

# The Patient Safety Education Project: An International Collaboration

Linda Emanuel, MD, PhD; Merrilyn Walton, PhD; Martin Hatlie, JD; Denys Lau, PhD;  
Tim Shaw, PhD; Joel Shalowitz, MD, MBA; John Combes, MD

## Abstract

The Patient Safety Education Project (PSEP) aims to advance the shift to patient-centered, systems-based care through high-impact education of health care workers using a superior “train-the-trainer” dissemination mechanism. Employing a core curriculum that includes practice improvement toolkits, PSEP develops “safety trainers,” who teach patient safety and foster its practice among “end-learners” in their own institutions. From 2005 to 2006, PSEP gathered support from leaders and identified learning topics. In 2007, the core curriculum was developed. In 2008, PSEP will be piloted before proceeding to rollouts in the United States and Australia. PSEP will be a course-driven college without walls that works with partner organizations; it will use a nonprofit, cost-recovery, sustainable economic model. Evaluation of PSEP’s impact will measure change in attitudes, knowledge, and simulated skills at our courses. We will also evaluate practice change, patient outcomes, and practice norms in service delivery settings.

## Introduction

Since the 1999 publication of the Institute of Medicine’s (IOM) landmark report, *To Err is Human: Building a Safer Health System*, health care institutions have sought solutions to managing newly appreciated sources of risk.<sup>1</sup> These sources of risk include poor systems design, increased technology and complexity, poor teamwork and communication, variations in health literacy among patients, a culture of blame that buries lessons learned, and others.

Although the United States, Australia, the United Kingdom and other nations have made patient safety a clearly articulated national priority, progress has been slow. Fundamental patient safety practices—such as learning from adverse events, working in effective teams, standardizing tools and procedures, and open disclosure of adverse events—are far from universal in health care organizations.

Four fundamental challenges confront us:

- First, despite the existence of considerable information about how to improve care, most health care professionals are not sufficiently educated in patient safety.
- Second, even when existing knowledge is taught, the problem of how to actually use that knowledge to change practice still looms large.<sup>2, 3</sup> Knowing the universal protocol for preventing wrong-site surgery (or having a policy in place to follow the protocol) is not

effective if staff do not follow the protocol.<sup>4</sup> Communities of practice that adopt the standards are necessary.<sup>5</sup>

- Third, obtaining knowledge from reporting efforts remains inadequate. Biomedical progress develops from a well-accepted process that begins with basic research, followed by phased clinical trials and health services research. Patient safety, though, relies on methods that make use of reporting and analyzing adverse events and problem solving in real time. Berwick<sup>6</sup> and Leape<sup>7</sup> have argued that evidence-based medicine needs to broaden its scope, particularly in relation to quality and safety, and to acknowledge the importance of such approaches to learning, growth, and development. These are very different categories from those found in traditional clinical research.
- Fourth, as articulated in the IOM's 2001 report, *Crossing the Quality Chasm: A New Health System for the 21<sup>st</sup> Century*, progress in safety and quality depends on alignment among microsystems within the health care workplace and among the organizations in which those microsystems are contained.<sup>8,9</sup> These microsystems must, in turn, align with external forces, such as regulatory bodies and payment mechanisms. Examples of misalignment include a legal system that fosters blaming people who make mistakes and a payment system that rewards unsafe care. In the absence of alignment, changes in culture or practice at the microsystem level will most likely neither be accomplished nor sustained.

The Patient Safety Education Project (PSEP) was designed to address these challenges by combining dissemination of existing knowledge with steps to translate this knowledge into better practice outcomes. PSEP was developed by a core team of educators in the United States and Australia. Its target audience includes all health care professionals who have gaps in their knowledge and skills in patient safety competencies. This paper provides an overview of PSEP's development and organization, its strategic vision, and its educational and practice-change methods.

## **Development and Design of the Patient Safety Education Program**

### **Oversight Structure and Its Role in Program Design and Curriculum Development**

In February 2005, a meeting of patient safety leaders was convened at Northwestern University in Evanston, IL, to discuss the need for, and potential design of, a program to bridge existing gaps between current and possible patient safety training. The group found that first, while quality patient safety curricular materials had been produced by a number of highly regarded organizations, no consensus existed regarding a basic, core patient safety curriculum for use in the United States. Second, as evidence of a strong need for such training, they noted that large numbers of health care providers still had not been trained in the basics of safety science or patient-centered care.

The group felt that the general design of PSEP should emulate an education-dissemination project in palliative care that has been recognized as successful: Education in Palliative and End-of-life Care (EPEC), which began in 1997 and is currently housed at the Buehler Center on Aging, Health & Society at Northwestern University. Since the 1990s, EPEC has reached

millions of health care workers.<sup>10</sup> The EPEC program uses a curriculum-driven approach grounded in adult learning methodology to teach content about palliative and end-of-life care to physicians and other medical team members. The EPEC education-dissemination approach utilizes the best adult teaching methodologies and practices and is structured so that course attendees can return to their home institutions to teach others what they have learned.

The group also agreed to use the Australian National Patient Safety Education Framework (ANPSEF) as a starting point to identify core learning topics.<sup>11</sup>

It was agreed that building on existing curricula resources would avoid duplication and that broad dissemination of a core curriculum had the potential to drive new engagement. The PSEP would be maintained and kept up to date by processes established by a core team that was formed to develop the initial PSEP proposal.

Aware that practice change depends on having broad stakeholder support and leadership, as well as grass roots activity and suitable expertise, a governing council and an expert advisory group (both made up of experts and major thought leaders in patient safety) were established. The governing council convened in Washington, DC, in May 2006, and was hosted by the IOM. The council provided its approval for the PSEP project design and content of the draft core curriculum. The advisory group provided additional input.

As the PSEP project moves forward through pilot, roll-out, and evaluation, the governing council will be consulted periodically at important junctures; the advisory group will be kept informed and involved in their areas of expertise or interest. These bodies will play lead roles in spreading the word about PSEP and its relevance, importance, and availability; and many of their members will become master facilitators or mentors for those engaged in PSEP activities.

## **Organizational Structure and Programming**

The organizational structure of PSEP reflects the needs of its programming design. The core curriculum forms the foundation for PSEP's main offering: 2½-day "Become a PSEP Safety Trainer" immersion courses. These courses are to be held several times a year to generate multidisciplinary teams of safety trainers who will deliver the curriculum content to "End-learners" at their home institutions. End-learners may be clinical, administrative, or executive professionals or other individuals who have a role in implementing patient safety practices or improvement projects in their health care communities.

**Safety trainers.** "Safety trainers" are professionals, who are involved in health care education or health care delivery—whether as clinicians, administrators, or professionals in related disciplines—who qualify to teach the core curriculum. To become safety trainers, they must take the PSEP course, "Become a PSEP Safety Trainer."

Applications for this course are competitive. To be eligible, applicants must have a commitment from an executive leader in their organization to attend the last half-day of the immersion course, as well as demonstrated support at the executive level of their institution for dissemination within their home organization. Applicants must come as a team that includes at least one physician,

one nurse, and one health care administrator. Others, such as pharmacists or information technology directors, are also encouraged to attend as part of the team. These safety trainers will be trained in both core curriculum content and teaching skills to effectively equip them to convey the core curriculum to end-learners in their home institutions.

**End-learners, safety professionals, and practice communities.** The ultimate target of PSEP is its end-learners, a category that is broadly construed to include frontline clinicians, managers, a full range of ancillary health care workers (such as receptionists or information technology workers), and executive leadership. Depending on the organization, end-learners may also include governing body members active in patient safety oversight or policy setting. The intent is to create patient safety communities and thereby thoroughly spread effective patient safety practices.

End-learners can become PSEP “safety professionals” by taking all of the plenary and modular units in the core curriculum. Once exposed to the discipline of patient safety, it is expected that some patient safety professionals will be motivated to attend a “Become a PSEP Safety Trainer” course or to pursue further educational opportunities offered by others to develop deeper expertise.

**Master facilitators.** Master facilitators are safety trainers, who have taken additional training focused on teaching skill development and have been recognized by the core team as competent to teach safety trainers. Initially, they have been recruited based on their experience in patient safety education or practice, as well as their interest in and ability for teaching, mentoring, and quality improvement activity. After establishment of the program, master facilitators will be drawn from safety trainers who have taken additional training in our professional development workshop (discussed later in this paper). As PSEP matures and spreads, master facilitator candidates will emerge from the expanding cadre of safety trainers and end-learners. The program will attract and identify future patient safety leaders and nurture them.

**Core team.** The core team comprises the lead editors of the safety curriculum from the United States and Australia. Core team members also have administrative responsibility for PSEP and are active in the development, maintenance, and evaluation of PSEP as it matures.

**Types of training.** As described above, “Become a Safety Trainer” courses will be held several times annually in diverse locations. Approximately 400 safety trainers are expected to be trained during the first 2 years of PSEP; these in turn will teach an average of 100 others. Within the first 5 years of the program, we expect that about 40,000 end-learners will have been trained throughout the United States. A similar roll-out in Australia is planned for 2008, to be followed by roll-outs in other countries.

Based on experience with EPEC, the PSEP dissemination process differs from traditional train-the-trainer models, which suffer from attrition and lack of quality control as layers of hand-me-down training continue. A key difference lies in the distinction between what the master facilitator delivers to the safety trainer and what the safety trainer delivers to the end-learner. The safety trainer will teach patient safety content and implementation to the end-learner without

trying to make end-learners into safety trainers. In other words, safety trainers will not deliver those parts of the core curriculum (described later) that deal with how to teach and mentor.

Safety trainers are encouraged to present sessions to end-learners at their home institutions that fit with local and institutional routines and learning opportunities already scheduled into the health care providers' work lives. Modules can be delivered at grand rounds, seminar series, or purpose-designed settings. Since many modules will take place at the home venue of the safety trainers and participants using local resources, they can be delivered with no special budget.

Safety trainers will select their audience to match the needs and capacities of the setting and the people involved. For instance, this might entail having a safety trainer work with a group from a specific discipline, department, or location. If the safety trainer needs to educate a target group that comes from diverse disciplines, he/she is encouraged to use a team approach.

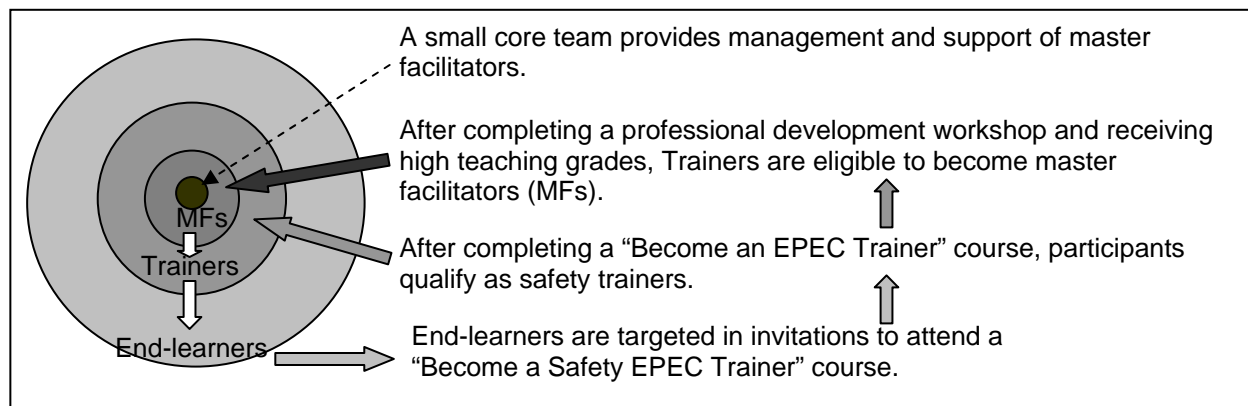
Teaching to a group that recognizes the safety trainer's authenticity helps establish an informal learning contract—that is, a social expectation that the teaching-learning group can make effective learning progress. Safety trainers can adapt or limit the amount of material they deliver to a portion of the full core curriculum content. For example, if an organization has already invested in a robust program of open disclosure, it might be appropriate to do an overview only on this topic and use the bulk of the session time to explore specific topics included in the disclosure module. Alternatively, if “reducing falls” has been designated a safety priority in the safety trainer's own organization, more depth and analysis of the topic may be desired. In such situations, the resources specifically developed for each module, including implementation kits, should be helpful to safety trainers.

In addition to the “Become a PSEP Safety Trainer” course, safety trainers are eligible to take an annual Professional Development Workshop” designed to foster participants' teaching skills, their capacity to mentor the implementation of safety improvement projects, and their advancement to master facilitator level. The bulk of the 2- to 3-day professional development workshop is devoted to practicing teaching and mentorship skills and to using clinical practice improvement (quality improvement) methods.

To advance, safety trainers also must co-teach with an existing master facilitator, receive excellent teaching evaluations of their teaching sessions, and then be invited by the PSEP core team to become master facilitators. Each teaching session will be evaluated for content and delivery and evaluations will be provided to the safety trainer.

## **The College-Without-Walls Model**

The training opportunities described in the previous section generate a perpetual process of patient safety knowledge dissemination, as illustrated in Figure 1. This has been sustainable in the EPEC program, which serves as the dissemination model and precedent for PSEP. The key to sustainability is a small core team, supported by a few staff members.



**Figure 1.** Schematic representation of the perpetual process of knowledge dissemination in the EPEC program.

This training formalizes achievement and stature, creating a collegiate form of merit-based advancement. This college-without-walls model facilitates learning and professional growth in the company of professionals from a range of disciplines; some will become career-long, trusted colleagues, and most will become part of a network of similarly motivated patient safety change agents.<sup>10</sup> The participants will be able to derive a sense of community and mission loyalty from the experience that can be gratifying and professionally exciting.

## The PSEP Financial Model

PSEP development and pilot testing has been supported by grants, as will be any subsequent developments and adaptations. In the post-development, self-sustainable phase, core support will come from registration fees, sale of educational materials (although the complete curriculum will also be available to download from the Internet at no cost) to safety trainers and master facilitators, and contracts with institutions that want to roll out PSEP.

Sustainability is accomplished via a lean business model based on a small core team and dispersed faculty who are paid not for full-time work but for services spent specifically on PSEP. The faculty comprises core team members and support staff, master facilitators, and safety trainers. Members of the faculty are drawn from diverse institutions, as are members of the governing council and expert advisory group. They are paid either for time spent on the project, by honorarium, or as part of a subcontract in accordance with normal academic procedures. Master facilitators are paid by honoraria for teaching safety trainers at each "Become a PSEP Safety Trainer" course or professional development workshop.

Legally and structurally, PSEP is designed as an independent program housed in an academic center. PSEP copyrights and trademarks its intellectual property for the purpose of ensuring attribution and preventing other claims to exclusive ownership. Core curriculum materials will be free on the Internet ([www.patientsafetyeducationproject.org](http://www.patientsafetyeducationproject.org)) to safety trainers with automatic permission to use them and adapt them with attribution.

The key feature retained as the exclusive function of the PSEP is the offering of “Become a PSEP Safety Trainer” courses and the designation of the title of “PSEP Safety Trainer.” The purpose of this is to maintain quality control and standards necessary for long-term evaluation and measurement of impact. It is expected that the program will be independently evaluated at key milestones.

## **Credentialing**

Based on the EPEC precedent, it is anticipated that a generation of patient safety teachers and learners will emerge from PSEP implementation. Certificates will be awarded to PSEP’s master facilitators, safety trainers, and to those end-learners who have become “safety professionals,” which should prove to be a valid and meaningful educational qualification. Many programs require trainees to demonstrate a range of patient safety competencies.

With time it is hoped that, in addition to college programs, home organizations, and educational institutions recognizing PSEP certifications, relevant institutions will use them as quality indicators or as a prerequisite for more formal educational qualifications, such as master’s degrees.

We envision that institutions with teams of safety trainers may one day be recognized as having demonstrated capacity to implement innovative improvement programs, such as the Jewish Healthcare Foundation/Pittsburgh Regional Health Initiative’s “Perfecting Patient Care” program, or IMPACT hospitals designated by the Institute for Healthcare Improvement.<sup>12, 13</sup>

## **The PSEP Educational Strategy**

### **Stages of Impact**

An increasing focus on performance, as well as understanding and knowledge, has been a welcome change in the field of education.<sup>3</sup> Properly understood, the goals of education have long been known to impact much more than knowledge. Dixon<sup>14</sup> and Davis and colleagues<sup>15</sup> have described a cascade of steps for education:

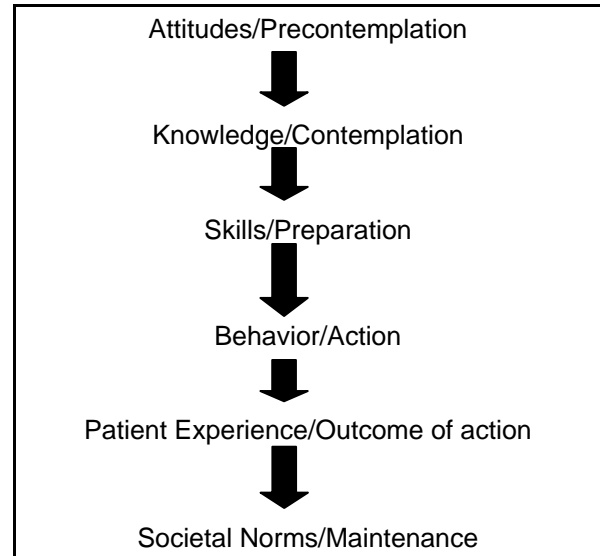
- Knowledge and attitudes precede the learning of new skills.
- If desired outcomes are to occur, new skills must be translated into behavior.
- Once sufficient people are experiencing the desired outcomes, community-wide improvement will be reflected in norms of practice.

These stages of change are readily comparable to changes often identified in management literature and are increasingly used to promote changes in health-related behaviors among patients. These stages include:

- **Precontemplation:** The person or group has a nonreceptive disposition or attitude toward the potential change.
- **Contemplation:** The person or group is ready to think about the potential change or issues related to it.

- Preparation: The person or group begins acquiring what they will need to accomplish the change.
- Action: The person or group engages in activities that reflect the change.
- Maintenance: Norms are set up that reinforce and maintain the change.

Figure 2 maps this six-step conceptual framework that informs PSEP strategy and design. Consider the necessary steps in accomplishing medication safety improvement. According to this conceptual framework, the attitude that “medication errors are preventable” and the knowledge of how to prevent these errors come first. Attitude change requires a motivating experience and knowledge uptake requires a teachable moment, both of which can be generated in the PSEP program, as described below. The next step in educational impact is to acquire the necessary skills to reduce medication errors. Some skills, such as aspects of communication and prescription writing, can be taught well in the classroom setting; others can begin in the classroom but require practical application for complete learning.



**Figure 2.** Conceptualization of education-driven performance change.

Changes in actual behaviors in the clinical setting must occur for the fourth step in the cascade of educational impact. These involve applying skills to generate good habits in, for example, prescription writing. Only when these behaviors have improved patient outcomes can the fifth step (patient experience/outcome of action) be accomplished. The final step is accomplished when behaviors that produce good outcomes are systemized into organization-wide norms of practice.

These last three stages all occur outside the classroom. To foster these later stages of change, the core curriculum incorporates toolkits that comprise slides, videos, protocols, templates, measurement tools, and other items that safety trainers can use in their own institutions. The core team culled through the many patient safety toolkits available on the Internet, gathered these into a user-friendly PSEP Toolkit Compendium, and mapped the tools to core curriculum modules.

### **The “Become a PSEP Safety Trainer” Course**

The typical schedule of PSEP courses runs from Friday through Sunday morning, a format that the EPEC project has shown to be optimal for health care worker schedules and attendance. About 11 master facilitators can teach the total number of plenary and concurrent breakout module sessions in any given immersion course. The EPEC experience demonstrates that the best teacher-to-learner ratios sustainable for delivering high-impact education material is a cap of about 100 participants per course, with smaller breakout sessions of up to 20 people. Table 1 lists core curriculum plenary sessions and breakout modules, in the order in which they are designed to be taught, in the “Become a PSEP Safety Trainer” course setting.



## Executive Track

Bringing patient safety to the point of real progress in the clinical setting requires crossing social divides within health care communities to create teamwork and support among different clinical professions and across the continuum from frontline microsystems to organizational middle management, executive leadership, and governance.

**Table 1. Core curriculum plenary sessions and breakout modules as taught in the “Become a PSEP Safety Trainer” course setting**

| <b>Setting the scene, gaining core knowledge</b>      |                        |  |
|---|------------------------|--|
| <b>Plenary 1</b>                                      | <b>General session</b> | <b>Why patient safety? Why now?</b>  |
| Module 1  | Breakout session       | Moving beyond blame to systems thinking  |
| Module 2  | Breakout session       | Applying human factors in the workplace  |
| Module 3  | Breakout session       | Communicating effectively with patients and caregivers   |
| Module 4  | Breakout session       | Being an effective team member and understanding teamwork  |
| Module 5  | Breakout session       | Organization and culture   |
| Module 6  | Breakout session       | The impact of technology on patient safety   |
| <b>Plenary 2</b>                                      | <b>General session</b> | <b>Law and other influences in the external environment</b>  |
| <b>Contextualizing knowledge, preparing to change</b> |                        |  |
| <b>Plenary 3</b>                                      | <b>General session</b> | <b>Conceptual framework for patient safety</b>   |
| Module 7  | Breakout session       | Effectively engaging patients and families as partners in care   |
| Module 8  | Breakout session       | Leadership and organizational support  |
| Module 9  | Breakout session       | Scientific methods for improving safety  |
| <b>Plenary 4</b>                                      | <b>General session</b> | <b>How to teach and implement patient safety</b>   |
| Module 10   | Breakout session       | Acute care settings: rapid response teams, ICU, ER, etc  |
| Module 11   | Breakout session       | Chronic care settings: palliative care, pressure ulcers, falls, etc  |
| Module 12   | Breakout session       | Interventional care settings: surgical care; infection control, (e.g., hand hygiene), medication safety, etc |
| <b>Action</b>   |                        |  |
| Small group session                                   |                        | Practicing your teaching skills  |
| Small group session                                   |                        | Planning your PSEP program   |
| Final session   |                        | Next steps: Senior execs/trainer teams at roundtables with group work and general session                    |

Note: ICU = intensive care unit; ER = emergency room; PSEP = Patient Safety Education Project.

To assist in aligning leadership support for safety trainers, the “Become a PSEP Safety Trainer” course has a half-day executive track in its course agenda, which has two aims: it provides health care organization executives with essential knowledge about patient safety, and it brings them up to speed with regard to what has been learned and planned by their participant teams.

The final session of the “Become a PSEP Safety Trainer” course is combined with the final session of the executive track. During this combined module, executive leaders and their teams collaborate about intended plans for improvement at the home setting and contract with one another to implement the plan. Executive leaders become invested and supportive, leading to the formation of connections between safety trainer teams and executive leadership.

## **The Core Curriculum**

The core curriculum was designed using adult education methods (described below) with specification for health care settings, to particularly accommodate the needs of the first three of the six steps in the educational impact framework described earlier (Figure 2). Also, as discussed above, the core curriculum prepares safety trainers and their executive leaders for the last three of the six steps.

Structurally, the core curriculum is divided into four plenary sessions, which are delivered in lecture settings, and 12 content modules (Table 1), which are arranged as small group settings in which a safe, active learning environment can be created. Three additional modules are devoted to planning and practicing delivery of the core curriculum to end-learners. The agenda follows adult learning principles, which call for allowing the brain to rest after active learning. Accordingly, each plenary or modular unit of the curriculum is designed to be no longer than 45 minutes.

The first set of plenary and module units cover fundamental safety science and patient-centered care material, such as systems thinking, human factors theory, and teamwork. A middle group of plenary and modular units progresses to specific areas in which practical approaches to improvement are established, such as hand washing or rapid response teams. The final set of units is concerned with the implementation of PSEP teaching and safety improvement projects in the safety trainers’ institutions.

The Core Curriculum is provided in two forms. The *PSEP Participant’s Handbook*, designed for end-learners, contains only the plenary and modular content of patient safety. The *PSEP Safety Trainer’s Guide* contains all the content of the *Participant’s Handbook*, and it provides guidance and comprehensive materials on how to teach each portion of the curriculum and how to mentor implementation of the integrated toolkit resources.

The curriculum is an accordion curriculum; it can be taught in expanded or contracted form. It is provided in modular form, so that units can be taught as a free-standing 45-minute unit or in a workshop-like series of sessions. All modules contain a section on how a trainer can evaluate the impact of their PSEP teaching on end-learner knowledge and skills and benchmarks for desired behaviors, patient outcomes, and institutional policy. The PSEP toolkit compendium and a glossary of terms are integrated as resources. Each unit also has some essential heuristic features in common, as described in the sections below on each educational step.

**Generating attitude change.** The objective of the plenary sessions is to motivate a change in disposition and/or transmit information that is needed as background or preparatory material. “Become a PSEP Safety Trainer” courses are structured to start each course day with a plenary session that is designed to bring about a change in participants’ attitudes about or engagement in safety work.

**Conveying knowledge.** Every module uses “trigger tapes” to depict a vignette that participants will recognize as a familiar situation that needs a solution and is designed to trigger a teachable moment. In keeping with adult learning literature among clinicians, these trigger tapes are designed to create the need-to-know sense among participants.

Modules are used to convey knowledge, with an emphasis on content that is needed to effect practice change. Accordingly, each module provides the end-learner with two to five key learning points, which is all that typically can be retained in an hour, according to adult learning theory. PowerPoint® slides crisply reinforce this small number of key points. Language is accessible but balanced with the need to use enough discipline-specific jargon to allow participants to identify and trust the authority of the material.

**Skill building.** Each module suggests options for interactive exercises, such as virtual patient exercises and role-plays, which enable participants to practice skills. However, skills must eventually be practiced and refined in the clinical setting. The toolkit implementation feature of the core curriculum is designed to help foster skills development. The PSEP’s ability to train safety trainers to be quality mentors who are well supported in the workplace is another key feature.

## Teaching Methods

Adult learning is the bedrock of the PSEP. To be effective, it requires familiarity with a suite of teaching methods. During the “Become a PSEP Safety Trainer” course, participants are coached in core methods and when to use them, depending on the subject matter, setting, and teaching abilities. The methods we use in the PSEP include interactive lectures, small group learning, and role play. We also include instruction on how to teach and implement projects.

During the “Become a PSEP Safety Trainer” course, participants deepen their understanding of the different methods and what fits best with what content. Safety trainers are also informed about teaching styles and receive analytic feedback on their own strengths and weaknesses in using the different teaching methods. With some preparation, and using the PSEP *Safety Trainers’ Guide* as a resource, safety trainers should be able to present all core curriculum modules. Practice helps, and safety trainers are reminded to continue practicing until they are comfortable enough to teach a group of end-learners.

Adult learning literature holds that any learning must be relevant to end-learners’ needs. Accordingly, safety trainers are asked to conduct a needs assessment in order to select or refine their teaching goals. Toolkits for conducting a needs assessment are provided.

## Methods for Practice Change

As discussed earlier, a principle PSEP strategy for achieving change in skills, behaviors, and practice norms is training in how to use toolkits for patient safety projects. Toolkits are provided in areas such as:

- Improved teamwork.
- Communication techniques.
- Assessing an institutions safety needs.
- Hand washing.
- Medication safety.

Methods for developing patient safety improvement projects are also taught and include:

- The plan-do-study-act improvement method
- Failure modes and effects analysis.
- The “breakthrough technique.”
- Root cause analysis.
- Clinical practice improvement methodology.
- Implementing a guideline.
- Applying human factors engineering principles.

Although a PSEP toolkit resource has been compiled to assist educators and health care professionals in delivering the PSEP program in their workplaces, few of the tools have been rigorously validated. We define a tool as any Web-based resource (e.g., guideline, checklist, Web site, database, report, fact sheet, guide, outcome-focused quality improvement initiative, “how-to” directive, or other mechanism) designed to help health care teams, health professionals, and health administrators implement a patient safety activity or lead an organization toward a safety culture.

A surge in quality measures in health care has generally been in processes of care and quality that apply to small groups of patients in highly contextualized environments. Encouraging health professionals to measure care delivery processes has been a necessary and important step in teaching the importance of measurement in patient safety. These tools provide guidance on approach, understanding, and implementation of a specified patient safety area or activity. At the same time, more evidence is needed on which improvement methods work.

Balancing these features of the field, we have included more than 100 toolkits (freely available on the Internet) and at the same time, we join others, who are disappointed in our ability to track much progress to date in making health care safer and call for the establishment of measures that are practical, valid, and capable of providing relevant findings.<sup>16</sup> This resource of toolkits will be updated continually to reflect progress.

## Methods for Evaluation

It is anticipated that the rollout and implementation of the PSEP to end-learners will be measured for the impact of the teaching sessions, so that trainers, providers, and managers can assess the extent of the improvements brought to patient care at their institution.

The core curriculum provides pre- and post-test questions that evaluate attitudes, knowledge, and some skills, as well as an evaluation of the “Become a PSEP Safety Trainer” course. Measures of some skills, behaviors, outcomes, and standards are provided as part of the “resources” section of the modules and, when possible, as part of the PSEP toolkits. Safety trainers decide whether to evaluate the impact of the educational rollout separately or together with the practice improvement project. PSEP aims to create a data bank of de-identified project improvement data.

## PSEP Processes for Design and Development

Taken as a whole, the method used for developing PSEP fits nicely into what has been articulated as the ADDIE method, a guide for the development of educational programming.<sup>17</sup> ADDIE is an acronym that stands for:

**Aalysis:** Our first tasks included analyzing existing patient safety knowledge in the health care workforce and the learning needs of the targeted end-learners. Existing patient safety curricula and competencies were reviewed and included recommendations of think tanks and oversight groups, with the final selection of the Australian National Patient Safety Education Framework.<sup>11</sup> The second important task was to analyze delivery methods, with final agreement on the highly successful EPEC model. A core team of patient safety experts and medical educators, guided by a blue-ribbon governing council and a highly qualified expert advisory group, finalized the learning objectives and outcomes for each of the instructional units.

**Development:** The core team met regularly and worked together to develop the curriculum and resources.

**Design:** PSEP has an innovative design that blends and builds on two strong approaches to program and curriculum design: the EPEC model and the Australian National Patient Safety Education Framework.<sup>11</sup> Further, it is designed as a system for education that is tailored to its target population(s) and settings.

**Implementation:** The train-the-trainer method underpins PSEP. International collaboration ensures opportunities for wide dissemination. The train-the-trainer method relies on the axiom (also underpinning the tipping-point principle) that broad social change occurs when one leader’s thoughts filter down to a few opinion leaders and then to a large number of people who normalize the knowledge and practices.

**Evaluation:** Built into the program are evaluation tools relevant to the curriculum, learners’ knowledge outcomes, teachers, teaching methods, and instructional design. Furthermore, toolkits are included to help measure practices and patient outcomes.

## Conclusion

Patient safety needs a boost. Progress has been slow. Implementation of patient safety practices has fallen short of expectations, despite the existence of good educational materials. Not only does patient safety face the same challenges as other efforts to translate education into practice, patient safety knowledge is derived in ways that are characteristically different from traditional clinical health services research. A new emphasis on types of learning and change is necessary.

The PSEP strategy is to involve the maximum number of people in an organization until a tipping point is reached, and patient safety practices are integrated into the culture. Instituting new norms of clinical care requires that a community of practice adopt the new behaviors. PSEP is designed to use optimal methods to widely disseminate and integrate new knowledge and skills into everyday practice.

This safety trainer-based program provides a conceptual framework for approaching patient safety and a step-by-step guide to patient safety learning areas and coaching techniques, showing how to apply workplace practice change. The PSEP approach of linking to other educators also allows for the important step of connecting with other programs that are working to change core delivery systems.

## Acknowledgments

Funding for this project was generously provided by the Zell Center for Risk Research; The Commonwealth Fund; the California Health Care Foundation; and the Jewish Healthcare Foundation.

We thank Alex Sanger, Mary Jarzebowski, Andrew Harris, Jonathan Masin-Peters, Maia Feigon, Marci O'Malley, and other staff members at the Buehler Center on Aging, Health, and Society, without whose extraordinary work we would not have been able to get to the point we have.

## Author Affiliations

Buehler Center on Aging, Health & Society, Feinberg School of Medicine, Northwestern University, Chicago, IL (Dr. Emanuel and Dr. Lau); Faculty of Medicine, University of Sydney, Sydney, Australia (Dr. Walton); Partnership for Patient Safety, Chicago, IL (Mr. Hatlie); Centre for Innovation in Professional Health Education and Research (CIPHER), University of Sydney, Sydney, Australia (Dr. Shaw); Kellogg School of Management, Northwestern University, Evanston, IL (Dr. Shalowitz); Center for Healthcare Governance, Chicago, IL (Dr. Combes).

*Address correspondence to:* Linda L. Emanuel, MD, PhD, 750 N. Lake Shore Drive, Suite 601, Chicago, IL 60611; e-mail: [l-emanuel@northwestern.edu](mailto:l-emanuel@northwestern.edu).

## References

1. Kohn LT, Corrigan JM, Donaldson MS. To err is human: Building a safer health system. Washington, DC: National Academies Press; 1999.
2. Davis DA, Thomson MA, Oxman AD, et al. Evidence for the effectiveness of CME. A review of 50 randomized controlled trials. JAMA 1992; 268: 1111-1117.
3. Boonyasai R, Windish D, Chakraborti C, et al. Effectiveness of teaching quality improvement to clinicians: A systematic review. JAMA 2007; 298: 1023-1037.
4. Batalden P, Davidoff F. Teaching quality improvement: The devil is in the details. JAMA. 2007; 298: 1059-1061.
5. Wenger EC, Snyder WM. Communities of practice: The organizational frontier. Harv Bus Rev 2000; 78: 139-145.
6. Berwick DM. Broadening the view of evidence-based medicine commentaries. Qual Saf Health Care 2005; 14: 315-316.
7. Leape LL, Berwick DM, Bates DW. What practices will most improve safety? Evidence-based medicine meets patient safety. JAMA 2002; 288: 501-507.
8. Institute of Medicine. Crossing the quality chasm: A new health system for the twenty-first century. Washington, DC: National Academies Press; 2001.
9. Berwick DM. A user's manual for the IOM's "Quality Chasm" report. Health Aff 2002; 21: 80-90.
10. Emanuel L. Changing the norms of palliative care by changing the norms of education. In: Bruera E, Von Gunten C, et al. Palliative medicine. London: Hodder Arnold.; 2006.
11. Walton M, Shaw T, Barnet S, et al. Developing a national patient safety education framework for Australia. Qual Saf Health Care 2006; 15: 437-442.
12. Institute for Healthcare Improvement. IMPACT: Improvement/action site. Available at: [www.im.org/AAIM/Pubs/Insight/Summer2005/page10.pdf](http://www.im.org/AAIM/Pubs/Insight/Summer2005/page10.pdf). Accessed February 20, 2008.
13. Jewish Healthcare Foundation. New prescriptions: Achieving healthy outcomes. Available at: [www.jhf.org/new-prescriptions/](http://www.jhf.org/new-prescriptions/). Accessed February 10, 2008.
14. Dixon J. Evaluation criteria in studies of continuing education in the health professions: A critical review and a suggested strategy. Eval Health Prof 1978; 1: 47-65.
15. Davis D, O'Brien MA, Freemantle N, et al. Impact of formal continuing medical education: Do conferences, workshops, rounds, and other traditional continuing education activities change physician behavior or health care outcomes? JAMA 1999; 282: 867-874.
16. Pronovost P, Miller M, Wachter R. Tracking progress in patient safety: An elusive target. JAMA 2006; 296: 696-699.
17. Battles JB. Improving patient safety by instructional systems design. Qual Saf Health Care 2006; 15: 25-29.