Outcomes of an Interprofessional Patient Safety Fellowship Program

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ABSTRACT

Background: Interprofessional training for patient safety is essential in developing leaders and advocates who are versed in patient safety science and interprofessional collaboration. We describe an interprofessional patient safety fellowship program and its outcomes over 8 years.

Methods: Programmatic data were reviewed and a survey was sent to all program graduates with a known email address (N = 18).

Results: Fellows obtained interprofessional skills, knowledge, and methods of patient safety science, as well as preparation as patient safety experts through didactic and experiential training. Program outcomes included sustained quality improvements, publications (n = 8), presentations (n = 29), and recruitment of graduates into quality and safety leadership positions (67%).

Discussion: Facilitators and barriers that influenced the success of the fellowship program were noted at institutional and individual levels. The development and sustainability of interprofessional safety training programs depends on concerted efforts by leadership, academic-practice partnerships, and committed faculty and learners.

BACKGROUND

There is a critical need for an expert, interprofessional workforce to lead current and future patient safety initiatives in health care. Some progress has been made in designing and establishing interprofessional training programs that focus on patient safety, quality improvement (QI), and teamwork knowledge and skills.[1,2] These advanced training programs are necessary for developing leaders and clinicians who are well-versed in building reliable and safe health care delivery systems through interprofessional collaboration.[1] Nevertheless, challenges remain to establish and sustain such training programs due to multiple factors at the institutional and individual levels.[1-4]

We describe a postgraduate interprofessional patient safety fellowship program that has successfully incorporated interprofessional education (IPE) and patient safety training into 1 integrated program. Fellow and programmatic outcomes are shared, along with facilitators and barriers experienced over the course of program maturation.

Program Description

An interprofessional patient safety fellowship program that provides a wide range of primary, secondary, and tertiary care to eligible veterans is offered at a Midwestern Veterans Affairs (VA) medical center. The program has had continuous funding since 2011 from 2 VA sources. In 2011, the Chief Resident in Quality and Safety (CRQS) training (a physician-only program) was expanded into an interprofessional patient safety fellowship program that supported additional positions for a graduate-degreed nurse and pharmacist. Based on the program's success, continued funding was awarded for 2 positions through the VA National Center for Patient Safety (NCPS).

The goal of this program is to develop clinical, administrative, and academic leaders who will serve as patient safety and IPE champions, with expertise in the areas of system redesign and patient safety science. Fellows are provided a stipend with benefits—similar to other federal awards—that covers 100% protected time. The fellowship faculty are composed of an interprofessional

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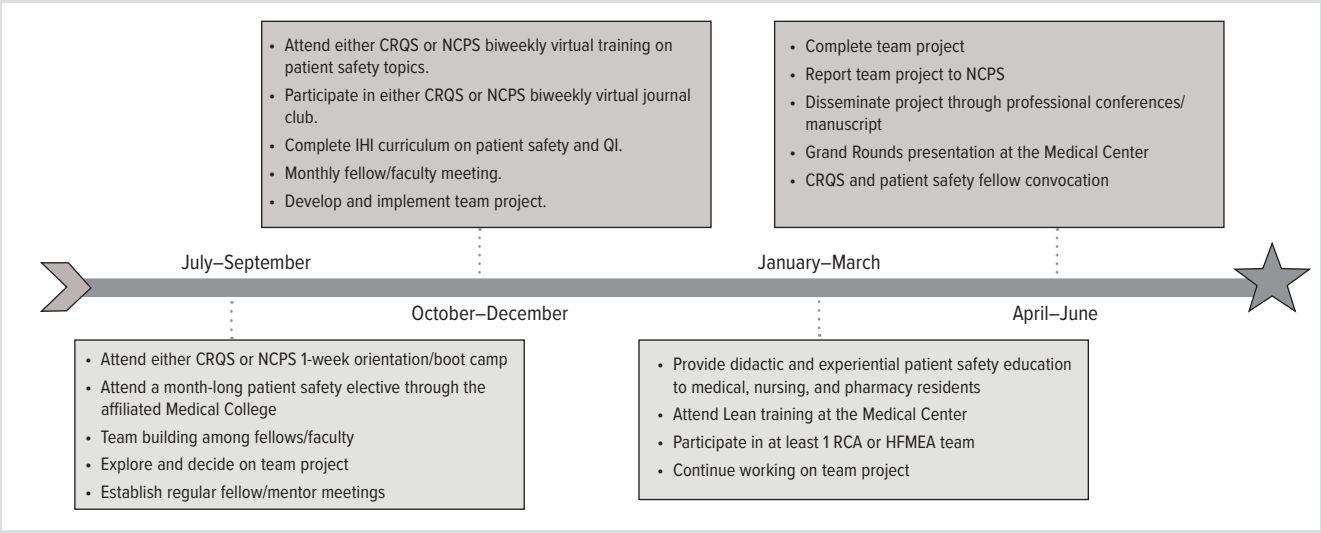
Figure. Timeline for CRQS and Patient Safety Fellows' Activities and Training



Abbreviations: CRQS, chief resident in quality and safety; NCPS, National Center for Patient Safety; IHI, Institute for Healthcare Improvement; RCA, root cause analysis; HFMEA, healthcare failure mode and effects analysis

Table 1. Leadership Positions Taken by Graduates after Completing the Interprofessional Patient Safety Fellowship Program

Nurses	Pharmacists	Physicians	Anesthesiologists/ Other Health Care Discipline
Performance improvement coordinator	High reliability organization lead	Associate director of medical residency program and division QI director	Medical college faculty
EBP coordinator	Medication safety coordinator	VA, medical college faculty with specialty fellowship x 4	Public health project lead
Program chair at nursing college	System medication safety officer		
Nurse scientist/ program coordinator x 2	Area pharmacy manager, medication safety		
Clinical nurse specialist	Patient safety manager		
	Medication safety pharmacist (infusion pumps)		
	Advanced clinical pharmacist, medication safety		

Abbreviations: EBP, evidence-based practice; QI. quality improvement.

team that includes physician, nurse, and pharmacist leaders, as well as patient safety managers.

Program Structure and Content

During this 1-year full-time fellowship, a comprehensive training program is provided at the national and local levels (Figure).[5-8] The combined curriculum provides the fellows with rich didactic and experiential training in patient safety and teamwork among 16 patient safety fellows across 7 sites. Each cohort is expected to jointly design and complete 1 QI project that meets an organizational safety need. Several strategies have been put in place to promote the development of interprofessional teamwork and decision-making among the fellows. As a team, the fellows share a common office space; together they actively learn, teach, and conduct QI projects throughout the year. The faculty-fellow group meets monthly to review project ideas, discuss patient safety topics, and track progress toward project outcomes. The patient safety curriculum provided at the affiliated medical college also allows the fellows to interact with clinicians from 2 other academic medical centers.

METHODS

Programmatic data were evaluated and an anonymous survey was sent to graduates with known email addresses (N = 18). The survey included 7 questions using a 5-point Likert scale (1 = low/strongly disagree to 5 = high/strongly agree) and an open-ended section for comments.

RESULTS

Programmatic Outcomes

The goal for our interprofessional patient safety training program is to prepare leaders, mentors, and educators versed in patient safety and QI. Within 8 cohorts, 27 fellows graduated from the program (100% completion) and 67% (18/27) obtained administrative, clinical, or educational leadership roles in patient safety and quality (Table 1). Some graduates took positions at this VA and are now faculty for this program. Overall, 42% of the graduates were retained by the VA: 5/8 nurses, 2/7 pharmacists, 4/11 physicians. Of note, 67% (18/27) of the graduates remained in Wisconsin, and many of those who moved out of state took positions closer to family.

Fellow Outcomes

Fellows developed increased knowledge and skills in safety and QI science, as demonstrated by their improvement projects. Each cohort successfully completed a team improvement project focused on a medical center's safety priority. These capstone projects demonstrate fellows' accomplishments in teamwork and patient safety and have brought sustained improvement to the medical center. For example, 1 cohort completed an inpatient insulin pump management project using Healthcare Failure Mode and Effects Analysis (HFMEA) methodology to identify over 50 failure modes and causes. Outcomes included an insulin pump note template for the electronic medical record (EMR), order set, development of a policy/procedure and interdisciplinary education resources. Another project added a note template to the EMR, ensuring accurate verbal/telephone orders and documentation of read-back; this improves patient safety, reduces the use of recall, and saves nursing time without an increase in physician workload. All patient safety and QI projects have been disseminated through multiple avenues, including 29 poster or paper presentations and 8 publications in peer-reviewed journals.

The survey had a 44% response rate (8/18). Respondents indicated "high/strongly agree" in response to 5 of 7 questions regarding their perceptions about the training. All respondents strongly agreed that their patient safety knowledge increased and that they acquired new skills (4.9-5.0). They rated their level of knowledge as high for factors influencing patient safety, systems-thinking to improve patient safety and quality, and QI methods (4.7-4.8). Their ability to use data for patient safety evaluation was moderately high, as was their level of confidence to lead patient safety projects (4.0, 4.4, respectively).

The 8 respondents also shared their accomplishments regarding new patient safety skills, leadership techniques, and the teamwork skills they developed from the fellowship (Table 2). All fellows commented on the effect the fellowship had on their career and professional development. One said the fellowship directly contributed to their ability to lead an Agency for Healthcare Research and Quality/Institute for Healthcare Improvement grant to address the COVID-19 pandemic in nursing homes. Two graduates remarked on the invaluable experiences of working with people from different professions, which allowed them to develop the skills, ability, and confidence to lead changes within a complex system. Several graduates said that the fellowship changed their views on patient safety and opened new doors for their career.

Table 2. Responses to a Postfellowship Survey

Examples of new patient safety skills learned during the fellowship:
- Using the Swiss cheese model when dealing with a complicated patient situation
- Using root cause analysis, run charts, HFMEAs, Lean, PDSA, A3
- Using data to illustrate an issue, support the need, and demonstrate change

Examples of leadership techniques cultivated during the fellowship:
- Developed confidence. Learned how to identify and engage stakeholders. Learned skills to lead or facilitate complex QI/research projects
- Best practices for communication with colleagues and peers; communication methods that are critical in leadership, including the 4-step assertive tool
- Establishing expectations and deferring to expertise. "As the year progressed, more people wanted help with things—being able to say 'I don't have time right now, but would be happy to help in 2 weeks' or 'Thanks for reaching out; I know someone who may be able to help' were key in my success."

Examples of teamwork skills developed during the fellowship:
- The ability to get a team on board for a project
- How to advocate, negotiate, and delegate among an interprofessional team
- How to resolve differences among team members
- Team facilitation
- Communication and balancing the talents of the team

Abbreviations: HFMEA, Healthcare Failure Mode and Effects Analysis; PDSA, plan, do, study act

Table 3. Facilitators and Barriers to Interprofessional Patient Safety Training

Institutional Level	Fellow Level
Facilitators	
• Leadership commitment • Culture of safety • Faculty with patient safety/ Quality improvement expertise	• Commitment to patient safety • Alignment between institutional and fellow's interest • Paid position with protected time • Experience in a different medical center
Barriers	
• Lack of funding • Lack of experts/mentors	• Competing priorities • Workload distribution • Pre-existing hierarchy • Low stipend

Facilitators and Barriers for Interprofessional Safety Training

Implementation of interprofessional safety training is not easy, and a variety of facilitators and barriers have been noted in the literature and with our program (Table 3).[4,9] For fellows, a deep commitment to patient safety is a motivator to further their training and education. Meanwhile, a strong alignment between the institution's needs and the fellows' interests is a critical facilitator supporting the fellows' attempts to lead improvement efforts.

A variety of barriers are listed in Table 3, including the low stipend amount. Some fellows have a part-time position to supplement their income. Another potential barrier found in the literature related to interprofessional learning is the preexisting hierarchy in the health care system, where the physician may be defaulted into a leadership role on the interprofessional team.[4] This has not been our experience, possibly due to initial and ongoing purposeful planning. For example, the program director intentionally identified an interprofessional faculty team, and a core competency for interprofessional collaborative practice[8] is embedded within our fellowship structure and curriculum.

Facilitators and barriers exist at the institutional level as well. The overall institutional safety culture and environment can con-

tribute greatly to the success of the program and the development of fellows.[3,10] For our program, the strong commitment to patient safety and support from leadership have been recognized as key facilitators. The availability of qualified faculty and mentors is vital to the sustainability of our fellowship program.[1-3] In addition to VA faculty, our academic affiliate is able to provide needed training. Lastly, financial resources are critical in sustaining the training program. There are many resources from the medical center that support the fellows, including poster development, graphic design, high-quality video recording, and conference registration with travel costs.

DISCUSSION

Health care quality and safety are expected by patients, families, clinicians, and society. However, this cannot occur in professional silos, as patient safety depends on multiprofessional collaboration.[1,11] Our program has demonstrated that providing patient safety training using an interprofessional framework leads to health care professionals adept in their ability to collaborate interprofessionally and foster improvements in patient safety.

Interprofessional learning needs to be multifaceted and built into all aspects of training, including structural, environmental, and procedural components, to provide an authentic experience for fellows. The program director and faculty have intentionally structured core learning activities based on components of the interprofessional collaborative practice competencies.[8] Successful interprofessional collaboration is reinforced through daily interactions among the fellows and role modeled by the interprofessional faculty team.[12]

Our fellows, like their counterparts reported in the literature, expressed difficulty in finding time to attend all required training and to master the extensive patient safety knowledge and skills in the allocated time frame.[9] Systematic strategies are required to address the finite amount of time available with increasing opportunities, experiences, and competencies being offered or expected. Last, program evaluation is a component that needs strengthening. A robust and systematic evaluation is needed in order to demonstrate individual and health care system outcomes, as well as the return on investment.[9,13]

CONCLUSION

A team approach is critical in achieving patient safety and providing quality care throughout the health care continuum. Interprofessional training programs for patient safety are a viable and important component in developing leaders who are equipped with the knowledge and skills for patient safety and QI, as well as interprofessional collaboration. Many graduates of this program continue their career paths as leaders in patient safety and QI in clinical practice and education. Nevertheless, challenges and obstacles remain for the training program. A concerted effort involving supportive leadership, a well-established faculty team, and overall institutional engagement are vital for success of interprofessional training programs.

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REFERENCES

1. Gandhi TK, Kaplan GS, Leape L, et al. Transforming concepts in patient safety: a progress report. *BMJ Qual Saf.* 2018;27(12):1019-1026. doi:10.1136/bmjqs-2017-007756

2. Watts BV, Williams L, Mills PD, et al. Curriculum development and implementation of a national interprofessional fellowship in patient safety. *J Patient Saf.* 2018;14(3):127-132. doi:10.1097/PTS.0b013e3182905e9c

3. Kirkman MA, Sevdalis N, Arora S, Baker P, Vincent C, Ahmed M. The outcomes of recent patient safety education interventions for trainee physicians and medical students: a systematic review. *BMJ Open.* 2015;5(5):e007705. doi:10.1136/bmjopen-2015-007705

4. Gergerich E, Boland D, Scott MA. Hierarchies in interprofessional training. *J Interprof Care.* 2019;33(5):528-535. doi:10.1080/13561820.2018.1538110

5. Institute for Healthcare Improvement. IHI Open School online courses. Certificates and continuing education. Basic certificate in quality and safety. Accessed May 19, 2021. http://www.ihi.org/education/IHIOpenSchool/Courses/Pages/OpenSchoolCertificates.aspx

6. VHA National Center for Patient Safety. Healthcare failure mode and effect analysis (HFMEA). Updated January 13, 2021. Accessed May 19, 2021. https://www.patientsafety.va.gov/professionals/onthejob/hfmea.asp

7. VHA National Center for Patient Safety. Root cause analysis. Updated March 8, 2021. Accessed May 19, 2021. https://www.patientsafety.va.gov/professionals/onthejob/rca.asp

8. Interprofessional Education Collaborative Expert Panel. *Core Competencies for Interprofessional Collaborative Practice: Report of an Expert Panel.* Interprofessional Education Collaborative; 2021.

9. O'Connor P, Fearfull, A. Evaluation of the Scottish patient safety fellowship programme 2008-2013. *J Patient Saf Risk Manag.* 2015; 21(2-3):22-30. doi:10.1177/1356262215570948

10. Fulop NJ, Ramsay AIG. How organisations contribute to improving the quality of healthcare. *BMJ.* 2019;365:l1773. doi:10.1136/bmj.l1773

11. Makic MB, Wald H. Achieving improved patient outcomes through interprofessional team. *J Interprof Educ Pract.* 2017;8:91-94. doi:10.1016/j.xjep.2017.07.003

12. Hall LW, Zierler BK. Interprofessional Education and Practice Guide No. 1: developing faculty to effectively facilitate interprofessional education. *J Interprof Care.* 2015;29(1):3-7. doi:10.3109/13561820.2014.937483

13. Committee on Measuring the Impact of Interprofessional Education on Collaborative Practice and Patient Outcomes; Board on Global Health; Institute of Medicine. Institute of Medicine. *Measuring the Impact of Interprofessional Education on Collaborative Practice and Patient Outcomes.* National Academies Press; 2015.

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