team to assess the proposed model and ensure that patient care settings meet the minimum requirements for iPACE™. Before implementation, the proposed model is submitted along with the worksheet. The iPACE™ leadership team then reviews the model and provides recommendations. This collaborative feedback between the patient care setting and the iPACE™ team will help to develop and refine the iPACE™ model. The distinctive characteristics, resource constraints, and other obstacles in each setting are examined and accounted for in each implementation. Therefore, the DT framework helps to establish a standardized process for adapting the iPACE™ model in other inpatient, outpatient, and rural settings.

Table 1. Design Thinking framework for application to iPACE™ model expansion

DT Step	Description	Application to iPACE™ model expansion
Understand	Collection of existing data and information to understand the problem and become an expert on a specific topic	Literature review on interprofessional team-based care and interprofessional educational models in the discipline or setting
Observe	Identification of user's needs through both quantitative and qualitative methods	• Focus groups & structured interviews • Time studies of team members • Patient surveys • Review existing process metrics (financial, patient outcomes) • Faculty and learner evaluations • Relational Coordination • Team well-being • Culture of safety survey results
Point of View	Generation of a 'micro-theory' about the problem and user's needs utilizing the data and insights collected from the "Understand" and "Observe" phases	• Disseminate findings to stakeholders • Storytelling (clustering and visualization of insights gained from previous steps) • Creation of 'micro-theory' includes problem definition; user needs (i.e. patients and care team members, including learners); and anticipated obstacles
Ideate	Informed by the output of the "Point of View" step, members of an interprofessional team generate potential solutions, structure them, and select one to move forward	• Brainstorming potential solutions or models based on input from previous steps for implementing iPACE™ principles, including interprofessional education • Solutions specific to the team and setting
Prototype	Detailed development of the solution selected in the ideate phase	• Model development and refinement, including: o Structure of team-based rounds including: workflow designs, the schedule of rounds, role expectations, scripting of rounds, the structure of the message to the patient, workflow designs, and the development of the joint documentation template in the EMR o Development of simulation scenarios to assist in the refinement of the model o Structure of educational experiences including: mode of presentation, topic selection, location, schedule, who is invited, and how and where they promoted
Test	Testing of the prototyped solution with iterative modification of the prototype based on feedback from users and stakeholders	• Rapid cycle improvement • Repeat metrics (from Observation step)

Use of the DT framework to design and launch new sites of iPACE™ in patient care settings offers a standardized approach that ensures adherence to iPACE™ principles. The time commitment needed to thoughtfully use the DT model is significant. Specifically, the Observe step can be time-intensive, especially if time studies are performed. Also, the Ideate stage requires involvement of the entire interprofessional team in the patient care setting and an additional time commitment of multiple team members. Due to these time- and labor-intensive phases, the DT framework is best used when there is sufficient time for full team engagement and thoughtful attention to the framework. Also, DT might not be the best approach for patient care settings in which most iPACE principles are already in place and only minor modifications or additions are needed to adhere to the core principles.

With support from the AMA 'Reimagining Residency' grant, the expansion of the iPACE™ model throughout the organization is under way. The DT framework provides a systematic approach to implement the iPACE™ model in diverse settings while meeting each setting's unique requirements and ensuring adherence to the iPACE™ principles.

Conflicts of Interest: None

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