

The Joint Commission

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Improvement from  
Front Office to Front Line

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Photo Credit: John Russell, courtesy Vanderbilt University Medical Center.



***“Peer professionals will readily engage in sharing observations with colleagues when supported by strong leadership commitment and the appropriate infrastructure.”***

***—Using Coworker Observations to Promote Accountability for Disrespectful and Unsafe Behaviors by Physicians and Advanced Practice Professionals (p. 157)***



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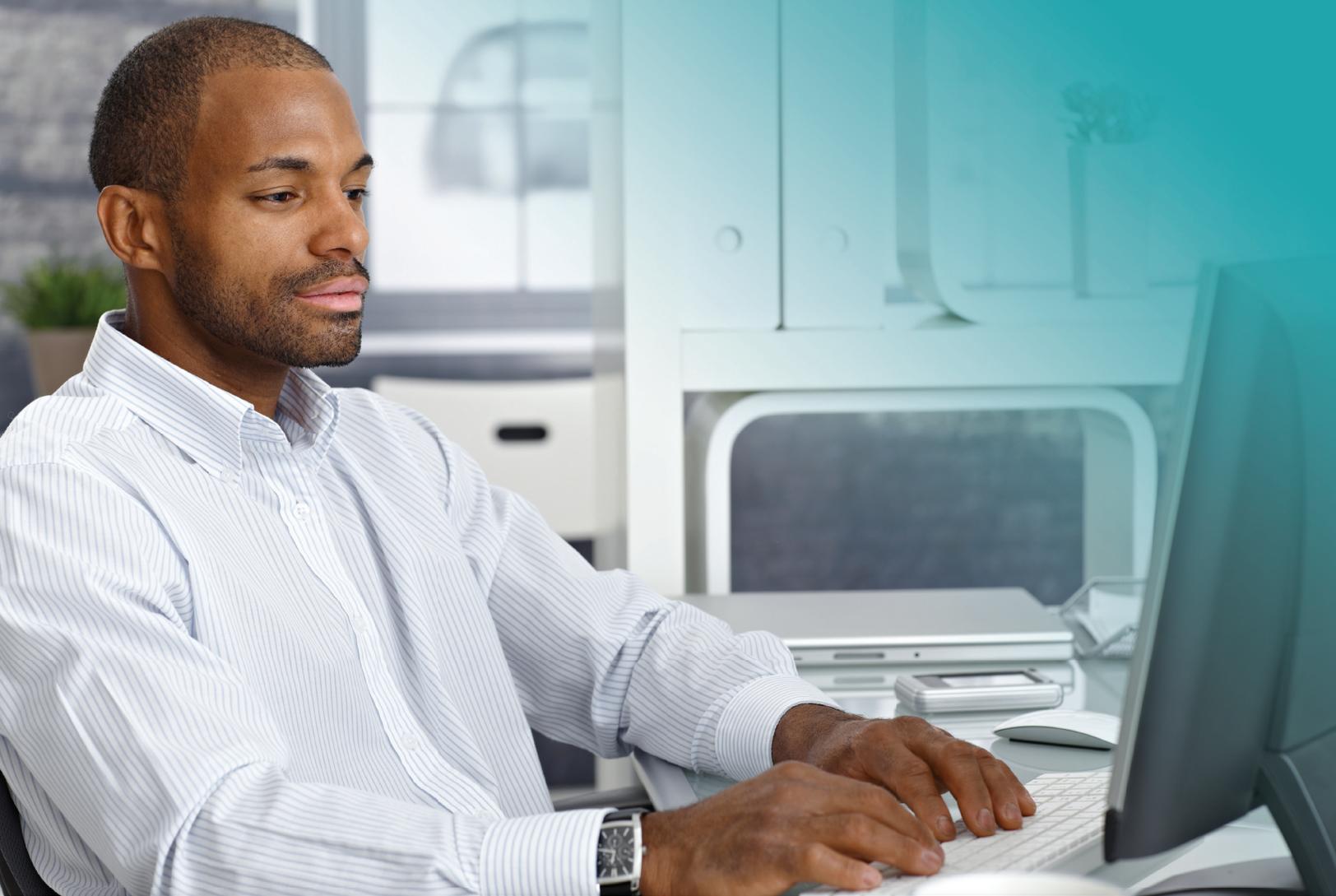
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Health care team members are well positioned to observe disrespectful and unsafe conduct—behaviors known to undermine team function. Vanderbilt University Medical Center (Nashville, Tennessee) assessed the feasibility of its Co-Worker Observation Reporting System<sup>SM</sup> (CORS<sup>SM</sup>) for addressing coworkers' reported concerns. Three percent of the medical staff were associated with a pattern of CORS reports, and 71% of recipients of pattern-related interventions were not named in any subsequent reports in a one-year follow-up period. Systematic monitoring of documented coworker observations about unprofessional conduct and sharing that information with involved professionals are feasible.

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*Cover photo:* A "cup of coffee conversation," as described on page 152, in which a designated trained messenger shares a report with a professional.

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An institutional collaborative improvement effort to develop and implement medication reconciliation processes was implemented across Brigham and Women's Hospital's (Boston) 148 ambulatory specialty practices, which included 14 primary care practices. After the collaborative was completed, for the percentage of active medications prescribed by that provider that were reconciled, specialty practices improved from 71% to 90%; primary care practice performance improved from 2% to 91%.

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## Safety Culture

# Breaking Through Dangerous Silence to Tap an Organization's Richest Source of Information: Its Own Staff

Richard C. Boothman, JD

No research group has so patiently, methodically, and relentlessly pursued peer review like the Vanderbilt University Medical Center (VUMC) research team led by Gerald Hickson, the senior author of the article, "Using Coworker Observations to Promote Accountability for Disrespectful and Unsafe Behaviors by Physicians and Advanced Practice Professionals,"<sup>1</sup> which appears in this issue of *The Joint Commission Journal on Quality and Patient Safety*. More than 25 years ago, Hickson and colleagues began to study the factors that prompted patients to file malpractice claims.<sup>2,3</sup> Since, the team has relentlessly examined the human side of patient injury/medical malpractice—remarkable when one considers the fact that their work straddled a considerable period of time in which it was politically correct to insist on a "blameless culture" and to emphasize systems not people in the search for root causes of avoidable patient injury.<sup>4-6</sup>

As Wachter has pointed out, "As with many aspects of trying to improve patient safety, finding the appropriate balance between a systems approach and individual accountability is the most challenging aspect of the RCA [root cause analysis] process."<sup>7</sup>(p. 245) Many persons believe, as I do, that the pendulum had swung too far in those days at the expense of individual accountability. Human beings are of course behind every operational aspect of health care—and are responsible for the creation and maintenance of dangerous cultures, dangerous systems, and, worse, for harboring dangerous individual caregivers.<sup>8,9</sup>

In this new article,<sup>1</sup> VUMC researchers report their latest advancement in peer review, the Co-Worker Observation Reporting System<sup>SM</sup> (CORS<sup>SM</sup>). This system provides a practical road map to unlocking one of the most frustrating challenges: How to tap the rich-but-elusive body of information on quality and patient safety that exists in every health care organization. With its nuts-and-bolts approach, much of which is built on earlier foundational work,<sup>10,11</sup> the VUMC researchers show that it is feasible for any organization to tap that resource within arms' reach of every patient care organization: its own staff.

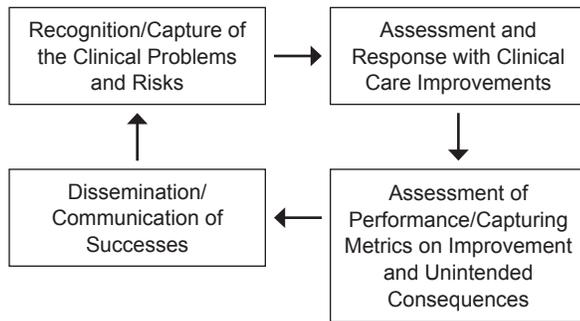
It seems axiomatic that improvement generally must follow a simple, logical flow. As depicted in Figure 1 (page 148), problems must be first recognized and captured and, next, analyzed

for root causes, with improvements then designed to address them. Those "fixes" must be studied for both effectiveness and to guard against unintended consequences, and, finally, the experience must be reported within the organization to encourage staff to observe the positive tangible consequences of raising issues in the first place. Satisfying the algorithm should produce a self-perpetuating spiral that feeds a culture of continual improvement.

Sadly, producing actual evidence of caregivers engaged in dangerous behavior has been largely the result of a lagging indicator too reliant on a pattern of harm—how many complications does it take before we finally identify a caregiver whose clinical behavior is problematic? How much staff turnover will we tolerate before we acknowledge an individual's abusive behavior as a root cause? How many injuries do we tally until we realize that a process or a colleague may be to blame? Want to know which physician to avoid? Ask a nurse. Want to know who is dangerous in an operating room? Don't ask another surgeon, ask an anesthesiologist. We've known for decades that our own staff goes home every night holding close the worst-kept secrets—secrets so valuable to that all-important first step of recognizing the problem—and precious few are willing to talk.

Caregivers engaged in dangerous behaviors or who work with personal or clinical competency challenges are never a secret to those with whom they work. The conspiracy of silence, however, is real.<sup>12-14</sup> As Wachter has stated, "[I]t is undeniable that doctors and hospitals tend to protect their own, sometimes at the expense of patients."<sup>7</sup>(p. 343) In my days as a trial lawyer representing hospitals, I rarely investigated a claim of patient injury without other staff members confidentially disclosing observations such as "It was only a matter of time before someone fell through the cracks" or "Every member of this department has had concerns about her for years." Several years ago, I looked into a birth-trauma case for a client—an infant born with global brain damage, the result of blatant misreading of a fetal-monitor tracing. In interviewing the department chair, after noting that the error seemed pretty basic, I asked if there were other concerns about the particular caregiver. The response was chilling: "You don't know the half of it." Yet, in that

### Flow for Capturing, Prioritizing, and Addressing Safety Concerns



**Figure 1.** A functional flow for capturing, prioritizing, and addressing safety concerns is shown. Reprinted with permission from Boothman RC, Imhoff SJ, Campbell DA. *Nurturing a culture of patient safety and achieving lower malpractice risk through disclosure: Lessons learned and future directions.* *Front Health Serv Manage.* 2012;28(3):13–28.

staff member in question’s tenure of years, no one had ever filed an incident report.

I seriously doubt that there exists an experienced health care professional anywhere who has not had concerns about the behavior or competence of a colleague, but unlocking that information has been notoriously problematic, even taboo. There are multiple reasons for this of course. Staff members worry about retribution, fears both real and exaggerated. There is a general, cultural aversion to anything adversarial: as Wachter observed, “[M]any physicians understandably will do backflips to avoid confrontation.”<sup>7(p. 344)</sup> Many staff members simply do not want to be responsible for the disciplinary consequences for their colleagues. Moreover, an overarching “There, but for the grace of God, go I” dynamic impedes identification of problematic staff.<sup>15,16</sup>

With the advent of electronic reporting and the concomitant push to collect data, some hospitals and health systems have seen dramatic increases in the number of incidents reported. In 2015 alone, the University of Michigan Health System logged nearly 30,000 incident reports, the vast majority of which did not name any staff, and precious few described dangerous behavior or individual competence concerns. In their article,<sup>1</sup> the authors describe concrete steps that organizations truly interested in advancing patient safety can take to tap their own staff for information, as well as offering guidance as to how to use it carefully and thoughtfully. Encouragingly, they report success with patient complaint monitoring and intervention programs at 135 collaborating medical centers and medical groups. As has been well demonstrated, better patient safety directly correlates with higher staff satisfaction, fewer employee injuries, and greater

productivity overall.<sup>17,18</sup> This positive spiral can only serve everyone involved in delivering patient care—and their patients. Hopefully, the VUMC group will next describe how organizations that courageously followed their lead are demonstrating that their staff’s threshold tolerance for disrespectful or dangerous behavior and substandard clinical competence has rapidly changed in service to improved safety as reporting-associated-with-positive-change becomes more the norm. **J**

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## Safety Culture

# Using Coworker Observations to Promote Accountability for Disrespectful and Unsafe Behaviors by Physicians and Advanced Practice Professionals

*Lynn E. Webb, PhD; Roger R. Dmochowski, MD; Ilene N. Moore, MD, JD; James W. Pichert, PhD; Thomas F. Catron, PhD; Michelle Troyer, BSc; William Martinez, MD, MS; William O. Cooper, MD, MPH; Gerald B. Hickson, MD*

A case of noncompliance with a perioperative bundle, as summarized in the following scenario, illustrates the persistence of disrespectful and unsafe behaviors by physicians and advanced practice professionals (APPs)—and their coworkers' willingness to report:

A medical center's Quality and Safety Department observes higher than expected postoperative infection rates for a surgical specialty. An interprofessional team is charged to create a plan to address these infection rates. The team reviews evidence-based best practices and develops a plan based on input from all professional groups whose work might be affected by the changes. The planning team gains leaders' approval and implements a resulting "bundle" of perioperative procedures to promote standardization and safety. One bundle element includes changing gown and gloves at key points during surgery. Following implementation, a nurse submits a report through the institution's occurrence reporting system: "Dr. XX was performing [a procedure covered by the bundle]. At the appropriate point in surgery, a team member reminded Dr. XX, 'it's time to regown and [re]glove.' Dr. XX replied, 'I don't agree. It's not necessary, and I'm not stopping now.' Dr. XX continued with the procedure."

Achieving safe and high-quality medical care requires well-designed systems and well-functioning teams. Efforts to improve outcomes by establishing best practices and designing care protocols<sup>1-7</sup> have achieved a measure of success but not to the degree anticipated.<sup>8-15</sup> One explanation is that efforts to improve systems and implement best practices require leaders to hold staff accountable. For example, hand hygiene's value is well established, but getting people to comply requires substantial effort.<sup>16</sup>

Relationships between medical malpractice litigation and patient concerns about their health care professionals' disrespectful and unsafe behavior are well established,<sup>17-23</sup> and we and our colleagues at Vanderbilt University Medical Center (VUMC; Nashville, Tennessee) have substantial experience<sup>20,21,24-26</sup> with established methods for using peer feedback to promote physician behavior change.<sup>27-32</sup> Our process for sharing aggregated patient complaints<sup>24</sup> has been successfully adopted and fully implemented with excellent fidelity by more than 135 collaborat-

## Article-at-a-Glance

**Background:** Health care team members are well positioned to observe disrespectful and unsafe conduct—behaviors known to undermine team function. Based on experience in sharing patient complaints with physicians who subsequently achieved decreased complaints and malpractice risk, Vanderbilt University Medical Center developed and assessed the feasibility of the Co-Worker Observation Reporting System<sup>SM</sup> (CORS<sup>SM</sup>) for addressing coworkers' reported concerns.

**Methods:** VUMC leaders used a "Project Bundle" readiness assessment, which entailed identification and development of key people, organizational supports, and systems. Methods involved gaining leadership buy-in, recruiting and training key individuals, aligning the project with organizational values and policies, promoting reporting, monitoring reports, and employing a tiered intervention process to address reported coworker concerns.

**Results:** Peer messengers shared coworker reports with the physicians and advanced practice professionals associated with at least one report 84% of the time. Since CORS inception, 3% of the medical staff was associated with a pattern of CORS reports, and 71% of recipients of pattern-related interventions were not named in any subsequent reports in a one-year follow-up period.

**Conclusions:** Systematic monitoring of documented coworker observations about unprofessional conduct and sharing that information with involved professionals are feasible. Feasibility requires organizationwide implementation; coworkers willing and able to share respectful, nonjudgmental, timely feedback designed initially to encourage self-reflection; and leadership committed to be more directive if needed. Follow-up surveillance indicates that the majority of professionals "self-regulate" after receiving CORS data.

ing medical centers and medical groups. Patients' perceptions are important and valuable, but so are those of colleagues and coworkers.<sup>33-36</sup> Without addressing behaviors and performance that can undermine team function, improved systems alone do not optimize safety. Unprofessional behaviors and performance (for example, ambiguous and/or disrespectful communication, not answering pages, refusing to respect adopted best practices such as use of the surgical checklist) interfere with (disrupt) others' work and adversely affect teamwork and clinical outcomes.<sup>33,34,37-44</sup> Such disrespectful conduct impairs or destroys trust, contributing to withdrawal and diminished performance, erosion of joy and meaning in one's work, and potentially resulting in employee burnout and retention issues.<sup>45-48</sup> Doctor XX's refusal to regown and reglove illustrates how projects may fail to achieve intended goals and be unsustainable if organizations are not prepared to quickly and fairly address what appears to be noncompliance with an established plan or best practice.

VUMC sought to build on its experience in obtaining, aggregating and sharing patients' concerns by developing an analogous process to further promote accountability by capturing and sharing coworker concerns, a "Co-Worker Observation Reporting System<sup>SM</sup>" ("CORS<sup>SM</sup>"). The CORS project's aims are to encourage collegial respect and accountability and to couple safe, contemporaneous reporting with consistent, timely delivery of the captured stories. In this article, we discuss our experience in assessing the feasibility, monitoring the fidelity, and examining both the reproducibility of CORS-supported interventions and unintended consequences. We present data on the frequency of coworker reports associated with medical group members and first-year results of the fully implemented CORS program, as well as lessons learned. Equally important for VUMC and other health care organizations considering ways to share coworker concerns, we discuss the extensive prelaunch efforts employed to increase the likelihood of CORS acceptance and impact.

## Methods

### SETTING

VUMC encompasses three hospitals, plus primary care and specialty clinics. The hospitals (Vanderbilt University, Monroe Carell Jr. Children's, and Vanderbilt Psychiatric) include 1,025 beds. For fiscal year 2014 (July 2013–June 2014), VUMC reported 59,000 admissions and 1.8 million ambulatory patient visits provided by 1,352 physicians (excluding residents) and 674 APPs. APPs include but are not limited to, nurse practitioners, certified nurse midwives, and physician assistants. All professionals are potential subjects of a CORS report.

### CO-WORKER OBSERVATION REPORTING SYSTEM PROJECT PLANNING: THE PROJECT BUNDLE

The CORS project was not undertaken lightly, as coworker reporting is hardly a given for any medical center, and relatively few such initiatives have been reported.<sup>44,49,50</sup> Therefore, from late 2007 through 2011, a project team composed of Quality, Safety and Risk Prevention (QSRP) [R.R.D., G.B.H.] and Center for Patient and Professional Advocacy (CPPA) [L.E.W., T.F.C., W.O.C.] leaders met to develop the CORS concept and draft a process to address coworker concerns, adapting and drawing from CPPA's patient complaint experience.<sup>20,21,24</sup> The iterative nature of the CORS program efforts and the length of time required to affect culture change are reflected in Sidebar 1 (pages 151–152).

VUMC leaders utilized a prelaunch "Project Bundle"<sup>51,52</sup> to guide development efforts and assessments of launch readiness (Table 1, page 153). The bundle organizes three domains of factors that can influence the success of proposed organizational initiatives: Key People, Organizational Supports, and Systems. As first described,<sup>51</sup> the Project Bundle reminds program developers of essential readiness-related elements that sometimes may be overlooked or forgotten. It also poses questions that developers can use to assess their project's launch readiness. The questions prompt developers to consider—and, as appropriate, rate readiness or progress in ensuring organizational strengths, commitments, and the robustness of each element. For example, questions guide consideration of key issues, such as how one assesses leadership commitment to the project, project champion and implementation team qualifications, alignment with organizational goals and incentives, availability of critical resources, milestones for internal reporting, training needs, and measures and metrics for tracking progress.<sup>52</sup> Actions undertaken to ensure adequacy of VUMC infrastructure elements are described in Table 2 (page 154); the VUMC Credo is provided in Sidebar 2 (page 155).

### INTERVENTION PROCESS

The CORS process (Figure 1, page 155) begins when a coworker submits a report describing a professional colleague's conduct that the coworker perceives to be unsafe or disrespectful via VUMC's online occurrence reporting system. Alternatively, reports may be made by telephoning a VUMC risk manager who creates the online report. All reports are reviewed within two hours by a risk manager both for potential liability and for allegations of egregious or unlawful conduct. If egregious or unlawful conduct is alleged, the report is referred to officials in charge of investigating and taking action in response

**Sidebar 1. Using Coworker Observations to Promote Accountability for Disrespectful and Unsafe Behaviors by Physicians and Advanced Practice Professionals**

**Co-Worker Observation Reporting System<sup>SM</sup> (CORS<sup>SM</sup>) Program Planning Events Procedures Time Line**

The Project Bundle helps planners exercise a discipline for identifying readiness of plan elements prior to launch and to problem-solve how to remedy deficiencies. The Project Bundle can be conceptualized as three clusters of related elements that support implementation tasks: People, Organization, and Systems. Gaps within any cluster may pose barriers to success.<sup>1,2</sup> The Plan-Do-Study-Act (PDSA)<sup>3</sup> process was used to assess and strengthen each cluster. High-priority projects require substantial planning and development time, and this project was no different, illustrated by the project development time line below. Vanderbilt University Medical Center (VUMC) and Center for Patient and Professional Advocacy (CPPA) leadership evaluated and addressed program-specific elements considered critical to adopting and maximizing CORS program benefits. Face-to-face meetings,

frequent conference calls, information-gathering sessions, and discussions with all levels of leadership and participants were used to ensure sufficient presence of each element prior to launching the CORS program.

**References**

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**Program Planning Events and Time Line, February 2007–January 2015**

	<b>Planning Events</b>	<b>Corresponding Project Bundle Element(s)</b>
February 2007	New Occurrence Reporting software implemented by Risk Management	1. Leadership commitment 7. Risk management and information technology (IT) resources 8. Measurement tool
March 2009–June 2011	Review & revise relevant policies, examine alignment of process with organizational goals, recruit and train champions and initial four-member implementation team, adapt Promoting Professionalism Pyramid model based on PDSA cycles with initial bundle elements	4. Goals, values 5. Policy review 2. Initial champion recruited 3. Initial implementation team 6. Intervention model 10. Initial training
July 2011–August 2013	Executive Director of Risk Prevention distributes single reports of unprofessional conduct to one of four designated VUMC leaders to share with an associated physician. Database of coworker reports grows.	2. Champions 3. Implementation team 8. Ongoing measurement 9. Review process assessed and revised
February 2013	Senior Executive Vice President (VP) for Quality, Safety and Risk Prevention and VUMC leaders discuss volume of professionalism reports and consider whether sharing is important, and if so, who should share, and what number of reports would signify an apparent pattern	1. Leadership commitment 4. Goals, values 9. Review process endorsed 6. Intervention model adopted
February–August 2013	Senior Executive VP for QSRP presents information about initiative for sharing reports of unprofessional conduct to expanded leader groups	1. Leadership commitment 4. Goals, values
March–June 2013	CPPA team for managing program logistics and production needs assembled and trained	7. Resources for production/ implementation
June 2013	Risk Management commences transferring reports associated with unprofessional conduct to CPPA	7. Risk management and IT resources 8. Measurement tool
July 2013	CPPA implementation team performs Project Bundle gap analysis, develops framework for CORS coding, aggregating, analyzing, distributing, and sharing single and aggregated reports	6. Intervention model implemented 9. Process/procedures developed and assessed
July 2013	Department-based quality and patient safety officers begin “Professional Accountability” presentations to faculty	2, 3. Expansion of champions and implementation team 10. Leader and implementation team training
October 2013	Senior Executive VP for QSRP presents cumulative report volume data to clinical leaders and uses an electronic audience response system to seek consensus on process for sharing reports, identifying patterns, and implementing graduated interventions	1. Leadership commitment 8. Measurement yields compelling comparative data 9. Review process
November 2013	Initial professionals identified with three or more CORS reports and eligible for “Awareness” interventions; CPPA prepares intervention folders, and department chairs conduct interventions	2, 3. Engaged champions and implementation team 6. Intervention model applied 7. Resources applied 8. Comparative data created

(continued on page 152)

**Sidebar 1. Using Coworker Observations to Promote Accountability for Disrespectful and Unsafe Behaviors by Physicians and Advanced Practice Professionals (continued)**

**Program Planning Events and Time Line, February 2007–January 2015**

	Planning Events	Corresponding Project Bundle Element(s)
January 2014	Update on the CORS project to VUMC senior leaders	1. Sustain leadership commitment 9. Review process
August 2014	CPPA assumes responsibility for tracking delivery and sharing of single reports	3, 7. Committed production as CORS program team resource 8. Data tracking
December 2014	Follow-up analysis for report recipients 12 months postintervention	9. Process for reviewing CORS data
January 2015	Trained messengers expand to 119 through extensive training program	3, 10. Implementation team expansion and training

to such reports. All CORS reports are uploaded to CPPA for coding and analysis.

The database identifies how many previous CORS reports, if any, have indicated unsafe or disrespectful conduct associated with the professional, and all reports are reviewed by CPPA's operational leader for appropriate and timely next steps. Specifically, in collaboration with CORS faculty champions, previously trained departmental "messengers" (other physicians or APPs) are identified to receive first and second reports associated with a named professional. Third and subsequent reports are compiled for delivery by designated authorities.

**Single-Report Sharing.** The designated peer "messenger" receives the report within one business day of its online submission and is asked to review the report and share it with the associated professional. These "cup of coffee conversations"<sup>25,26,53–56</sup> are intended to be private (whenever possible, in the clinician's office or work space), timely (within five working days of receipt), respectful, and collegial. When sharing with a colleague that a coworker had perceived behavior or performance inconsistent with professional standards, messengers were trained to remain nonjudgmental, acknowledge other potential perspectives, and ask the professional to consider the content and self-reflect. The goal was to offer an opportunity for "self-regulation." Messengers were asked to return a secure online survey to confirm whether the report was shared and, if not, the rationale for not sharing.

**Sharing Multiple Reports—Awareness Interventions (Level 1).** On the basis of evidence that peer feedback changes physicians' behavior,<sup>24,25,27–30</sup> the developers expected that although most professionals would respond positively, in some cases reports would continue to accumulate. Therefore, a second process aggregated CORS reports to identify individuals with "apparent" patterns. Department chairs and nurse leaders voted and agreed on the criteria for escalating to "Awareness" (Level 1)

feedback (Figure 2, page 156) and the nonpunitive aim for recipients to pause, reflect, and self-regulate. CORS data folders were prepared to support data delivery. The folders contained both individualized and peer-based comparative report data (Sidebar 3, page 156).

After reviewing its content, the relevant messenger (Associate Nursing Officer for Advanced Practice Professionals, department chair, or their delegate) met to share the folder with the professional at the professional's preferred location. The Senior Associate Dean for Faculty Affairs also received a copy. The department chair, unit director, nursing leader, and Senior Associate Dean for Faculty Affairs reviewed any subsequent CORS reports linked to the professional.

Messengers must be prepared to deliver a coworker report, handle recipient responses, and conclude the brief session with some encouragement; one such conversation is outlined in the following:

Following receipt of the report about the refusal to regown and reglove, a messenger met with Dr. XX within 24 hours and shared the reporter's perception that a safety protocol was disregarded. Dr. XX replied by saying he felt the literature on impacts of gown/glove changes was equivocal. The messenger agreed that the evidence for each bundle element may vary, but referred to the consensus-building process that led to agreement to employ them all. The messenger said he regarded Dr. XX as a key contributor to the department and a model for others, expressed confidence that Dr. XX would reflect on why the concern was reported, and asked him to reconsider his position on regowning and regloving in support of what the messenger knew was Dr. XX's commitment to his patients.

**Advanced Interventions: Level 2 and Beyond.** Professionals identified in new coworker reports following Level 1 interventions ("nonresponders"), are escalated by VUMC policy to "Guided Intervention by Authority" (Level 2) (see Figure 2), which include written plans designed to address the behaviors or performance. The plan, for example, might direct a professional to seek a medical and behavioral health evaluation before

**Table 1. Co-Worker Observation Reporting System<sup>SM</sup> (CORS<sup>SM</sup>) Characteristics Associated with Successful Initiatives for Improving Safety and Quality<sup>1</sup>**

Does this project have sufficient levels* of	
People	1. <b>Committed leadership</b> prepared to address reports of behaviors that undermine a culture of safety?
	2. <b>Project champion(s)</b> entrusted with key data, and have a history of persevering and inspiring others to overcome barriers to achieving aims?
	3. <b>An engaged implementation team</b> of leaders with clinical practices similar to those of recipient professionals, and who are willing to undergo a half day of training, able to communicate potentially distressing information nonjudgmentally and confidentially?
Organization	4. <b>Clearly articulated organizational values and goals</b> (mission and values statements, and professional conduct policies) that are aligned with program intent?
	5. <b>Enforceable policies</b> that address expectations for professional conduct and professional accountability?
	6. <b>Model for tiered interventions</b> (Figure 2, page 156) for sharing coworker concerns and addressing patterns?
	7. <b>Resources</b> appropriate and sufficient to create, improve, and sustain best-practice processes for collecting, reviewing, aggregating, and sharing concerns (for example, software, personnel, training), plus wellness and assistance for both the professionals who are the subjects of reports and those who are witnesses and victims of reported events?
Systems	8. <b>Measurement and surveillance tools</b> for capturing, reviewing, coding, analyzing, and tracking data?
	9. <b>Reliable processes for reviewing and delivering data</b> , ensuring including timely review and delivery, individualized and peer-based comparative data analyses, and trending?
	10. <b>Multilevel training</b> for leaders and other professionals, including unprofessional behaviors' impact on safety, evidence base, skills practice and feedback, and how to implement, manage, and sustain?
* Organized by domain of factors that can influence the success of proposed organizational initiatives: Key People, Organizational Supports, and Systems. Perfection is not required, but willingness and commitment to improve current practices and sustain best practices are essential.	
<b>Reference</b>	
1. Hickson GB, et al. Balancing systems and individual accountability in a safety culture. In <i>From Front Office to Front Line: Essential Issues for Health Care Leaders</i> , 2nd ed. Oak Brook, IL: Joint Commission Resources, 2012, 1–35.	

determining additional actions. Written plans are submitted for approval by the Senior Associate Dean for Faculty Affairs. Making a senior leader aware of concerns from any source permits triangulation of multiple data points. For example, physicians with multiple patient complaints and other concerning data have been diagnosed with and referred for treatment of serious medical illness, cognitive impairment, or psychiatric illness.<sup>24</sup> In other cases, professionals who remain unwilling or unable to make appropriate changes would be referred for possible correc-

tive/disciplinary institutional action (Level 3).<sup>51,53,54</sup>

**DATA COLLECTION AND ANALYSIS**

Data were collected to monitor initial CORS feasibility and fidelity to intended processes. Descriptive statistics are reported for coworker concerns recorded about physicians and APPs since February 2007. Data about other team members are beyond the scope of this article.

In July 2011, the Executive Director of Risk Prevention commenced initial physician-to-physician sharing of individual reports. These pre-CORS-launch experiences served to test the intervention process and delineate the process for distributing reports, types of concerns, and common responses, resulting in continuous refinements during a time of growth in coworker reporting (Figure 3, page 156). Routine report sharing began in September 2011. Program development continued until report-related statistics demonstrated compelling differences between recipients of multiple coworker concerns and those who had few or none.

Beginning in late November 2013 and continuing on a rolling basis, three-year “look-back” aggregated audits were conducted in an attempt to identify professionals with apparent patterns of coworker reports and eligibility for Awareness interventions. Beginning in September 2014, messengers who shared single reports completed an online survey to confirm that the report was delivered or, if not, why.

**Results**

By addressing readiness via the Project Bundle elements, the CORS process launched and continues. Practical lessons learned during implementation are summarized in Table 3 (page 157). In brief, leaders’ commitment was critical, as leaders supported and modeled VUMC goals and values when disrespectful and unsafe behavior were reported. In addition, our tiered intervention process worked and continues to guide intervention-related decisions, processes, and messenger delivery of CORS reports. Fidelity to the intervention process as taught during training is strong. Leaders are continually updated and remain committed to the process of professional accountability embodied by the CORS program. Specific results follow.

**COWORKER REPORTING**

Pre- and post-CORS-introduction trends in coworker reporting were calculated; trend lines were computed using the least squares method (Figure 3). The onset of CORS program interventions appeared to be associated with increases in the numbers and rate of coworker reporting.

**Table 2. Actions and Activities Undertaken During the Co-Worker Observation Reporting System<sup>SM</sup> (CORS<sup>SM</sup>)  
Prelaunch Development\***

	Bundle Element	Actions	Activities
People (Sidebar)	Leadership engagement	Nurtured commitment of executive leaders Facilitated senior leaders' (for example, deans, department chairs) shared ownership	Discussed coworker concerns data and embedded threats to safety in one-to-one meetings Shared proposed steps, solicited and incorporated feedback in group meetings Reviewed aggregate data and defined triggers for each level of the tiered intervention pyramid
	Dedicated project champion	Identified champion	Recruited champions based on reputation for fairness, commitment to confidentiality, and existing clinical practice Developed roles and expectations Identified and trained initial group of peer messengers to share information with professionals
	Implementation team	Identified implementation team members ("messengers")	Created, iteratively tested, and implemented initial process Senior leaders designated selected department/division members to review and deliver individual reports
Organization	Aligned values, policies, goals	Reviewed VUMC stated values, policies, and safety goals	Met with general counsel, risk managers, and human resources to review VUMC Credo (Sidebar 2, page 155), <sup>1</sup> professional conduct policy, and faculty manual to assess need for changes; none were required
	Tiered intervention model	Assessed, modified existing intervention model <sup>2</sup>	Examined the intervention model's applicability to CORS, modified for leadership-defined escalation triggers
	Resources	Modified or developed reporting and coding systems Identified assistive resources	Customized vendor's online reporting system to include conduct-related concerns Created codes related to Medical Care, Communication, Personal Responsibility, Professional Integrity <sup>†</sup> Identified VUMC Physician and Faculty Wellness <sup>3-5</sup> for assistance
Systems	Data review and delivery processes	Established multilevel reviews	Defined egregious, mandated (unlawful) allegations for immediate escalation Defined allegations to be shared without further investigation Established procedures for delivering first and second individual reports and aggregated data based on multiple reports upon escalation
	Multilevel training	Developed, implemented three levels of training	Raised general awareness of all clinicians of behaviors that undermine safety Used simulation exercises to train peer messengers and department leaders Provided PRN coaching for messengers and leaders

VUMC, Vanderbilt University Medical Center; PRN, as needed.

\* Goals for the three domains of factors that can influence the success of proposed organizational initiatives:

**People:** Achieve consensus about implementation—high-level organizational leaders, frontline implementation team members, and project champions must make critical decisions for most programs to be successful.

**Organization:** Establish supportive infrastructure—organizations need reliable processes supported by aspirational values, actionable policies, a model for guiding conduct-related interventions, and resources sufficient for both task completion and addressing human factors.

**Systems:** Achieve robust reporting, data analysis, and feedback sharing—successful improvement programs require reliably implemented systems for reporting concerns, reviewing and analyzing reports, and making aware the professionals associated with coworker concerns.

<sup>†</sup> Interrater reliability across domains was 80%–100% (Kappa statistics ranged from 0.52 to 1.00, mean Kappa = 0.83).

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1. Govern P. Professional conduct standards take shape. *Reporter*. Vanderbilt University Medical Center, Jul. 8, 2005. Accessed Mar 2, 2016. <http://www.mc.vanderbilt.edu:8080/reporter/index.html?ID=4077>.
2. Hickson GB, et al. A complementary approach to promoting professionalism: Identifying, measuring, and addressing unprofessional behaviors. *Acad Med*. 2007;82:1040–1048.
3. Byrne DW, et al. Seven-year trends in employee health habits from a comprehensive workplace health promotion program at Vanderbilt University.

4. Birdee GS, et al. Relationship between physical inactivity and health characteristics among participants in an employee-wellness program. *J Occup Environ Med*. 2013;55:514–519.
5. Vanderbilt University. Faculty & Physician Wellness Program. Accessed Mar 2, 2016. <http://healthandwellness.vanderbilt.edu/work-life/faculty-physician-wellness/>.

**PHYSICIANS AND ADVANCED PRACTICE PROFESSIONALS ASSOCIATED WITH CORS REPORTS**

From January 1, 2012, through December 31, 2014 (36 months), coworkers recorded 372 CORS reports about physicians and APPs. Physicians were associated with 344 reports, and

APPs with 28. Most physicians (85%) and APPs (96%) were associated with no reports; 164 physicians (12%) were associated with 1 or 2 reports; and 34 (3%) were associated with 3 or more (Figure 4, page 158). Of 674 APPs, 26 (4%) had 1 or 2 reports. No APP had 3 or more.

**Sidebar 2. The Vanderbilt University Medical Center Credo**

We provide excellence in health care, research and education.  
 We treat others as we wish to be treated.  
 We continuously evaluate and improve our performance.

**Credo Behaviors**

- I make those I serve my highest priority.
- I respect privacy and confidentiality.
- I communicate effectively.
- I conduct myself professionally.
- I have a sense of ownership.
- I am committed to my colleagues.

VUMC's Credo is a statement of the values shared by professionals and staff concerning their commitment to patients, coworkers, and others. All new personnel are made aware of and acknowledge the Credo during orientation, and the Credo elements are reinforced during annual reviews. Co-Worker Observation Reporting System<sup>SM</sup> (CORS<sup>SM</sup>) reports frequently refer to observed behaviors as "inconsistent with our Credo" or "non-Credo behavior," evidence that VUMC personnel acknowledge the Credo as a set of professionalism standards. The Credo also helps frame the conversation with the professional with whom feedback is shared.

**Source:** Govern P. Professional conduct standards take shape. *Reporter*, Vanderbilt University Medical Center, Jul 8, 2005.

**TRACKING SINGLE-REPORT SHARING**

CPPA used a secure electronic survey to track report sharing and sent reminders to return surveys after one, two, and three weeks if necessary. During the first five months of CORS operation, we sought to learn whether and why reports were not "shared." We discovered that during this period, 59 (84%) of 70 reports were shared. Messengers indicated three reasons for not sharing a report, as follows:

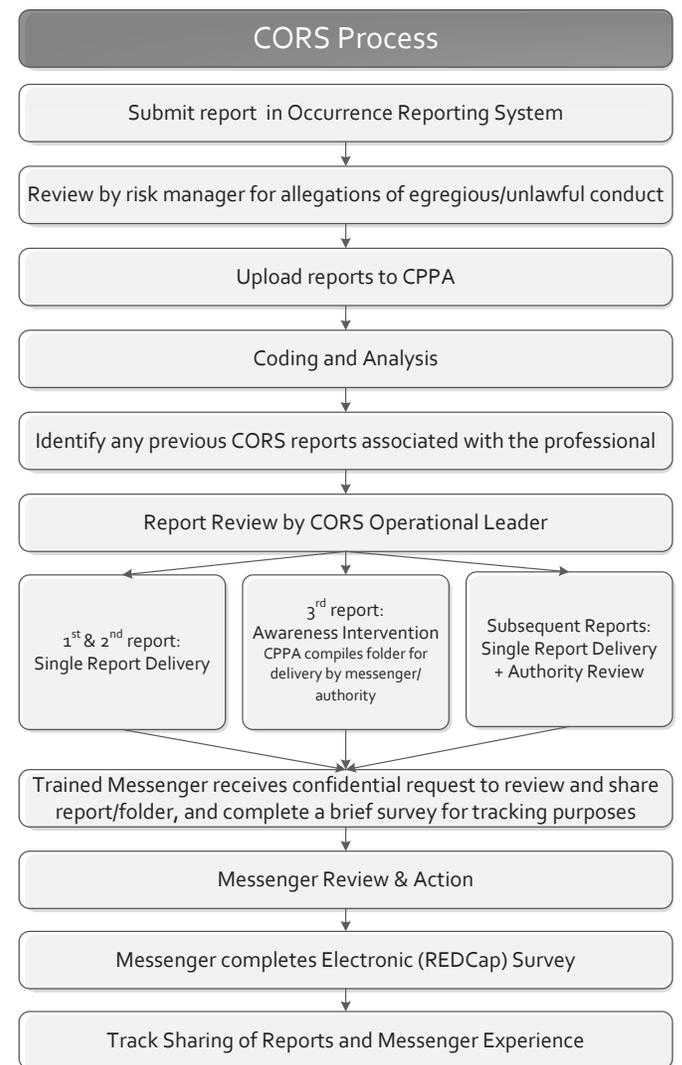
- Assessment that the report contained internal inconsistencies or the reporter unfairly attributed responsibility
- Belief that the concern was "too petty" or "too vague"
- Awareness of a contributory systems issue being actively addressed

By reporting delivery rates to messengers, overall rates have progressively increased over time.

**THE "AWARENESS" INTERVENTION EXPERIENCE**

Following review of the distribution across time of coworker reports associated with medical group members, VUMC leaders reached consensus that three reports within a rolling three-year audit period constituted an apparent pattern (Appendix 1, available in online article). From late October 2011 through December 31, 2014 (39 months), 37 individuals (3% of all faculty physicians, but no APPs) met threshold criteria for Aware-

**Co-Worker Observation Reporting System<sup>SM</sup> (CORS<sup>SM</sup>) Procedure Diagram**

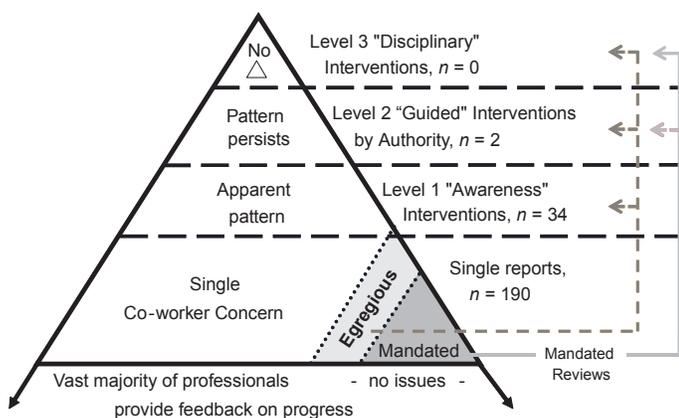


**Figure 1.** This diagram depicts the CORS process, which begins when a coworker submits a report describing a professional colleague's conduct that the coworker perceives to be unsafe or disrespectful. CPPA, Center for Patient and Professional Advocacy.

ness interventions. These 37 physicians were associated with 42% of all physician CORS reports. Two of these 37 did not receive an Awareness intervention because other institutional data had already prompted advanced interventions (see page 156).

VUMC leaders continued to share new reports with professionals who had received an Awareness intervention. By December 31, 2014, 17 physicians had at least 12 months of post-Awareness intervention surveillance, of whom 12 (71%) had received no further reports, 2 (12%) had received a single

## Promoting Professionalism Pyramid for Graduated Interventions and Number of Professionals Receiving Each Level of Intervention



**Figure 2.** The pyramid illustrates the process of tiered interventions (“Awareness,” “Guided Interventions by Authority,” and “Disciplinary”) and related conversations for promoting reliability and accountability. Adapted (with inclusion of the number of professionals receiving each level of intervention) from Hickson GB, et al. A complementary approach to promoting professionalism: Identifying, measuring, and addressing unprofessional behaviors. Acad Med. 2007;82:1040–1048. Used with permission.

additional report, and 3 (18%) had received two or more reports.

One author [L.E.W.] conducted structured interviews with four key physician leaders from large clinical departments, as well as leaders of VUMC’s APPs (accounting for more than 85% of professionals in the system) regarding their Awareness intervention experiences. The leaders reported that recipients’ responses included blaming systems and other people, asserting inaccurate reporting, minimizing their behavior’s impact, expressing disbelief that three reports over three years constituted a pattern, focusing on who might have reported, and offering to “apologize” (Appendix 1, available in online article). Reported “pushback” was similar in many respects to responses from professionals receiving interventions for a pattern of patient complaints (Appendix 2, available in online article).<sup>24</sup>

### THE ADVANCED INTERVENTION EXPERIENCE

Decisions to escalate to Level 2 “Guided Interventions by Authority” or Level 3 “Disciplinary Interventions”<sup>25,53–56</sup> (Figure 2) lie within the authority of department chairs and the Senior Associate Dean for Faculty Affairs. Advanced interventions occurred in two cases during the year following CORS program initiation.

### Sidebar 3. The Items in the Awareness Intervention Folder

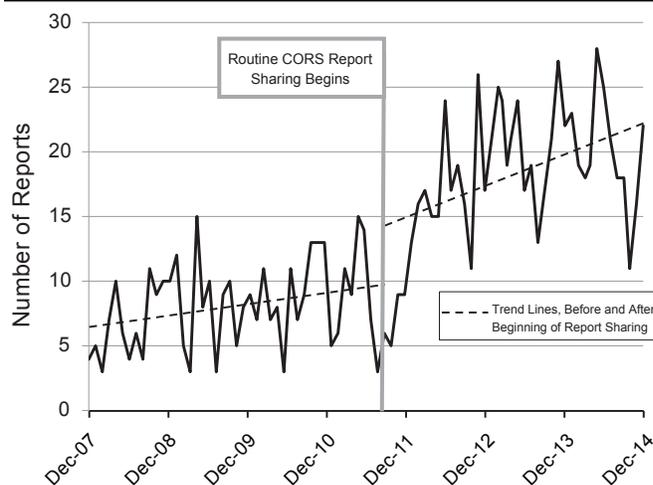
For professionals with apparent patterns of reports, an intervention folder was prepared to provide consistent information, designed to promote awareness for the professional. The folder contained the following items:

- A memorandum describing the Co-Worker Observation Reporting System<sup>SM</sup> (CORS<sup>SM</sup>) program
- A copy of Vanderbilt University Medical Center (VUMC’s) Professional Conduct Policy
- Information about the number of CORS reports for the individual compared to peer professionals
- A graph depicting the number of reports compared to the total number of VUMC peer physicians or advanced practice professionals
- Text from each professionalism concern report with patient/staff names redacted
- Excerpts from reports categorized under four major domains: Medical Care, Communication, Responsibility, and Professional Integrity

### Discussion

Despite private<sup>37</sup> and public<sup>57,58</sup> regulatory standards that reinforce the need for behavior-related accountability, many organizations lack a reliable process for identifying and addressing

### Number of Monthly Co-Worker Observation Reporting System<sup>SM</sup> (CORS<sup>SM</sup>) Reports Associated with VUMC Physicians and Advanced Practice Professionals\*



\* Routine feedback of all single reports initiated September 2011. Trend lines calculated by least squares method.

**Figure 3.** Trend lines in this figure were computed using the least squares method. The onset of CORS<sup>SM</sup> program interventions (September 2011) appeared to be associated with increases in the numbers and rate of coworker reporting.

**Table 3. Lessons Learned Using the Project Bundle to Develop the Co-Worker Observation Reporting System<sup>SM</sup> (CORS<sup>SM</sup>) Program**

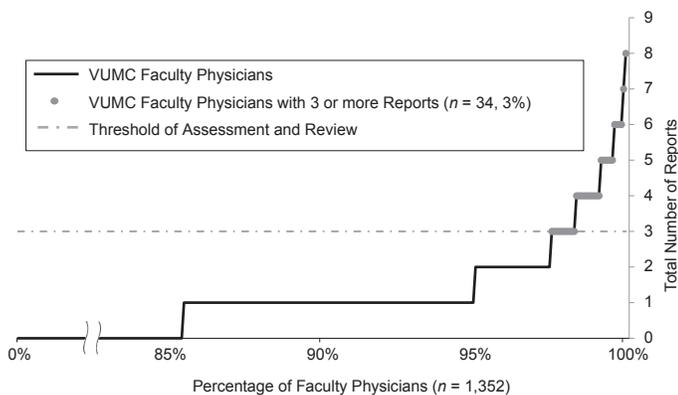
<b>People</b>	<ul style="list-style-type: none"> <li>Health care improvement projects require strong and consistent commitment by titled leaders (for example, Chief Medical Officer, Chief of Staff, department chairs) and influential physicians whose opinions shape what happens at all levels of the organization.</li> </ul>
	<ul style="list-style-type: none"> <li>Project champions will work hard to build support and must have influence (or have a strong leader's unwavering support).</li> </ul>
	<ul style="list-style-type: none"> <li>"Messenger" leaders are willing to respectfully address physicians and advanced practice professionals who are associated with coworker observation reports or who develop an apparent pattern of concerning behavior/performance.</li> </ul>
	<ul style="list-style-type: none"> <li>Implementation team members are critical because projects require efforts of many others. Among these are the following:                             <ul style="list-style-type: none"> <li>Professionals and support staff who are willing to report concerns in good faith</li> <li>A cadre of trained peers to deliver uncomfortable messages to colleagues</li> <li>Health care administrators and supervisors who promote professionalism among professionals and support staff by setting clear expectations for professional behavior, including engaging in collegial "cup of coffee" conversations with others and/or reporting threats to teamwork and safety</li> </ul> </li> </ul>
	<ul style="list-style-type: none"> <li>Peer professionals will readily engage in sharing observations with colleagues when supported by strong leadership commitment and the appropriate infrastructure.</li> </ul>
<b>Organization</b>	<ul style="list-style-type: none"> <li>Leaders' authority over the project is reinforced by aligning improvement projects with organizational values and goals.</li> </ul>
	<ul style="list-style-type: none"> <li>A single professional conduct policy should apply to everyone within the organization, even if processes for addressing deviations from expected behavior/performance fall under different administrative models (for example, Medical Center Medical Board oversight versus Human Resources).</li> </ul>
	<ul style="list-style-type: none"> <li>The organization's offices of general counsel and risk management are key partners to ensure that policies and procedures support CORS, including graduated, tiered interventions, and that all CORS-related materials adhere to state peer review and/or quality improvement statutes to optimize protection from discovery.</li> </ul>
	<ul style="list-style-type: none"> <li>Risk managers who practice proactive risk prevention are essential to help design a process that can allow designated parties to review coworker concerns and deliver data derived from those reports to physicians and advanced practice professionals.</li> </ul>
	<ul style="list-style-type: none"> <li>The organization must invest in an online occurrence-reporting system to support reporting.</li> </ul>
	<ul style="list-style-type: none"> <li>The organization must have, adopt, or adapt a model for tiered interventions.</li> </ul>
	<ul style="list-style-type: none"> <li>Leaders are willing to recruit the number of messengers sufficient to ensure availability for prompt delivery of concerns reports and to invest in training for addressing coworker complaints.</li> </ul>
	<ul style="list-style-type: none"> <li>Before embarking on the project, the organization should have in place a set of wellness and assistive programs to aid the professionals who are the subjects of reports as well as the individuals who are the witnesses and victims of the reported events.</li> </ul>
<b>Systems</b>	<ul style="list-style-type: none"> <li>Creating standardized tools for data management, analysis, and report delivery required substantial investment of time but proved essential for producing reliable metrics and measures.</li> </ul>
	<ul style="list-style-type: none"> <li>Fidelity to program processes varied during initial piloting but improved as people, organization, and systems elements were refined.</li> </ul>
	<ul style="list-style-type: none"> <li>Monitoring for evidence of unanticipated consequences is essential, including retaliation against reporters, biased reporting, and effects on teamwork.</li> </ul>
	<ul style="list-style-type: none"> <li>The CORS process and data support and extend Vanderbilt University Medical Center leaders' existing efforts to promote patient safety and professional accountability.</li> </ul>

human threats to teamwork, care, and safety.<sup>14,15,39,40,59,60</sup> VUMC, having recognized the need for such a process, planned and implemented the Co-Worker Observation Reporting System, a systematic, progressive approach for supporting a culture of safety and respect. Results over its first three years of implementation, including at least 12 months of follow-up for the first 17 recipients of Awareness interventions, demonstrated that the CORS process for monitoring and addressing perceptions of colleagues' disrespectful and unsafe conduct is feasible with leadership endorsement and the support of a robust and reliably implemented infrastructure. Fidelity to intended CORS processes was good. We did learn, however, that we need

to continue to learn and address reasons why CORS messengers chose not to share reports and continue monitoring for retaliation and other unintended consequences. In addition, we will assess reporter and messenger experiences to learn how CORS processes can be further improved.

How was reliable implementation achieved? We used a Project Bundle<sup>51,52</sup> to guide the team's prelaunch actions and activities for planning, implementing, troubleshooting, and promoting sustainability, which required a considerable investment of time and effort. The bundle proved a helpful tool for assessing whether and when the critical elements for success were sufficiently robust for the project to proceed. Leaders' commitment

**Distribution of Co-Worker Observation Reporting System<sup>SM</sup> (CORS<sup>SM</sup>) Reports Associated with Vanderbilt University Medical Center Faculty Physicians, January 1, 2012–December 31, 2014**



**Figure 4.** From January 1, 2012, through December 31, 2014 (36 months), coworkers recorded 372 CORS reports about physicians (344) and advanced practice professionals (28). Of the 1,352 faculty physicians, 34 (3%) were associated with 146 (42%) of the 344 behavior/performance reports.

and engagement, in combination with a well-developed organizational infrastructure (that is, compelling data and multilevel training programs and reliable systems for collecting, reviewing, and sharing data) were crucial to project launch. From this experience, project planners learned important lessons (Table 3) about people, organization, and systems that may generalize when launching other improvement projects.

Relatively few professionals were associated with multiple coworker concerns, which is similar to the findings regarding patient complaints<sup>18,19,22–24</sup>—that is, the vast majority of professionals had none. Peer messengers shared coworker reports with the 15% of physicians and 4% of APPs associated with at least one report. In a three-year period, only 34 physicians (3% of medical staff) and no APPs were associated with three or more reports. The process of collecting, coding, and analyzing reports turned observations of unprofessional behavior or performance into actionable data. Lack of response to peer-delivered messages predictably led to escalation up the pyramid, thereby providing VUMC with a systematic method for addressing conduct-related threats to teamwork and patient safety.

Although coworker observations of disrespectful and unsafe conduct are important resources for pursuing enhanced reliability and patient safety, the concerns that are reported likely represent a fraction of experienced or witnessed breaches of professionalism. Studies make clear that most professionals

have witnessed or have been the target of unprofessional behavior.<sup>33,34,39–44,61</sup> However, the same studies reveal that asymmetry within professional relationships may inhibit reporting threats to safety even when policies require or encourage staff to do so. Nevertheless, VUMC clinicians and staff appeared to value the reporting system, as evidenced by increasing numbers of documented coworker reports; increased reporting is anticipated with ongoing project efforts. More research is needed to clarify when health care professionals report concerns and the types of concerns they do and do not report.<sup>62,63</sup>

Reporting behavior is potentially subject to challenges such as concerns about consequences for reporters and reporter bias. Furthermore, introducing feedback about coworker concerns may have unintended consequences ranging from increases in unprofessional conduct and retaliatory reporting to negative effects on team cohesion and a culture that emphasizes reporting over colleague-to-colleague conversations about concerns. CPPA reviewers monitor CORS reports for evidence of retaliation and potential bad-faith reporting. Retaliation or attempted retaliation against a reporter is considered egregious and addressed rapidly by an authority in accordance with VUMC policy. Physician retaliation was reported and addressed immediately in two instances. To date, we are aware of no evidence that bad-faith reporting has occurred.

Messengers did not always deliver single reports, a challenge to program fidelity. Reasons included competing priorities or assessment that the report was not sufficiently credible, understandable, or significant. With the awareness that exercising discretion regarding whether to share reports risks CORS program reliability and integrity, project leaders are monitoring whether professionals whose leaders declined to share continue to accumulate reports.

**IMPLICATIONS**

The CORS process demonstrated that systematic monitoring for coworker observations about unprofessional conduct and sharing that information with involved professionals can be done. On the basis of VUMC’s experience, the following observations should be considered when implementing similar programs at other organizations:

- Implementation should occur throughout the organization and apply to all physicians and advanced practice professionals.
- In general, timely, nonpunitive initial feedback should be provided without conducting traditional, time-consuming investigations. Exceptions exist, however, when reports assert behaviors that meet criteria for a mandated review (for example, assertions of discrimination or a criminal act) or are of an egre-

gious nature. Such reports are promptly referred to specified offices or authorities charged to investigate them.

- VUMC's approach to addressing reports of unprofessional conduct may help explain why the number of recorded reports continued to increase. Possible reasons may be that team members gained confidence that speaking up was safe, they would be "heard," the organization would take action, professionals would be held accountable, and action led to observable positive behavior change.

- Department chairs and leaders can use CORS data in concert with other information, such as patient complaint data, clinical outcomes, and compliance metrics, to choose appropriate courses of action for professionals who appear to be associated with problematic performance.

- The CORS process offers an approach to identifying and addressing professionals who resist adoption and inhibit sustainability of safety initiatives. For example, effects of introducing surgical checklists have been disappointing despite their promise.<sup>14,15</sup> Such initiatives are likely to achieve better results when accompanied by leadership commitment to quickly and reliably address noncompliance.

- The CORS process may be applicable to other health care professionals, including nurses, residents, and allied health professionals.

- Ongoing monitoring for evidence of retaliation against reporters, bad-faith reporting, and trends in reporting is essential for rapid identification and attention to issues that threaten program integrity.

## LIMITATIONS

This study has a number of limitations. First, the results of interventions are based on a short-term follow-up period. Nevertheless, 71% of the initial Awareness intervention recipients had no subsequent reports for one year. Second, the planning, initial implementation, and early results may not generalize beyond VUMC. However, the success of patient complaint monitoring and intervention programs at more than 135 geographically and structurally diverse health care organizations—hospitals and medical groups—with which VUMC collaborates suggests that they and others could also successfully undertake and implement CORS-type projects.<sup>24</sup> These organizations demonstrate highest-level leadership commitment to modeling and promoting professional accountability, have organizational values and policies to support decision making and action, and employ data-and-review systems as outlined in Table 1. In addition, they all have developed and improved various infrastructure elements over time, demonstrating ability to implement a

feedback program in support of professionalism and professional accountability. Organizations unwilling or unable to develop a robust infrastructure have less opportunity to successfully implement such programs. Third, although VUMC CORS reporting has grown substantially, how much more unprofessional conduct remains unreported, and therefore unaddressed, is unknown. Many health care professionals and staff hesitate to report observations of unprofessional conduct, whether from fear of retaliation or other repercussions or from lack of appreciation of the presence of a "normalization of deviance" in their work (that is, accepting or condoning nonstandard or unacceptable behavior and standards).<sup>33,34,39–43,64</sup> Vanderbilt coworkers' continuous increase in reporting is encouraging, which suggests that efforts to communicate the message "we want to hear from you" are addressing and reducing barriers to coworker sharing and reporting, thereby revealing ever more behavior-related safety threats. These efforts include the following:

- Policy-based reassurances regarding safety for good-faith reporting and intolerance for retaliation

- Leaders' public statements that reports will be taken seriously and reliably addressed

- Immediate electronic feedback to individual reporters: confirmation that their report was received, including appreciation for submitting it; a stated commitment to use the information in a confidential, nonpunitive way to improve the quality and safety of patient care; contact information for those to contact should questions about the report arise; and a file number for future reference

- Periodic aggregated reporting of results to administrative and clinical leadership

Perhaps as a result, more health care professionals appear to have reduced tolerance for "non-Credo behavior," as many event reports specifically describe some concerning behaviors as not consistent with the VUMC Credo.

## Conclusion

Maintaining well-functioning health care teams and pursuing a culture of safety and respect require professionals who behave and perform professionally. At VUMC, a small percentage of medical and advanced practice professional group members are associated with a disproportionate number of reported coworker concerns. VUMC was able to successfully use the Project Bundle readiness assessment to develop and launch the CORS process for identifying and addressing professionals who are associated with coworker reports of concerns about behavior or performance. Our experience with the CORS program suggests that well-trained, well-supported peers and leaders will share

concerns-related feedback. Follow-up surveillance to date indicates that the majority of professionals self-regulate after receiving CORS data. Prelaunch readiness of all Project Bundle elements (People, Organization, Systems) proved time-consuming but essential to institutionalizing the effort. **I**

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Appendix 1. People: Process for Leadership Engagement

Appendix 2. Systems: Training Leaders and Messengers to Deliver Co-Worker Observation Reporting System<sup>SM</sup> (CORS<sup>SM</sup>) Data

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### Appendix 1. People: Process for Leadership Engagement

Leadership engagement was a critical step in designing and implementing the Co-Worker Observation Reporting System<sup>SM</sup> (CORS<sup>SM</sup>). Engagement was built via individual and group meetings to ensure that leaders had sufficient information to guide decisions and to identify concerns that could be addressed in program development.

Through the meetings, the leaders began to assume shared ownership with the project team. The group addressed potential barriers to success. One barrier, for example, involved preconceived ideas about what might result from increasing awareness of the availability of reporting. Some leaders were concerned that every professional would be the subject of coworker reports, or that there might be team members who would file repeatedly (“super-reporters”). Data were therefore presented showing no evidence of “super-reporting,” that more than 80% of professionals were never named in a coworker concern and that only a small percentage were associated with three or more reports over a 36-month audit period, thus allaying concerns. Examples of concerns, as follows, reported by physicians, nurses, and other staff also demonstrated the types of issues that Vanderbilt University Medical Center personnel raise in their reports:

I asked the doctor a second time for the [required documentation], whereupon [s/he] tossed it under the OR [operating room] table. . . . I had to crawl underneath . . . this was demeaning.

The patient had deteriorated, so we called a rapid response. The attending arrived at the rapid response and announced, “I am the attending. No one will call a rapid response on my patient. Do you understand me?”

Dr. X entered the myelosuppression unit without washing his hands. I asked him three times to foam in and he just looked at me.

We were ready to start the case and I began reviewing the preop checklist to ensure we were following all of the steps for the operative bundle. Dr. Y yelled out, “I don’t have time for this. Hand me the scalpel and let’s get going.”

Seeing firsthand what professionals and other staff observed and reported helped leaders better understand how these experiences might impact patient safety and teamwork.

A meeting of department chairs was held to give them an opportunity to participate in critical program decisions, which included, but were not limited to, the following:

- Should individual CORS reports be shared with physicians and advanced practice professionals?
- If so, who (peer, mid-level group leader, high-level leader) should share the reports?
- When do department chairs want to be involved in the sharing process?
- What number of reports over what period of time constitutes a “pattern”?

Following introduction of the meeting agenda, the department chairs were anonymously polled on these questions using an electronic audience response system. Polling preceded discussion, and results were revealed only after all responses had been made. The group agreed that the results would become binding on all departments. This approach prevented inordinate influence of any single individual, supporting unbiased and collective decision making.

The results indicated commitment to establish a system for sharing both individual and aggregated patterns of coworker concerns reports associated with physicians and advanced practice professionals. Ninety percent (90%) of 20 key leaders (including department chairs) agreed or strongly agreed with the need, and the group proceeded to vote on criteria for conducting graduated interventions. Department chairs voted to remain involved in the process for sharing coworker concerns, either personally or through their delegates (Figure 1, page AP2). In particular, they decided that they wished to be involved when a physician or advanced practice professional was the subject of three reports within a three-year period.

These meetings were essential for obtaining public commitment (via polling data) and for medical center leaders to declare a goal of designing and implementing a formal process for monitoring, sharing, and trending coworker concerns. Polling data were also presented to other key stakeholders in order to demonstrate leaders’ decisions and commitment. The project team continues to foster leadership support by providing regular progress reports.

*(continued on page AP2)*

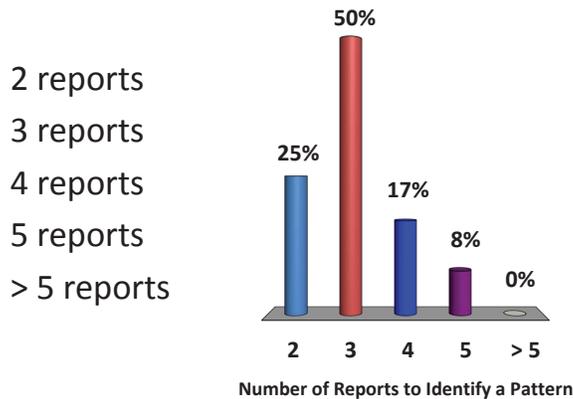
**Appendix 1. People: Process for Leadership Engagement (continued)**

**Figure 1. Anonymous Polling Results of Vanderbilt University Medical Center Department Chairs When Asked:**

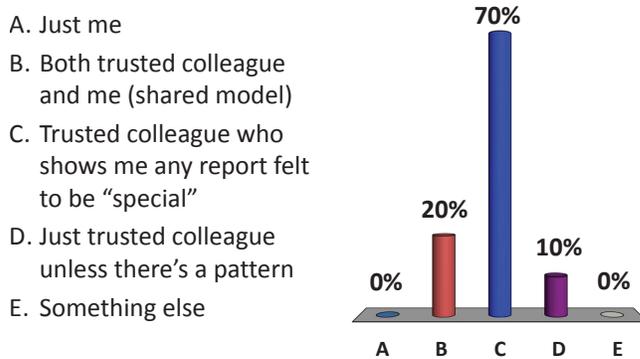
a. How many non-mandated reports over 36 months suggest a need for Chair review and an “Awareness” intervention with an individual physician?

b. Do you want to see and deliver complaints vs. delegate a trusted colleague to review and deliver?

a. How many reports? The Chairs responded. . . .



b. Do you want to see and deliver complaints vs. delegate a trusted colleague to review and deliver?



## Appendix 2. Systems: Training Leaders and Messengers to Deliver Co-Worker Observation Reporting System<sup>SM</sup> (CORS<sup>SM</sup>) Data

To promote fidelity to the CORS process for the delivery of single reports and aggregated data, Center for Patient and Professional Advocacy faculty provided training sessions for all department chairs, vice chairs, division chiefs, other leaders, and department-assigned “messengers.” Training was based on a “flipped classroom” approach in which participants receive and review content provided electronically prior to small-group sessions.<sup>1,2</sup> Initial content included orientation to the Vanderbilt University Medical Center (VUMC) policies and principles underlying the CORS program and procedures, the pyramid of tiered interventions, and video-recorded demonstrations of associated conversations.

Skills training also included how to recognize behaviors that undermine a culture of safety and respect, expectations for reporting or addressing such behaviors, and the goals and techniques for providing collegial feedback.<sup>3</sup> Thus, the training emphasized that while aggressive behavior such as yelling is easily recognizable, passive (for example, not returning phone calls) and passive-aggressive (for example, agreeing to do what was requested but slipping in negative comments about team members) behaviors also may be destructive to teamwork and safety.<sup>4-8</sup>

One important training principle is that investigating facts asserted in a report adds little value.<sup>9</sup> for two primary reasons. First, when multiple perspectives exist, determining “the truth” is challenging. The point of sharing the information is instead to share an observation, express trust that the professional will reflect and make adjustments

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### Sample Potential Recipient Responses to Coworker Observation Reports

1. *Questioning validity of reported concern(s)*: “. . . not what happened.” “. . . nurses are ganging up on me.” Report reviews include assessment for evidence of “unprofessional, bad-faith reporting” or evidence of “ganging up.” To date, no unprofessional reporting has been identified.
2. *Misattribution*: “This is not about me . . . it's the system, and no one is addressing.” “I may have said something, but what XX did is much more serious, and that's what started this whole situation. The real issue here is. . .” Some empathy for systems failures may be warranted, but all must respond professionally. Individuals are reminded that others in the same or similar systems are not associated with coworker concerns.
3. *Minimizing*: “blown out of proportion . . . overreacted.” “. . . only three reports in three years . . . what's the big deal?” Leaders respond

(“self-regulate”). Second, because the organization has a reliable system for data collection and regular review, the accumulation of data helps identify emerging patterns.

Leaders who conduct Awareness interventions are taught to initiate by sending or personally delivering a letter that describes VUMC's CORS program to the professional. During a face-to-face meeting, the leader explains the data collection process and then presents the professional with his or her individualized and peer-based comparative data in a folder (Sidebar 3, page 156). Leaders aim to minimize discussion about the merit or lack of merit of individual reports. The purpose is not to debate any individual report but rather to encourage the professional to review the aggregate data and ask, “Why do I have more than my share?” Accumulated data identify professionals who prove unable to “self-regulate,” that is, those for whom a pattern of reports becomes evident.

Training participants gather in scheduled small-group sessions to practice sharing reports and address recipients' common responses (“pushback”) during intervention meetings (see “Sample Potential Recipient Responses,” below). During training session practice exercises, participants receive feedback on how they delivered CORS materials and responded to recipients' reactions. Participants have ample time to discuss questions and concerns. Postintervention discussions identify common issues raised by Awareness intervention recipients. Training is modified and updated in response.

*Circulation*. 2013 Sep 3;128:1139–1169.

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with reference to the graph showing how few physicians in the group have that many reports.

4. *Desire to know reporter's identity*: “. . . so I can discuss perceptions . . . apologize . . . make it right.” Leaders respond that the best response is to refrain from the behavior/performance that resulted in the report and to model professional conduct. Leaders may express appreciation for a desire to apologize/discuss further, but then suggest that sometimes such conversations may not be perceived the way they are intended, and may be interpreted as threatening, in which case the leader would need to have a more directive conversation about nonretaliation.
5. *Acceptance*: “Thank you for making me aware . . . not my intent, but I can see how it came across . . . will be more aware next time. . . .” “I am under a lot of stress . . . and I am embarrassed and I am sorry.”

## Health Professions Education

# Competencies for Patient Safety and Quality Improvement: A Synthesis of Recommendations in Influential Position Papers

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National attention in the United States to problems in health care has stimulated formulation of recommendations for reform to improve the quality and safety of patient care.<sup>1,2</sup> A number of reports, such as the Institute of Medicine's (IOM) *Crossing the Quality Chasm: A New Health System for the 21st Century*,<sup>2</sup> have proposed changes in health care systems to address these problems. System failures are now recognized as a major contributor to problems in health care.<sup>1,3-5</sup> The IOM report *Health Professions Education: A Bridge to Quality*,<sup>6</sup> however, argues that implementation of safer health care systems is not sufficient to improve and sustain the quality of health care, and the IOM and others argue that health care professionals should prioritize quality and safety as important in their practice and be capable of performing effectively within evolving health care systems.<sup>2,6,7</sup> The development of such professionals requires integration of patient safety and quality improvement (QI) in curricula and assessment of competency in these domains.<sup>6</sup> A frequently cited definition of *competency* is "an observable ability of a health professional, integrating multiple components such as knowledge, skills, values, and attitudes."<sup>8(p. 641)</sup>

Many national and international professional associations, expert panels, consortia, centers and institutes, and convened committees (hereinafter referred to as *professional organizations*) have published or sponsored position papers with recommendations for competencies essential for health care professionals to provide high-quality, effective, and safe patient care. These competencies may serve as the basis for design of curriculum intended to educate health professionals who will demonstrate the knowledge, skills, and attitudes (KSA) required to provide effective and safe patient care.<sup>9</sup> There are, however, barriers to successful instruction and assessment of these competencies; for example, educators may find it difficult to navigate the large number of published recommendations. There is no common understanding, among the published competencies, of the KSA by stage of skill acquisition, essential for all health professionals. Educators may develop their curriculum on the basis of their own conceptions of (1) what are the essential KSA for patient safety and QI; and (2) their students' required stage of skill

### Article-at-a-Glance

**Background:** There is limited conformity among patient safety and quality improvement (QI) competencies of the knowledge, skills, and attitudes (KSA), by stage of skill acquisition, essential for all health professionals. A study was conducted to identify, categorize, critically appraise, and discuss implications of competency recommendations published in influential position papers.

**Methods:** A literature search was conducted of competency recommendations in position papers published by national and international professional associations, expert panels, consortia, centers and institutes, and convened committees, in the domain of patient safety and QI. To be included in the analysis, the competency had to be recommended in at least 20% (rounded) of the position papers. Qualitative content analysis was used to identify themes among the published competencies for the skill acquisition levels of *competent* and *expert*, using Dreyfus's definitions.

**Results:** On the basis of the 22 papers that met the inclusion criteria, 17 themes were identified among the 59 competencies for the skill level *competent*. Among the 23 competencies for the skill level *expert*, 13 themes were identified. Competencies within the theme "Evidence-Based Practice" were most frequently recommended across both skill levels. The themes "Interdisciplinary Teamwork and Collaboration" and "Evidence-Based Practice" were the themes identified among the greatest number of position papers for the skill level *competent* and *expert*, respectively.

**Conclusions:** The identified themes for competencies in patient safety and QI have implications for curriculum development and assessment of competence in education and practice. The findings in this study demonstrate a need to discourage publication of recommendations of yet more competencies and to instead encourage development of an international consensus on the essential KSA for patient safety and QI across all health professions and all levels of skill acquisition.

acquisition (for example, health professionals entering practice compared to those having advanced responsibilities for patient safety and QI activities). Identifying those most frequently cited competencies among current published recommendations may inform the design and development of education programs. The literature lacks a comparison of competencies across position papers to identify the most frequently recommended competencies and to assess the consistency of competency recommendations across papers, and there is no known national or international agreement as to the essential competencies across all stages of skill acquisition, across all the health professions.

Since 2007, the University of Illinois at Chicago, College of Medicine, first through the Institute for Patient Safety Excellence and now through its Department of Medical Education, has offered graduate programs in patient safety leadership. In the process of curriculum renewal, we conducted a review of recommendations published in influential position papers sponsored by major professional organizations to identify essential competencies recommended for patient safety and QI on the basis of their frequency of citation.

In this article, we report the results of this analysis, with themes synthesized from the recommended competencies across the position papers, and provide a critical appraisal of the coherence among the reported competencies. This synthesis of recommendations, along with the critical appraisal of competencies recommended by major professional organizations, provides an integrated source for curriculum development, identifies gaps in current published recommendations, and suggests implications for further deliberation to develop comprehensive standards for competence in the field of patient safety and QI.

## Methods

### DEFINITIONS

The following definitions guided this study:

■ **Patient safety:** “The prevention and mitigation of harm caused by errors of omission or commission that are associated with healthcare, and involving the establishment of operational systems and processes that minimize the likelihood of errors and maximize the likelihood of intercepting them when they occur.”<sup>10</sup>

■ **Quality improvement:** “refers to a continuous and ongoing effort to achieve measurable improvements in the efficiency, effectiveness, performance, accountability, outcomes, and other indicators of quality services or processes which achieve equity and improve the health of the community.”<sup>11(p. 6)</sup>

■ **Competency:** “An observable ability of a health professional, integrating multiple components such as knowledge, skills,

values, and attitudes. Since competencies are observable, they can be measured and assessed to ensure their acquisition. Competencies can be assembled like building blocks to facilitate progressive development.”<sup>8(p. 641)</sup>

■ **Competence:** “The array of abilities [KSA] across multiple domains or aspects of . . . performance in a certain context. Statements about competence require descriptive qualifiers to define the relevant abilities, context, and stage of training. Competence is multi-dimensional and dynamic. It changes with time, experience, and setting.”<sup>8 (p. 641)</sup>

### SAMPLING OF THE LITERATURE

We conducted a thorough, purposeful sampling of the literature to identify influential position papers recommending competencies for patient safety and QI that were published or sponsored by major professional organizations. Our purpose was not to recommend new competencies but to identify recommendations of competencies for categorization and comparison across all health care disciplines. For the purpose of this review, we define an “influential position paper” as one recommending competencies grounded in evidence or expert opinion which has the potential to influence curricula. Working groups within major professional organizations should, and do, influence patient safety and QI competence standards through the publication of these influential position papers.

Competency recommendations should differ on the basis of the skill level and professional roles of the learner. As a result, we chose to organize competencies in two separate categories on the basis of the Dreyfus model of skill acquisition—*competent* and *expert*.<sup>12</sup> We defined the competencies for the skill acquisition level *competent* as the KSA that should be expected of all health care professionals entering practice. Some professionals, by the nature of their responsibilities or interests (for example, leaders), may require *expert* competencies, such as the skill to change and implement policies, procedures, and processes for patient safety and QI that reflect evidence. Maintaining this distinction and identifying the competencies in each skill level are important for curriculum design, instruction and assessment, and evaluation of health professionals within the workplace.

### SEARCH STRATEGIES

We used two simultaneous approaches to acquiring our data in the initial search:

1. We identified major professional organizations with known interests in patient safety and QI and, guided by two internal subject matter experts in patient safety/QI and in medical education [I.B.H., A.L.V.], searched organizational websites for

posted position papers.

2. We performed a database search of PubMed, using the search terms (“patient safety” or “quality improvement”) and (“education” or “health professional education” or “leadership”) and (“competency” or “core competencies”). The searches were limited to English-language publications.

### **INCLUSION CRITERIA**

To be eligible for inclusion in the review, a position paper was required to meet the following criteria:

1. The position paper had to contain evidence- or expert opinion-based competency recommendations for “patient safety” or for “patient safety and quality improvement.”

2. The position paper had to be sponsored or published by a major professional organization, defined as (i) a national association for health professions education; (ii) an accrediting organization; or (iii) a national or international organization, expert panel, consortium, or centers and institutes with a focus on patient safety and QI.

3. The sponsoring organization had to represent a major health care discipline, such as medicine, nursing, or pharmacy, or be an interdisciplinary organization representing multiple disciplines.

### **EXCLUSION CRITERIA**

Excluded from this review were the following:

1. Papers whose sole focus was evidence- or expert opinion-based competency recommendations for “quality improvement”

2. Papers sponsored by subspecialty organizations; we sought to identify only competencies for the broadest population of health care professionals, which are those recommended for primary or multiple professions.

3. Papers only describing methods or outcomes of implementing patient safety and QI competency recommendations in curricula; our aim was to identify and perform an appraisal of the competencies, not their application in programs.

4. Papers published before 1998; the period following that year was marked by significant maturation in the field—for example, in June 1998, the IOM established the Committee on the Quality of Health Care in America. This committee subsequently released two landmark reports on health care quality and safety: *To Err Is Human: Building a Safer Health System*<sup>1</sup> and *Crossing the Quality Chasm: A New Health System for the 21st Century*.<sup>2</sup> In addition, important papers were published and initiatives established in 1998, such as the Pew Health Professions Commission’s fourth report,<sup>13</sup> the Institute for Healthcare Improvement’s (IHI) Knowledge Domains,<sup>14</sup> and the Association

of American Medical Colleges (AAMC) Medical Schools Objectives Project.<sup>15</sup>

### **SELECTION OF POSITION PAPERS**

In August 2013–December 2013 and again in August 2015–September 2015, the first author [K.M.M.] performed the searches and reviewed the titles and abstracts of all publications retrieved from PubMed and the websites of major professional organizations. She performed backward reference searches on the basis of the reference lists of position papers and journal articles to locate publications not already identified. The review of organizational websites, PubMed, and reference lists yielded 497 articles. After removal of duplicates, 380 articles were eliminated from the review because of their lack of relationship to patient safety or QI competencies (inclusion criteria 1).

The remaining 117 articles were reviewed by the second [I.B.H.] and third [A.L.V.] authors. Using the exclusion criteria, the authors excluded (1) those that did not recommend a comprehensive set of competencies but only described a curriculum application of competencies (84 in total, 33 remaining); and (2) those that did not meet other inclusion criteria or were sponsored by a subspecialty organization or were published before 1998 (11 in total, 22 remaining). The final set of 22 full-text position papers or journal articles was determined by group consensus among all three authors. Each of these 22 publications described a rigorous methodology for formulation of the competencies, and the methods often included a literature review to establish baseline evidence, followed by expert deliberations. Sidebar 1 (page 165) lists the 15 major professional organizations that either published or sponsored the 22 position papers selected for final inclusion in this review.

### **DATA ABSTRACTION, CATEGORIZATION, AND SYNTHESIS**

We used the qualitative method of triangulation and saturation to identify and categorize competencies among those reported in the 22 publications.<sup>16,17</sup> We used the stages of *competent* and *expert* as filters to identify which competencies to report. We continually reflected on the Dreyfus definitions as we reviewed the position papers.<sup>18</sup>

The first author extracted and separated the competency recommendations—our “data”—into the two Dreyfus categories, *competent* and *expert*, and the third author reviewed this extraction. For each category, the first author then analyzed its content, grouped together similar concepts or competency statements, and proposed themes. The second and third authors reviewed the themes and their associated competencies, and through the process of content analysis, deliberation, and

**Sidebar 1. Major Professional Organizations with Recommendations for Competencies in Patient Safety and Quality Improvement Included in This Review\***

Accreditation Council for Graduate Medical Education (ACGME) <sup>24</sup>
American Association of Colleges of Nursing (AACN) <sup>25-27</sup>
American Association of Colleges of Pharmacy (AACP) <sup>28</sup>
American Society of Health-System Pharmacists (ASHP) <sup>29</sup>
Association of American Medical Colleges (AAMC) <sup>7,9,15</sup>
Australian Council for Safety and Quality in Health Care (ACSQHC) <sup>20</sup>
Canadian Patient Safety Institute (CPSI) <sup>30</sup>
Institute for Healthcare Improvement (IHI) <sup>3,14</sup>
Institute of Medicine (IOM) <sup>2,6</sup>
Interprofessional Education Collaborative (IPEC) <sup>23</sup>
National Association of Pharmacy Regulatory Authorities (NAPRA) <sup>31</sup>
National Patient Safety Foundation (NPSF) <sup>4</sup>
Pew Health Professions Commission (PEW) <sup>13</sup>
Society of Hospital Medicine (SHM) <sup>5,32</sup>
World Health Organization (WHO) <sup>33</sup>
* References can be found on pages 168–169.

consensus, refined and approved the themes, with every competency concept included in a theme.<sup>19</sup>

**ANALYSIS OF DATA**

The number of times a similar competency recommendation appeared across position papers suggests a level of agreement about its importance among subject matter experts. Balancing inclusivity and exclusivity, we selected a threshold value for inclusion of 20% (rounded), meaning that a competency similar in concept had to be reported by 20% (rounded) of the total number of publications in our analysis.

**Results**

A total of 422 competencies across all 22 publications for both the *competent* (197 competencies) and *expert* (225 competencies) skill levels were identified. Applying the threshold of the same competency being reported in 20% (rounded) of the publications, we reduced the final number of competencies from 197 to 59 for the skill level *competent* and from 225 to 23 for the skill level *expert*. Using the methodological approach of content analysis, we identified 17 themes among the 59 competencies for the skill level *competent*; Sidebar 2 (page 166) presents these competencies’ themes and general concepts. For the skill level *expert*, we identified 13 themes among the 23 competencies (Sidebar 3, page 167).

Competencies within the theme “Evidence-Based Practice” were most frequently recommended across both skill levels. For the skill level *competent*, the concept “Interdisciplinary Teamwork and Collaboration” was the theme identified in the greatest number of position papers, with “Patient-Centered Focus” the next most frequent theme. The themes emerging at the *competent* level and not at the *expert* level were “Coordination and Transitions of Care,” “Effective Communication Skills,” “Ethics and Legal Issues,” “Patient-Centered Focus,” “Personal and Professional Accountability for Quality,” “Quality and Safety Best Practices,” “Quality and Safety Principles,” and “Risk Management.”

For the skill level *expert*, the concept “Evidence-Based Practice” was the theme that was identified in the greatest number of position papers, with “Utilization and Improvement of Health Information Technology” the next most frequent theme. The themes identified at the *expert* level and not at the *competent* level were “Creating a Culture of Safety,” “Implementing and Sustaining Quality Initiatives,” “Motivating and Strategizing for Change,” and “Staff Support.”

Recommendations for specific competencies made by the international organizations typically were written to include specific learning objectives and behavioral anchors describing milestones for achievement of objectives, whereas recommendations for competencies made by organizations in the United States were written in more general terms. Recommendations for specific competencies were consistent among the health professions disciplines.

**Discussion**

The field of study focused on patient safety and QI is growing, from the perspectives of academic education, training in practice settings, and scholarship. The current primary approach for recognition of qualifications are the well-recognized credentials, earned through certification exams. These credentials will continue to be important, as they demonstrate competence, defined by the credential, and demonstrate continuing education and advancement in the field over time. Advances in the breadth and depth of organized disciplinary knowledge, in research and scholarship, however, require formal academic preparation, typically based in graduate programs.

The purpose of this review was to aggregate the core competencies agreed on for the field of patient safety and QI, in influential position papers, with the goal of reviewing the current curriculum of the Master of Science in Patient Safety Leadership in the Department of Medical Education at the University of Illinois at Chicago. Unexpectedly, this review revealed a low

**Sidebar 2. For Skill Level *Competent*, Competency Themes and Their Associated General Concepts Having 20% General Concurrence Across Influential Papers\***

**Coordination and Transitions of Care**<sup>5,6,20,23–28,30,33</sup>

- General concepts include *risks associated with transitions of care, coordination of care, and transmission of information.*

**Effective Communication Skills**<sup>2,6,15,20,23–30,33</sup>

- General concepts include *basic written and verbal communication skills, the impact of good or bad communication, communicating with patients and families, communicating with other health professionals, electronic health record (EHR) handoffs, and the benefits and limitations of communication technology.*

**Ethics and Legal Issues**<sup>13,15,20,23,33</sup>

- General concepts include *ethical principles and managing ethical dilemmas.*

**Evidence-Based Practice**<sup>2,6,7,9,13,14,24–30,33</sup>

- General concepts include *evaluating the literature, incorporating evidence into practice, guideline development, and combining evidence-based knowledge with patient preferences.*

**Interdisciplinary Teamwork and Collaboration**<sup>2,5–7,9,13–15,20,23–28,30,32,33</sup>

- General concepts include *teamwork, components of successful teams, interdisciplinary collaboration, trusting team relationships, interprofessional development, communication strategies, role definition, active listening, conflict resolution, negotiation, team leadership, and barriers to teamwork.*

**Management of Adverse Events**<sup>9,20,30,33</sup>

- General concepts include *disclosure of adverse events to patients and families.*

**Organizational Knowledge and Systems Approach to Quality**<sup>14,24–26,33</sup>

- General concepts include *appreciating health care as a system.*

**Patient-Centered Focus**<sup>2,5,6,13–15,20,23–28,30,32,33</sup>

- General concepts include *incorporating the patient/family in care management, patient-provider relationships, open communication, respect, empathy, patient privacy, identifying barriers for patient access, prioritizing patient preferences, cultural competence, and patient empowerment.*

\* References can be found on pages 168–169.

**Personal and Professional Accountability for Quality**<sup>6,7,9,13–15,20,23,28,30,33</sup>

- General concepts include *acknowledging personal limitations and commitment to lifelong learning.*

**Population-Based Care and Preventative Health**<sup>2,6,9,13,15,28,33</sup>

- General concepts include *the economic, social, and cultural determinants of health, common population health problems, and disease prevention and health promotion.*

**Quality and Safety Best Practices**<sup>25,26,30,33</sup>

- General concepts include *vigilance, monitoring outcomes, and using checklists.*

**Quality and Safety Principles**<sup>2,5,6,20,24–33</sup>

- General concepts include *understanding safety risks, types of error, adverse outcomes, medication safety principles, human factors, and culture of safety.*

**Quality Improvement**<sup>13,24,28,30,31,33</sup>

- General concepts include *contributing to approaches for improving quality and safety.*

**Quality Measurement and Process Evaluation**<sup>2,5,6,25–27,29,32,33</sup>

- General concepts include *understanding types of quality measures, participating in outcomes monitoring, performance measurement, and care processes.*

**Reporting Systems and Error Evaluation**<sup>5,25,26,30,32,33</sup>

- General concepts include *assessing and monitoring errors and using reporting systems.*

**Risk Management**<sup>9,20,25–27,31,33</sup>

- General concepts include *managing errors, near misses, and adverse events.*

**Utilization and Improvement of Health Information Technology**<sup>2,9,13,15,20,24–28</sup>

- General concepts include *information technology skills and use of the EHR.*

level of national and international agreement as to what are the core competencies in this field. We identified similar recommendations of competencies in 20% (rounded) of the influential papers published or sponsored by working groups within major professional organizations. Had we chosen a higher level of agreement, the number of competencies identified as core competencies would have markedly decreased.

This thematic review of the competencies formulated in influential position papers reveals the areas of agreement and the differences in perspective about the KSA needed for patient safety practice for all health professionals considered competent or expert in the field of patient safety and QI. In this regard, we found little evidence of national or international agreement.

Furthermore, our review led us to find several problems, as we now describe, in formulating essential competencies for this

field. These problems suggest the need for further national and international deliberation to build consensus about the essential competencies for the field of patient safety and QI.

**PROBLEMS IN FORMULATING ESSENTIAL COMPETENCIES**

***Inconsistent Recommendations.*** No one competency was found consistently in recommendations among the papers reviewed. We must consider the implications of these variations for curriculum design and professional practice. These variations reflect the state of a field that is still maturing. To reach full maturation, it is necessary to develop an international consensus about the KSA essential for health professions education and the systems characteristics required for effective professional practice.

***Level of Detail in Recommendations.*** There were variations

**Sidebar 3. For Skill Level *Expert*, Competency Themes and Their Associated General Concepts Having 20% General Concurrence Across Influential Papers\***

**Creating a Culture of Safety**<sup>3-5,27</sup>

- General concepts include *environments that promote safety*.

**Evidence-Based Practice**<sup>2,6,7,9,13,14,24-30,32,33</sup>

- General concepts include *changing policies and procedures to reflect evidence* and *evidence-based methods for quality improvement*.

**Implementing and Sustaining Quality Initiatives**<sup>3,5,27,30</sup>

- General concepts include *integrating quality improvement projects* and *minimizing workflow disruption*.

**Interdisciplinary Teamwork and Collaboration**<sup>2,7,9,20,27</sup>

- General concepts include *promotion of interdisciplinary learning and training*.

**Management of Adverse Events**<sup>3,7,9,20,27,30,33</sup>

- General concepts include *guidelines for open disclosure* and *educating staff on effective disclosure*.

**Motivating and Strategizing for Change**<sup>3,5,27,30</sup>

- General concepts include *stakeholder involvement*.

**Organizational Knowledge and Systems Approach to Quality**<sup>5,27,30,33</sup>

- General concepts include *health care complexities* and *systems approach to improvement*.

**Population-Based Care and Preventative Health**<sup>6,9,13,15,28,33</sup>

- General concepts include *systems failures for population health problems* and *community education projects*.

**Quality Improvement**<sup>4,3,5,6,14,20,25-27,30,32</sup>

- General concepts include *quality processes and strategies*, *designing and testing improvement interventions*, and *creating safe and reliable systems*.

**Quality Measurement and Process Evaluation**<sup>5-7,25,26,32</sup>

- General concepts include *process mapping*, *identifying improvement opportunities*, and *coordination of outcome and performance measurement*.

**Reporting Systems and Error Evaluation**<sup>3-5,7,25-27,30,32,33</sup>

- General concepts include *nonpunitive reporting systems* and *tools for evaluating and monitoring errors*.

**Staff Support**<sup>3,7,20,30,32</sup>

- General concepts include *supporting staff after an error* and *minimizing workplace fatigue*.

**Utilization and Improvement of Health Information Technology**<sup>3,5,7,9,14,20,25-27,30,32</sup>

- General concepts include *integrating new technology*, *change management*, *usability assessment*, *staff training*, and *using technology to guide health care delivery improvements*.

\* References can be found on pages 168–169.

in the depth and breadth of the discussions of the KSA comprising competencies. A number of position papers describe competencies in great detail, while others make recommendations in more general terms. When competencies are stated in overly general terms, education program directors have insufficient guidance for curriculum and instructional design to assist students in achieving those competencies; too much detail, on the other hand, may result in rigidity in application. Clearly stated competencies are needed to guide educational program design, implementation, and evaluation.

**Stages of Competence.** There is little focus on competencies for experts among the position papers, as evidenced by only 23 such competencies being reported in 20% of the position papers, including, for example, those of the National Patient Safety Foundation<sup>4</sup> and the IHI.<sup>3,14</sup> Little discussion in these 22 papers is focused on clear definitions of the levels of skill acquisition, from *novice* to *expert*, for each competency. As professionals advance in their education and practice, expectations of competence should be consistent with increasing levels of knowledge, experience, and responsibility. There are significant differences between the level of knowledge and skills required from *novice* to *expert*. There needs, therefore, to be consensus for expectations of competencies across all stages of the continuum of professional development. Among the position papers

reviewed, not all offer recommendations in a format defining stages of competence. The AAMC's recent publication, *Teaching for Quality: Integrating Quality Improvement and Patient Safety Across the Continuum of Medical Education*,<sup>9</sup> distinguishes competencies at three levels: *proficient*, *expert*, and *master*. The position paper published by the Australian Council for Safety and Quality in Health Care<sup>20</sup> separates recommended competencies into four stages, starting at *foundational* competencies and building to *organizational* competencies. This framework, which appears to be easy to understand and apply across education programs, provides assurance that students have achieved basic competencies before advancing to the next stage of training.

**IMPLICATIONS**

An increase in the number of position papers published, and the number of competencies recommended, are evidence of growth of the field of patient safety and QI during the past 15 years. We used our analysis of competencies for patient safety and QI, recommended by major professional organizations, to produce a thematic list of competencies for health professionals. These organizations developed their recommendations through extensive deliberative processes, to capture expert judgment. There is a clear need for national and international consensus building for competencies in the field of patient safety and QI

across the levels of skill acquisition. The themes of competencies identified in this review can serve as a starting point for such consensus building. Within existing education programs at academic and health care institutions, these identified themes can inform the process of curriculum needs assessment. These recurring recommendations do suggest some core competencies that program directors may find useful in conducting their general and targeted needs assessments for patient safety and QI curriculum development and renewal.<sup>21</sup>

Many of the themes that we identified such as “Quality and Safety Best Practices/Principles” were to be expected and are easily recognized as fundamental for patient safety and QI education. In more recent recommendations in position papers, health care organizations are also responding to other quality-of-care deficiencies identified in the 1999 IOM report,<sup>1</sup> including the importance of knowledge about health information technology and interdisciplinary teamwork. It is not surprising to see an emphasis in the position papers on, for example, skills in patient-centered care and coordination of care. These themes are well represented in the literature, independent of discussions of patient safety and QI. Interdisciplinary teamwork became an important focus of health professions education and practice in the 1970s, following the IOM conference “Interrelationships of Educational Programs for Health Professionals.”<sup>22</sup> More recent interprofessional education recommendations have been published by influential groups such as the Interprofessional Education Collaborative (IPEC).<sup>23</sup>

Most recognized health care disciplines today (for example, medicine, nursing, pharmacy, dentistry) have come to consensus, through their professional associations and their education and accreditation groups, on a set of competencies for the profession; many have defined competencies as well as levels of skills acquisition. Although there is some consistency among recommended competencies, the variations that we identified in recommendations among position papers, for competencies in patient safety and QI, serve as a call for deliberation to reach national and international consensus about educational standards, consistent in content and detail across health professions. The lack of consensus identified in this study, which is particularly lacking with respect to the KSA, including change management, curriculum building, and senior management skills for leaders, demonstrates a need to discourage publication of recommendations for yet more competencies and to instead place priority on the need to arrive at consensus on the essential KSA for practice in this field.

## LIMITATIONS

This paper was not intended to be a systematic review of the literature. Many papers have been published on the subject of patient safety and QI education. Although our search uncovered a large number of important position papers, there remains a small risk that some important papers were not identified, given our methods of review. Our inclusion and exclusion criteria were relatively strict. Another limitation was the exclusion of standards documents, the gray literature, or papers published by subspecialty organizations. We recognize that, as a result, some specialized perspectives may be omitted; however, our goal was to identify a comprehensive list of competency recommendations, not a targeted or discipline-specific list. Similarly, the choice of a frequency criterion of 20% (rounded) of agreement across position papers, which was intended to balance inclusivity and exclusivity, may also have excluded competencies of potential interest for many audiences.

## Conclusions

This review of competency recommendations in position papers published by national and international professional associations suggests implications for further deliberation and national and international consensus to develop comprehensive standards for competence in patient safety and QI. **■**

The authors presented preliminary results regarding the core competencies in a poster, *Competencies for Patient Safety and Quality Improvement: Recommendations in Influential Position Papers and Implications for Curriculum*, Association of American Medical Colleges Annual Meeting, Philadelphia, November 1–6, 2013.

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## Methods, Tools, and Strategies

# Engaging Frontline Leaders and Staff in Real-Time Improvement

Jennifer Phillips, MMC; Linda J. Hebish, MBA; Sharon Mann, RN, MS, NEA-BC; Joan M. Ching, RN, MN, CPHQ; C. Craig Blackmore, MD, MPH

The relationship of staff satisfaction and engagement to organizational success, along with the integral influence of frontline managers on this dimension, is well established in health care and other industries.<sup>1-5</sup> Achieving operational excellence, delivering high-value experiences for customers, and ensuring financial success have all been associated with how satisfied and invested staff feel in their organizations. Staff engagement is also central to creating the culture of daily improvement needed for the high level of quality, safety, and service necessary to remain viable and thrive.<sup>4,6-8</sup> Understanding improvement as a culture rather than simply as a program has been long established in industries such as manufacturing.<sup>9</sup> More recently, health care has begun to explore and adopt this concept.<sup>10-16</sup>

Since 2000, Virginia Mason Medical Center has employed the Virginia Mason Production System (VMPS), our adaptation of the Toyota Production System, as our management system.<sup>17</sup> Early on at Virginia Mason, staff involvement in improvement primarily took the form of participation in structured one- to five-day VMPS workshops. However, simple use of the Lean tools and workshops was insufficient to fully engage staff. We as an institution did not see the desired staff involvement in tackling small-scale ideas outside of events, as found in companies with high-performing idea systems.<sup>7,18</sup> Further, the cultural transformation that is foundational to VMPS and the Toyota Production System, where engaged staff routinely can and do act to reduce waste and improve quality, was insufficient. Accordingly, we sought to specifically address staff engagement, developing an approach that involved leaders, through the daily use of Standard Work for Leaders (SWL), and staff, through a Lean-inspired staff-idea system. Organizational strategies to improve staff engagement have been supported by the Kaizen Promotion Office (which is composed of 15 to 20 staff fully trained in Lean and charged with accelerating the application and impact of the VMPS). Its role includes education of staff and leaders in the VMPS methods, daily management, and support of quality improvement events. This article describes guiding principles, design elements, and critical success factors for engaging leaders and staff in daily problem solving and improvement.

### Article-at-a-Glance

**Background:** The relationship of staff satisfaction and engagement to organizational success, along with the integral influence of frontline managers on this dimension, is well established in health care and other industries. To specifically address staff engagement, Virginia Mason Medical Center, an integrated, single-hospital health system, developed an approach that involved leaders, through the daily use of standard work for leaders, as well as staff, through a Lean-inspired staff idea system.

**Methods:** Kaizen Promotion Office (KPO) staff members established three guiding principles: (1) Staff engagement begins with leader engagement; (2) Integrate daily improvement (*kaizen*) as a habitual way of life not as an add-on; and (3) Create an environment in which staff feel psychologically safe and valued. Two design elements—Standard Work for Leaders (SWL) and Everyday Lean Ideas (ELIs) were implemented.

**Results:** For the emergency department (ED), an early adopter of the staff engagement work, the challenge was to apply the guiding principles to improve staff engagement while improving quality and patient and staff satisfaction, even as patient volumes were increasing. Daily huddles for the KPO staff members and weekly leader rounds are used to elicit staff ideas and foster ELIs in real time. Overall progress to date has been tracked in terms of staff satisfaction surveys, voluntary staff turnover, adoption of SWL, and testing and implementation of staff ideas. For example, voluntary turnover of ED staff decreased from 14.6% in 2011 to 7.5% in 2012, and 2.0% in 2013. Organizationwide, at least 800 staff ideas are in motion at any given time, with finished ones posted in an idea supermarket website.

**Conclusion:** A leadership and staff engagement approach that focuses on SWL and on capturing staff ideas for daily problem solving and improvement can contribute to organization success and improve the quality of health care delivery.

**Methods**

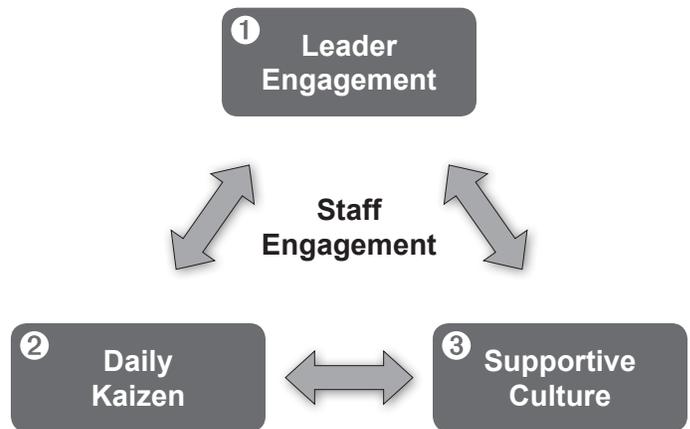
**SETTING**

Virginia Mason is an integrated health care system in the Pacific Northwest, with a single 336-bed hospital and multiple outpatient clinics. There are 460 Virginia Mason providers and 6,000 staff members. The emergency department (ED) is a Level 1 Stroke and Cardiac Center, with 17 beds, 80 staff (including providers), and 23,000 patient visits annually. One third of ED patients are admitted to the hospital, and fewer than 1% are “left without being seen.”

**GUIDING PRINCIPLES FOR STAFF ENGAGEMENT**

Guiding principles for our staff engagement work emerged from the study of different models and approaches. Staff engagement is not the sole responsibility of management or staff but rather is the consequence of active empowerment of leaders, in a supportive institutional culture, with a focus on daily improvement (*kaizen*) (Figure 1, right). Throughout this work, the executive leadership has helped sustain a sense of urgency and provided guidance. The KPO staff members performed a pilot study in 2010 with 12 departments with high potential for success because their leaders had many of the foundational elements in place already or the area was deemed a good business opportunity. A thorough review occurred 90 days after the pilot launch, and lessons learned were used to modify the teaching and implementation approach. Subsequent successful pilots moved us into an organizationwide rollout of the first three

**Staff Engagement in Relation to Leadership Engagement, Daily Kaizen, and Supportive Culture**



**Figure 1.** Staff engagement is not the sole responsibility of management or staff but rather is the consequence of active empowerment of leaders, in a supportive institutional culture, with a focus on daily improvement (*kaizen*).

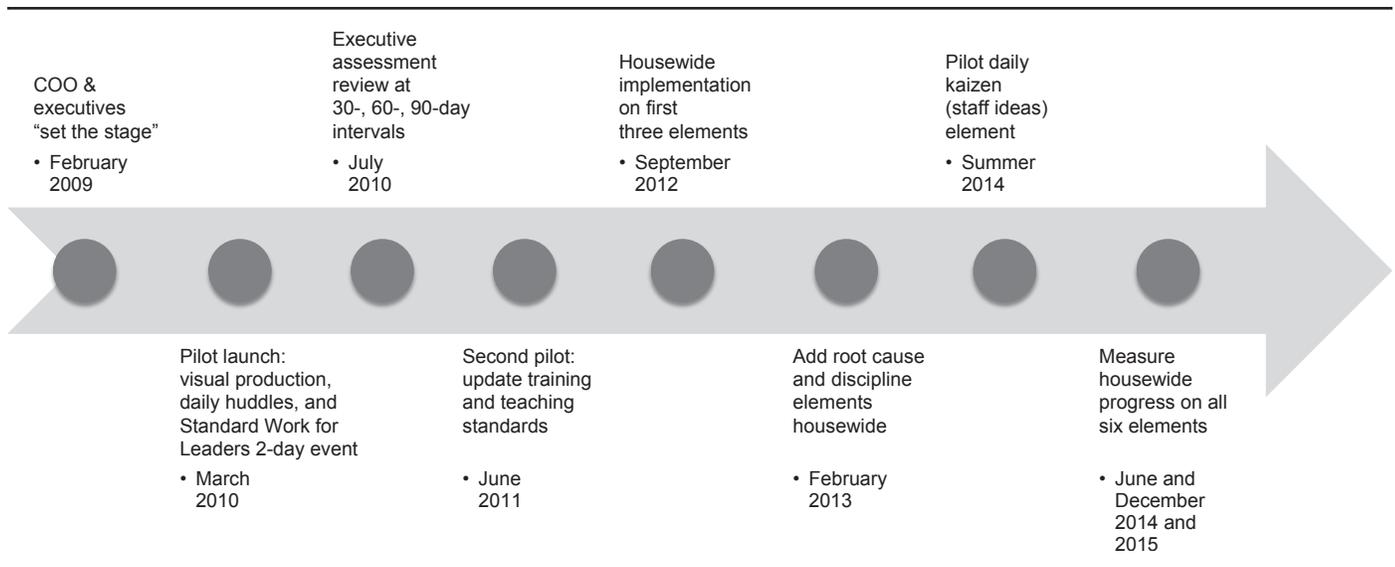
elements of SWL by the end of 2012.

Two additional elements were added in 2013, and a sixth element focused on staff ideas was piloted in 2014 and then formally introduced in 2015 (Figure 2, below).

The guiding principles are as follows:

**1. Leadership: Staff Engagement Begins with Leader Engagement.** Leaders must be responsible to know their busi-

**Implementation Time Line**



**Figure 2.** The first three elements of Standard Work for Leaders were rolled out by the end of 2012. Two additional elements were added in 2013, and a sixth element, which focused on staff ideas, was piloted in 2014 and then formally introduced in 2015.

ness, run their business, and improve their business. Success in each of these is dependent on staff being involved in active problem solving. Accordingly, the first principle in staff engagement is providing leaders the support and tools necessary so they in turn can partner with staff.

**2. Daily Kaizen: Integrate Daily Improvement (Kaizen) as a Habitual Way of Life, Not as an Add-on.** The daily work for both staff and leaders includes both completing the day's tasks and improving the work. Daily management is about identifying issues before they become "fires to extinguish," reducing the time spent addressing defects through rework. Staff see the value of their input as improvements are made.

**3. Culture: Create an Environment Where Staff Feel Psychologically Safe and Valued.** The goal is that staff will be willing to go beyond their daily tasks and engage in identifying and driving out waste in its various forms.<sup>19,20</sup> At Virginia Mason, we believe that the shared vision and work from our strategic plan have contributed greatly to staff engagement.

**DESIGN ELEMENTS**

To operationalize the guiding principles, we implemented two design elements: Standard Work for Leaders and Everyday Lean Ideas.

**Standard Work for Leaders.** SWL is a uniform, repeatable process that ensures alignment with a work team and its leadership in meeting customer demand. It provides a mechanism to measure current performance against planned production, ensure that standards are being followed through standard visual controls, and engage in regular checks. SWL also provides critical transparency to staff on the activities of leaders, contributing to engagement. Furthermore, when frontline staff witness their leaders following standard work, they become more receptive to changing the way in which they do their own work. For example, in hospital units where the leadership team's standard work and daily huddles are easily visible, staff have expressed appreciation in knowing what their managers are working on, what their schedules look like, when they will be present in the unit, and what their priorities and challenges are. Staff quickly express dissatisfaction with managers who don't "walk the talk" and, conversely, express more trust in and connection to managers who make kaizen to their own processes transparent to the team.

To support SWL, we developed a series of tools and processes (Figure 3, right) designed to do the following:

- Improve communication between leaders and staff (daily huddles and leadership rounds)
- Increase visibility of the daily work and goals (production

**Virginia Mason Medical Center Standard Work for Leaders Roll-out Tools**

Genba Production Board Checklist	
Capacity	
Daily Assignments (lunch/breaks, assignments)	
Demand	
Evidence of Visual Review by Leader	
Leadership on Point for the Day	
Normal/Abnormal Status	

Leader Standard Work Checklist	Frequency		
	Daily	Weekly	Monthly
<b>Essential "Must Do" standard work for EVERY Leader</b>			
Review Financials & Report Variances (information/report specific)	x		
Operational Rounding	x		
Document & Follow Up on Issues/Concerns	x		
Document & Follow Up on PSA's & Defects	x		
Plan and Implement Kaizen	x		
Applause		x	
Conduct Purposeful Genba Observations supported by VMPS tools		x	
Sweep Staff Readiness: Performance Evals, FFD, etc		x	
Review Press Ganey			x

Leader Standard Work Checklist	Frequency		
	Daily	Weekly	Monthly
<b>Essential "Assigned" standard work for at least one Leader</b>			
Conduct Daily Huddle with Standard Work	x		
Review & Sign Genba Production Board (throughout the day)	x		
Sweep Work Environment/Facility	x		
Sweep for WIP (electronic systems for urgent messages i.e., Outlook, Cerner, etc.)	x		
Review Kronos (Overtime, no breaks, etc.)	x		
Plan & Schedule Staffing	x		
Perform Required Safety Audits & Checks	x		
Coach/Track Staff Idea Generation		x	
Review VMPS for Leader Status		x	
Track & Trend Production Board Defects/Issues		x	
Update PeopleLink		x	

**Leader Daily Huddle Agenda Checklist**

- Staffing and rotations
- Updates regarding performance from the previous day
- Review today's plan - note issues
- Takes place at the production board; agenda synched with board
- No longer that 15 min; standing up

**Figure 3.** The early checklists for three foundational elements of the Standard Work for Leaders included a visual production board, leader standard work, and daily huddle. Checklists provide visual cues to ensure compliance with required components of each element. PSA, patient safety alert; VMPS, Virginia Mason Production System; FFD, fit for duty; WIP, work in progress.

boards and visual controls)

- Enable early identification of problems in daily work (dashboards and root cause analysis)
- Improve accountability of leaders and staff (leadership checklists and observations of work being performed)

All leaders now learn standard work for leaders as a part of their initial VMPS training, and the uniform application of these tools is promoting transparency and accountability.<sup>17</sup>

**Everyday Lean Ideas.** Virginia Mason's staff-idea history is long. A traditional suggestion program, complete with sugges-

tion boxes installed on walls, was in place for about 40 years. The program was based on a centralized-committee model in which staff submitted ideas for evaluation and the committee evaluated them and calculated a financial award for accepted suggestions. Some good ideas made it through this process and had a positive impact on the organization, while many did not. The program was retired in 1999.

In 2003, shortly after we adopted VMPS as our management method, we initiated a new Everyday Lean Idea (ELI) system based on research into compatible models.<sup>21,22</sup> An adaptation of the Plan-Do-Study-Act (PDSA) model,<sup>23</sup> the ELI process is a formal method used to capture staff ideas and develop them with the manager. In tandem, an “Idea Supermarket” website was launched in 2006 through the employee intranet to support interest in exchanging implemented improvement ideas across the organization for reuse and to inspire more improvement. The intent of the ELIs is to tackle small-scale problems within a team’s scope of control. Leaders, as opposed to a centralized team or committee, coach and support their teams’ idea process. Each ELI includes a brief description of the problem and the idea, along with a simple before-after metric to guide testing the idea to see if it resolves the problem (Figure 4, below). The tools for eliciting staff ideas have been in constant evolution. For example, staff have provided input into redesign of idea templates and the intranet idea platform over the years. Yet what remains constant is the desire of staff to reduce or eliminate one or more types of waste. The ELI process was also designed to build employees’ problem-solving skills.

**IMPLEMENTATION**

Implementing the ELI system and related Idea Supermarket was a multiyear challenge for the organization, which encouraged but did not mandate their use. Some leadership teams, such as those in the ED, embraced the process and innovated, developing their own staff-idea processes using pieces from the ELI model (see page 174). In other areas, use was limited because of a lack of understanding of the formal system, time constraints from other duties, disagreement on the value of documenting and sharing ideas, and struggles with collecting data

on before-after measures. The ELI system evidently represented a change for which not all staff or leaders were ready.

By 2012, however, the ELI process gained momentum in teams in which SWL routines were being established, supporting the interaction of the two methods. In these cases, the leaders used huddles, rounding, and visual tracking boards to weave in coaching and recognition of staff ideas with SWL. In 2014 we began formalizing this integration through emphasis of daily kaizen in the framework of SWL,<sup>24</sup> which helped to fully embed the staff-idea process as a vital rather than an “extra” (and therefore optional) activity. From the start, we encouraged small ELI teams as the norm. Some departments actively pair up staff as “idea buddies,” while others let staff self-organize, depending on the problem to be tackled.

Implementation of both of these design elements was also aided by their interrelationship, particularly regarding teamwork and communication. An internal study of Virginia Mason’s staff-idea process revealed the importance of not only leadership but also coworker support in creation of a psychologically safe environment in which team members are willing to propose and try new ideas (unpublished data). In addition, we discovered that very few ideas can truly be implemented by a single unit or person, but rather that teamwork is essential. Communication was also key to successful ELIs, as questions and suggestions make ideas stronger,<sup>25</sup> just as frequent and effective team communications and collaboration were critical to

**Everyday Lean Idea (ELI) Example**

**Idea Supermarket**





[Idea Supermarket >> Idea Details](#)

<b>Idea Ref:</b>	3968
<b>Idea Title:</b>	Inconsistent Physical and Occupational Therapy Schedules for Patients
<b>Categories:</b>	Care Delivery-Inpatient
<b>Date Created:</b>	10/02/2014
<b>Date Published:</b>	11/12/2014
<b>Submitters:</b>	Laurie C. Hettinga, Phys Med - Inpatient (301093)
<b>Idea Originated From:</b>	None - Original Idea
<b>Idea Attachments:</b>	<a href="#">Badge reminder</a>
<b>Problem before Improvement:</b>	It became clear that there was confusion amongst therapists regarding how often patients with various diagnoses should be seen for therapy. There are set protocol for certain surgery patients; for other patients, therapists use their own discretion as to the frequency of therapy visits. Some therapists were misinformed regarding protocols or were in disagreement with them.
<b>Idea Description:</b>	My idea was to create a "cheat sheet" that therapists could attach to their badge holder and use throughout their day when they were documenting after seeing a patient.
<b>Idea Source:</b>	Personal Experiences / Observation
<b>How Idea was Tested:</b>	N/A
<b>Type(s) of Waste Reduced:</b>	Defects
<b>Specific Results:</b>	At a meeting of department PTs it became clear that there was confusion around a new therapy ordering system we are using. There was also disagreement and confusion around the protocols for how often patients with certain diagnoses should be seen. After trialing the badge "cheat sheets" an audit of our Corner task list revealed 99% accuracy in ordering of therapy frequency per our protocols. Two thirds of those in error had documented that they were using therapist discretion to deem the appropriate frequency of therapy. Defect waste was decreased to 1%.
<b>Implementation Status:</b>	Idea Implemented
<b>Suggestions for others who want to try this idea:</b>	
<b>Ideas Generated:</b>	None at this time

**Figure 4.** Each ELI includes a brief description of the problem and the idea, along with a simple before-after metric to guide testing the idea to see if it resolves the problem

making problems, ideas, and outcomes visible in SWL.

Because of the interaction between SWL and ELIs, it can be difficult to determine which to focus on first. Our experience suggests that SWL routines will help a team with a strong foundational culture get even better and, conversely, will help a team that is struggling to start to establish a safe environment in which staff can and will engage in real-time improvements, setting the stage for implementation of ELIs.

#### **APPLICATION IN THE EMERGENCY DEPARTMENT**

The ED, early adopter of our staff engagement work, provides a useful example of successful implementation of both SWL and ELIs. The challenge for the ED, a complex environment with a high level of patient acuity, was to apply the guiding principles to improve staff engagement while improving quality and patient and staff satisfaction, even as patient volumes were increasing.

SWL in the ED consists of daily huddles with production boards and leader rounds of observed work.

**Daily Huddles.** The team—including all available ED staff and leaders—meets each day at a standard time, with a set agenda to both understand the current state and plan for the day's activities (Appendix 1, available in online article). The agenda consists of the following:

- Review of the production board and look for root causes to delays in patient care
- Debrief of events from previous day and create an action plan for the day
- Review of new standard work
- Review of medical center updates
- Staff presentation of their ideas to get input from their co-workers and teach new processes

**Leader Rounds and Workplace (Genba) Observations.** Weekly leader rounds and observations are used to elicit staff ideas and foster ELIs in real time. Whatever is learned from rounds about staff and patients is shared and often creates an avenue for contributing to an ELI, as in the following examples:

- Through genba observations, we discovered that during busy periods, patient assignments and staff workload varied among the ED nursing teams. For example, teams were not always ready to receive a new patient when he or she was wheeled into an open room. Staff used the PDSA process to trial a round-robin way of making patient assignments and then wrote standard procedures to ensure stability and consistency in the new process. The teams felt more cohesive and experienced fewer burdens when they knew that patients would arrive at a more manageable pace.
- A consistent pattern of high census and patients in the

waiting room by 1:00 p.m. was noted almost every day. After spending time watching the process and operators, leaders made a discovery that at the same time each day, 29 staff members needed to take breaks and lunches. The ED leadership team then made a “waterfall” chart listing everyone in the department, from environmental services to radiology technicians to providers. It was immediately clear that staff breaks and lunches needed to be reorganized so that they didn't impinge on the ED's work flow.

**Everyday Lean Ideas in the ED.** In addition to formal ELIs, we developed a simple yet effective tool to engage staff in identifying barriers to daily routines in the department through a whiteboard labeled “Rocks in Your Shoes” (Appendix 2, available in online article). Staff routinely post items on this board that cause them to feel like they are “walking on pebbles.” These items are then reviewed during huddles to initiate staff-driven improvements.

Improvements from the ED “Rocks in Your Shoes” board and ELIs have included the following examples:

- Staff created a text paging list with all staff members so when someone calls in ill, the entire staff is paged with the open shift details rather than calling each person individually and taking up to an hour of the charge nurse's time away from patient care.
- Frequently used medications had been placed in the bottom drawer of the medication dispensing station, which required nurses to bend down to retrieve them for their patients. A simple staff idea was to sort the medications, with the most frequently dispensed loaded in the top drawer. Nurses appreciated this ergonomic solution.

Although difficult to quantify, implementation of SWL and ELIs appear to have improved the department's staff engagement level and operational performance.

#### **OVERALL PROGRESS TO DATE**

We describe overall progress to date in terms of staff satisfaction surveys, voluntary staff turnover, adoption of SWL, and testing and implementation of staff ideas.

**Staff Satisfaction Surveys.** We assess the effectiveness of our approach with annual staff satisfaction surveys, including both formal questions and free-text comments. For a summary measure of staff engagement, we use a cluster of five staff idea-related items on the annual staff satisfaction survey customized by the vendor for our institution, as follows (similar questions are also on the annual culture of safety survey<sup>26</sup>):

- My direct manager provides me the time to work on promising new ideas.

- My direct manager makes it clear that new ideas are highly desirable.
- My direct manager recognizes my ideas or suggestions for improvement.
- I know how to generate creative ideas.
- My work group uses specific methods to generate creative ideas to meet the challenges we face.

For the past four years, approximately 80% of the organization's 200 or so work groups have scored in the top third on these items, suggesting that the overall environment is encouraging and supportive of staff ideas. Similarly, organizational mean scores are in the top third for the 2 of the 49 items from the annual culture of safety survey that address the climate for staff improvement ideas, as follows:

- Staff freely speak up about safety concerns.
- My supervisor/manager seriously considers staff suggestions for improving patient safety.

In the ED, staff satisfaction results improved from 56.3% favorable in 2012 to 72.5% in 2013. In a first-quarter 2014 survey, 79.6% of the responding ED staff were engaged or content with their jobs. On the cluster of five staff idea-related items on the annual survey, our results improved from 65.6% favorable in 2012 to 77.5% favorable in 2013. (More recent data are not provided because surveys have been conducted by a different vendor.)

**Voluntary Staff Turnover.** Voluntary ED staff turnover decreased from 14.6% in 2011 to 7.5% in 2012, and 2.0% in 2013.

**Free-Text Comments.** Staff free-text comments in response to questions about the ELI system and SWL (both positive and negative) have included the following examples:

- "My supervisor's excitement and encouragement make me confident in bringing up ideas."
- "That Virginia Mason would want my idea out there for others to see and maybe use made me excited."
- "Great coworkers. Able to voice ideas in a positive way."
- "My coworkers are amazing to brainstorm with. Everyone listens and the ending result is usually a combined result of multiple people and multiple ideas."
- "Can be excited to share ideas if team is; can feel a little silly if there is no reaction."
- "I love the fact that anyone that works here can impact savings, patient safety & worker safety."
- "I love having my idea out there for others to see."
- "Someone told me it's not my job to worry about improving the current process."
- "Some people value [hearing about results from idea tests]. Others don't listen or criticize."

- "Love coming up with and sharing everyday ideas but when these are not reviewed or acted on by leadership it's frustrating."

**Adoption of Standard Work for Leaders.** Implementation of SWL started in 2010, and has increased each year, with almost all departmental work groups now using SWL for daily management and the remainder with implementation plans in place. Implementation was tracked at a broad level starting in 2013, with leaders reporting whether basic elements were in place. The total number of departmental implementation of SWL routines increased from 12 in 2010, to 35 in 2011, to 93 in 2012, to 150 in 2013. Currently, essentially all departments have implemented at least the basics and are working on maturing their systems.

**Testing and Implementation of Staff Ideas.** Finally, we count the number of staff ideas tested at minimum and implemented, if feasible, that meet our definition of a finished ELI (approximately 350 each year). Only implemented ideas logged in the Web-based Idea Supermarket are counted. Hundreds of staff ideas are shared this way, but observational evidence continues to suggest there are many more staff ideas being tackled than those shared through the Web system. We see approximately 800 ideas-in-process in the system at any given point.

A review and categorization of ELIs from 2014 (Table 1, page 176) revealed that the largest percentage of ideas addressed forms and information flow, which is not surprising, given that health care is an information-dependent business with much apparent waste in information capture and sharing processes. The second largest category of staff ideas focused on improving external and internal service and communication processes.

Capture and implementation of staff ideas have not been without challenges, such as the need to devise clear but simple before-after measures for ideas; not all ideas are easily quantifiable in terms of specific impact, such as labor hours saved. Staff (and leader) comfort with the PDSA process has been variable, and encouraging and teaching the scientific method behind the PDSA cycle is a continuing need. Another challenge involves compliance in using the Idea Supermarket, the Web-based system document, to get ideas documented for sharing across the organization. Case study examples of the use of SWL tools and the ELI process from three additional Virginia Mason departments are provided in Appendix 3 (available in online article).

## Discussion

A high level of staff engagement is critical to organization success and improving the quality of health care delivery. In this article, we have described the guiding principles and design elements of a leadership and staff engagement approach that focuses on SWL and on capturing staff ideas to increase staff engage-

Table 1. Examples of Everyday Lean Ideas and Impact from the Idea Supermarket, 2014 (N = 400)

Category*	Focus	No. of Ideas (%)	Typical Ideas	Typical Waste Reductions
Forms and Information	Improving recorded information for sharing and tracking	98 (25)	<ul style="list-style-type: none"> <li>Information capture (for example, billing, referrals, educational requirements)</li> <li>Visibility boards, work status</li> <li>Documenting decisions, eligibility</li> <li>Access to clinical details</li> <li>Converting from handwritten processes</li> <li>Information flow between teams</li> </ul>	<ul style="list-style-type: none"> <li>Duplicated, missing, or inaccurate information</li> <li>Number of touches</li> <li>Processing time</li> <li>Service delays</li> <li>Frustration</li> </ul>
Service and Communication	Improving customer experience	79 (20)	<ul style="list-style-type: none"> <li>Improving signage and patient materials</li> <li>Team communication processes</li> </ul>	<ul style="list-style-type: none"> <li>Frustrating experiences for patients and visitors</li> <li>Information handoff defects</li> </ul>
Clutter and 5S	Visually managing our environment to keep the workplace safe and organized	41 (10)	<ul style="list-style-type: none"> <li>Improving and standardizing set-up</li> <li>Moving most-used items to point of use</li> <li>Making supply stocking more reliable</li> <li>Refining team space agreements</li> <li>Organizing computer drives</li> <li>Quick information reference tools</li> </ul>	<ul style="list-style-type: none"> <li>Care delivery delays</li> <li>Motion</li> <li>Searching time</li> <li>Missing supplies</li> <li>Misused, unsafe space</li> <li>Rework and duplication</li> </ul>
Computer	Improving use of computer systems	34 (9)	<ul style="list-style-type: none"> <li>Improving software efficiency features</li> <li>Improving routing of information</li> <li>Setting up electronic information flows</li> </ul>	<ul style="list-style-type: none"> <li>Time</li> <li>Number of clicks/steps</li> <li>Misdirected information</li> <li>Paper printouts</li> </ul>
Equipment and Supplies	Making equipment and supplies work better	27 (7)	<ul style="list-style-type: none"> <li>Better pricing and ordering options</li> <li>Inventory management; par levels</li> <li>Improving access and function</li> <li>Having the right items</li> </ul>	<ul style="list-style-type: none"> <li>Defects</li> <li>Costs</li> <li>Space and storage</li> <li>Motion</li> </ul>
Leadership	Leader processes and high-level organizational standard work	22 (5)	<ul style="list-style-type: none"> <li>Refining daily management routines</li> <li>Streamlining workloads (for example, meetings, reports)</li> <li>Improving implementation strategies</li> </ul>	<ul style="list-style-type: none"> <li>Time for operational tasks and organizational reporting</li> <li>Low staff engagement</li> <li>Rework and delays in implementing changes</li> </ul>
Care Delivery	Improving direct patient care processes	21 (5)	<ul style="list-style-type: none"> <li>Improved scheduling, lab ordering</li> <li>Reducing patient anxiety in procedures</li> <li>Improving patient handouts</li> <li>Simplifying patients materials</li> </ul>	<ul style="list-style-type: none"> <li>Clinical test response times</li> <li>Order delays and inaccuracy</li> <li>Patient anxiety or discomfort</li> <li>Infection risks</li> </ul>
Green Ideas	Environmentally friendly practices	20 (6)	<ul style="list-style-type: none"> <li>Reducing printing and other paper</li> <li>Recycling supplies and equipment</li> <li>Reusable supplies (water bottles, etc.)</li> <li>Energy conservation</li> </ul>	<ul style="list-style-type: none"> <li>Costs</li> <li>Time</li> </ul>
Other Categories	Staffing coordination, training and support, medication processes, safety and ergonomics	58 (15)	<ul style="list-style-type: none"> <li>Absence planning and coverage, level loading work across teams</li> <li>Cross-training, training effectiveness, education documentation</li> <li>Infection prevention, sharps handling</li> <li>Medication delivery, documentation, labeling, mistake-proofing</li> </ul>	<ul style="list-style-type: none"> <li>Time for routine processes</li> <li>Staff frustration with workload and having needed skills/knowledge</li> <li>Potential for job-site injuries</li> <li>Safety risks for patients</li> <li>Information defects</li> </ul>

\* Categories are identified centrally by the staff engagement team, which reviews submitted ideas and posts them in the Supermarket for organizational use.

ment in daily problem solving and improvement.

Our daily management system is based on the understanding that staff engagement is a product of active empowerment of leaders, in a supportive institutional culture, and with a focus on daily improvement (kaizen). Through this approach, we are attempting to create a self-sustaining, innovative environment in which there is comfort with idea risk-taking and a high degree of transparency. On the basis of our experience, we have identified

four important factors that are contributing to our success:

**1. Establishing VMPS as our management method.** Whatever the quality improvement method, leverage it fully, and integrate quality improvement with daily management. Let the framework and guiding principles shape all aspects of the business. Make it the language and mind-set of the organization

**2. Transforming our culture to create the environmental conditions for staff engagement.** Focus on developing strong

methods and skills in creativity and improvement, have systems for routinely encouraging and supporting staff ideas, and ensure that ideas are recognized in meaningful ways.

**3. Having a strong strategic plan that serves as the organization's compass.** Like VMPS, Virginia Mason's strategic plan is routinely used throughout the organization to guide discussions and improvements—and is cited at the onset of all organizationwide meetings. It is an active, living document that keeps us focused.

**4. Having constancy of purpose, anchored by executive leadership.** This is long-term work that requires a long-term view by the executive team and a level of commitment that does not waver. This is easier said than done, and the importance of an aligned executive team providing constancy of purpose cannot be overstated.

We have also identified the following recommendations:

- Clearly and repeatedly communicate the value and rationale of what you are doing.
- Rituals are critical. Keep schedules for routines such as huddles and rounding, and don't let them fade away.
- Leader attitudes and approaches really matter.
- Visual boards need to be seen as a means to facilitate daily management and not the end in themselves.
- Expect the implementation to take time and a lot of experimentation—set clear expectations and then provide leaders the psychological safety to tackle it as a continuous improvement journey.
- Focus on building trusting relationships that can weather change.
- Make staff idea processes hassle-free and pay attention to the language you use (for example, we've had to shift from "fill out an idea form" to "work on an idea, share the basics").
- Challenge mental models about traditional leader and staff roles when it comes to identifying and solving problems.
- Remember that staff involvement contributes to staff development.

Implementation of the daily management system was challenging because of early resistance to the idea of standardizing work, particularly for leaders. In addition, the ELI program was seen as extra work, of unproven value. However, the high visibility of positive results from early-adopter departments, such as the ED, contributed to broader implementation. We have also observed that the most effective teams make their staff engagement work visible through their daily management routines, reducing their reliance on the annual measurement process to know how things are doing and involve staff to make things better. Our experiences to date may help other organizations on a

quest for broad and sustainable involvement of all staff in daily improvement of their operations.

Our results are from a single institution with a strong cultural adoption of VMPS as a management system, and as such may not be directly generalizable to other institutions in different settings. However, the basic principles and design elements that we report are not specific to VMPS or any other methodology. Furthermore, the success of any institution and management system should be enhanced by greater staff engagement. Accordingly, we believe that the staff engagement program we report can serve as a foundation for development of successful programs at other institutions regardless of size or management system, though local adaptation may be desirable, or even necessary. We also suggest that the staff engagement will only grow in importance as pay-for-performance and value-based care payment models become more commonplace.

## Summary

We report on systematic enhancement of staff engagement through implementation of an SWL process and an ELI system. The staff engagement program is founded on the guiding principles of leader engagement, integration of improvement into daily activities, and support of a culture in which staff feel psychologically safe to engage improvement idea generation. **J**

This article was developed on the basis of the presentation, "Engaging Front-Line Staff in Real-Time Improvement," December 10, 2013, Institute of Healthcare Improvement 2013 IHI National Forum, Orlando, Florida.

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See the online version of this article for

- Appendix 1. Sample Emergency Department (ED) Production Board Used in Daily Huddles, Provided as a Photo (Appendix 1a) and the Typed Version of the Information (Appendix 1b)
- Appendix 2. Sample Emergency Department (ED) Rocks in Your Shoes Staff Board, Provided as a Photo (Appendix 2a) and the Typed Version of the Information (Appendix 2b)
- Appendix 3. Case Studies at Three Departments at Virginia Mason

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Appendix 1. Sample Emergency Department (ED) Production Board Used in Daily Huddles, Provided as a Photo (Appendix 1a) and the Typed Version of the Information (Appendix 1b)

Appendix 1a. Photo

**ED PRODUCTION BOARD**

We produce timely, appropriate dispositions/discharges in a patient-centered environment

ED VOLUMES: MEDDATA > 30  
< 30  
 03/15 BUDGET: 4828  
 ACTUAL: 4946  
 VARIANCE: 118 2.44%

	BASELINE 2014	TARGET	DEC 2014	JAN 2015	3/16
DAILY CENSUS	66	67	67	69	58
DOOR TO DOC	29	10	29	34	20
DOOR TO D/C	171	120	172	181	190
DOOR TO ADMIT	226	150	220	223	207

DATE	HOS AM CENSUS	ED CENSUS	ADMITTS	%	DTZ	DTD	DIS	ADM	MISSED OPPORTUNITIES / PLAN
MON 3/16	209	58	18	31%	10	20	190	207	
TUE 3/1	242								
WED 3/11	270	57	22	39%	13	20	179	199	
THU 3/12	292	74	28	38%	31	41	192	200	
FRI 3/13	273	64	29	45%	16	24	197	220	
SAT 3/14	250	72	20	28%	21	30	161	233	
SUN 3/15	222	62	25	40%	10	19	198	182	

= PDSA

(continued on page AP2)

**Appendix 1. Sample Emergency Department (ED) Production Board Used in Daily Huddles, Provided as a Photo (Appendix 1a) and the Typed Version of the Information (Appendix 1b) continued**

**Appendix 1b. Typed Version**

**ED Production Board**

*We produce timely, appropriate dispositions/discharges in a patient-centered environment.*

ED Volumes:

Budget:	4828	MEDDATA
Actual:	4946	> 30
Variance:	118 (2.44%)	< 30

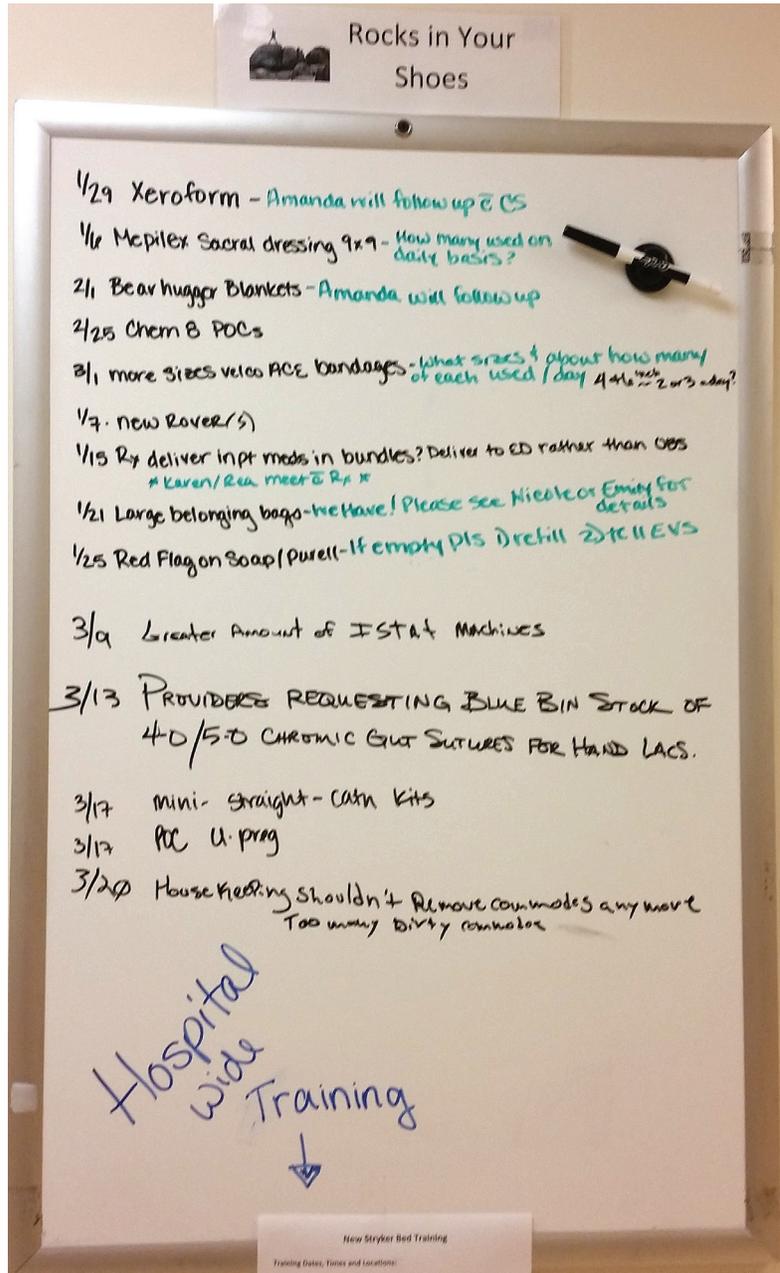
	Baseline 2014	Target	Dec 2014	Jan 2015	Mar 2015
Daily Census	66	67	67	69	58
Door to DOC	29	10	29	34	20
Door to D/C	171	120	172	181	190
Door to Admit	226	150	220	223	207

Date	HOS AM Census	ED Census	Admits	%	DTZ	DTD	DIS	ADM	Missed Opportunities/Plan
Mon 3/16	209	58	18	31%	10	20	190	207	
Tues 3/10	242								
Wed 3/11	270	57	22	39%	13	20	179	199	
Thurs 3/12	292	74	28	38%	31	41	192	200	
Fri 3/13	273	64	29	45%	16	24	197	220	
Sat 3/14	250	72	20	28%	21	30	161	233	
Sun 3/15	222	62	25	40%	10	19	198	182	

DOC, doctor; D/C, discharge; HOS, Hospital; DTZ, door to nursing zone; DTD, door to doctor; DIS, discharged; ADM, admitted.

Appendix 2. Sample Emergency Department (ED) Rocks in Your Shoes Staff Board, Provided as a Photo (Appendix 2a) and the Typed Version of the Information (Appendix 2b)

Appendix 2a. Photo



(continued on page AP4)

**Appendix 2. Sample Emergency Department (ED) Rocks in Your Shoes Staff Board,  
Provided as a Photo (Appendix 2a) and the Typed Version of the Information (Appendix 2b)**

**Appendix 2b. Typed Version**

**Rocks In Your Shoes**

- 1/29 Xeroform – Amanda will follow up [with] CS
- 1/6 Mepilex Sacral dressing 9x9 – How many used on daily basis?
- 2/1 Bear hugger blankets – Amanda will followup
- 2/25 Chem 8 POCs
- 3/1 More sizes velc[r]o ACE bandages – what sizes & about how many of each used/  
day 4 & 6 inch, 2 or 3 a day?
- 1/7 New rover(s)
- 1/15 Rx deliver inpt meds in bundles? Deliver to ED rather than OBS (Karen/Rea meet  
[with] Rx)
- 1/21 Large belonging bags – we have! Please see Nicole or Emily for details
- 1/25 Red flag on soap/Purell – if empty pls [please] 1) refill 2) tell EVS
- 3/9 Greater amount of ISTAT machines
- 3/13 Providers requesting blue bin stock of 4.0/5.0 chromic gut sutures for hand lacs.
- 3/17 Mini-straight –cath kits
- 3/17 POC U-preg
- 3/20 Housekeeping shouldn't remove commodes anymore[,] too many dirty commodes

CS, Central Supply; POC, point of care; Rx, prescription; inpt, inpatient; OBS, observation unit; EVS, Environmental Services; ISTAT, blood analyzer system device (Abbott Laboratories, Abbott Park, Illinois); lacs, lacerations; cath, catheter; U-preg, pregnancy test, urine.

### Appendix 3. Case Studies at Three Departments at Virginia Mason

**Case Study 1. Insurance Billing and Follow-Up.** During the past several years, the Insurance Billing and Follow-Up Department (IBF), with 62 employees, has enjoyed success with engaging staff on integrating the ELI system and SWL tools. IBF was an early adopter of both initiatives and quickly recognized the linkage to staff engagement; between 2011 and 2013, its staff engagement scores improved by three percentage points. Its scores on the cluster of five idea-related items was also in the top third, and the team won the corporate knowledge-sharing award four years in a row.

Staff members are matched with “idea buddies” to work on ideas together, both to build kaizen skills and to evenly distribute the idea work. ELI “workshops” are held to help staff with completing and publishing ELIs. Slips of paper and the team’s visibility boards are used to visually track issues needing ELIs (called “Free-ELIs” because they are up for grabs) and ELIs in process. Team members provide updates during huddles, which are also used for real-time resolution of problems per the intent of daily management routines. The team’s ELIs have focused on standardizing what and how information is documented, eliminating errors that hold up bills, reducing workload burdens on staff, speeding up claims processing times, and putting environmentally and ergonomically sound practices in place.

The departmental leaders believe that their daily huddles are key to the team’s success in having the right conversations at the right time, underscoring the importance of having the people who do the work make improvements to their work.

**Case Study 2. Phlebotomy Department.** The Phlebotomy Department, which has 40 employees, represents an example of a clinical work group that has embraced a daily-management mind-set to facilitate adoption of the ELI process and SWL routines. Staff engagement scores rose dramatically—from an overall mean of 69.8 to 81.0—between 2011 and 2013. Their scores on the cluster of five idea-related items was also in the top third. Key to their improvements were the local leadership’s asking for staff ideas and integrating the “ask for ideas” into SWL daily and weekly huddles. In 2011 they launched an ELI contest, setting their goal at 20 ideas in one month, with a prize of lunch for all. By the end of the first week, they had received 12 ideas, and at month’s end they had exceeded their target and received 50 ELIs. Now that staff are comfortable sharing their ideas, they use their huddles, a key component of SWL, to solicit help working on the implementation of ELIs. Another by-product of their information sharing at their daily and weekly huddles is additional capacity during their staff meetings. Instead of shortening their staff meetings, this team elected to use the time for team development.

**Case Study 3. Inpatient Physical Medicine and Rehabilitation Department.** The Inpatient Physical Medicine and Rehabilitation Department, with 72 employees, is a hospital-based team with integrated ELI and SWL routines. Developing VMPS knowledge and idea testing skills are seen as vital. The department’s routines have included all staff members, each implementing at least two ELIs per year on the basis of opportunities identified in the department’s high-level value streams. Staff are able to request protected time to work on an idea, while leaders use team huddles and one-to-one coaching to support staff with specific ideas and skill building. Idea mentors are assigned to teach others the process. Typical ELIs from this team focus on management of patient care equipment and supplies, staff scheduling and communication processes, patient therapy, communication and discharge, and reporting processes.

This team also has been recognized multiple years for its focus on ELIs and for sharing these through the Idea Supermarket. The team’s staff engagement scores have been in the top third for the past few years and have continued to rise each year; this includes an increase on the cluster of five idea-related items from a mean of 75.0 in 2012 to 81.3 in 2013.

ELI, Everyday Lean Idea; SWL, Standard Work for Leaders; VMPS, Virginia Mason Production System.

## Performance Measures

# Rural Implications of Expanded Birth Volume Threshold for Reporting Perinatal Care Measures

*Michelle M. Casey, MS; Peiyin Hung, MSPH; Carrie Henning-Smith, PhD, MSW, MPH; Shailendra Prasad, MBBS, MPH; Katy B. Kozhimannil, PhD, MPA*

Childbirth is a leading reason for inpatient hospital admissions in the United States, and perinatal quality and patient safety are increasingly important topics for health care providers and hospitals.<sup>1</sup> In 2010 The Joint Commission's Perinatal Care performance measure set was made available for voluntary reporting by accredited hospitals. In 2014, accredited hospitals with at least 1,100 births annually were required to collect and report data on the Perinatal Care measures, along with five other sets of core measures, to The Joint Commission. Starting with January 1, 2016, discharges, the threshold for required reporting of the perinatal measures by accredited hospitals decreased to a minimum of 300 live births per year.<sup>2</sup>

Accredited hospitals with an average daily census of 10 or fewer inpatients are exempt from the requirement to transmit data on any specific measure set, including the Perinatal Care measures, to The Joint Commission. Such hospitals are only required to collect data internally on six sets of measures and share the analysis with surveyors if they have at least 300 live births per year, but most are unlikely to meet this threshold. Critical access hospitals (CAHs)—small rural hospitals with 25 or fewer beds—have a separate Joint Commission measure-reporting requirement. CAHs are required to collect data on a minimum of four core measure sets, which may include the Perinatal Care measures, but are exempt from the requirement to transmit data to the Joint Commission.<sup>3</sup>

The current Perinatal Care (PC) set includes the following five measures<sup>4</sup>:

- PC-01 Elective delivery (Patients with elective vaginal deliveries or elective cesarean births at  $\geq 37$  and  $< 39$  weeks of gestation completed)
- PC-02 Cesarean birth (Nulliparous women with a term, singleton baby in a vertex position delivered by cesarean birth)
- PC-03 Antenatal steroids (Patients at risk of preterm delivery at  $\geq 24$  and  $< 34$  weeks gestation receiving antenatal steroids prior to delivering preterm newborns)
- PC-04 Health care-associated bloodstream infections in newborns (Staphylococcal and gram-negative septicemias or

## Article-at-a-Glance

**Background:** In 2016 the minimum annual birth volume threshold for required reporting of the Joint Commission Perinatal Care measures by accredited hospitals decreased from 1,100 to 300 births.

**Methods:** Publicly available Joint Commission Quality Check data from April 2014 to March 2015 for three Perinatal Care measures were linked to Medicare Provider of Services and American Hospital Association Annual Survey data. For each measure, hospital-level reporting and performance among accredited hospitals providing obstetric care were compared using Fisher's exact tests.

**Results:** Sixty-seven percent of the 2,396 accredited hospitals with obstetric services reported at least one eligible patient for two of the four reported Perinatal Care measures: Elective delivery and exclusive breast milk feeding. Fewer hospitals (35.0%) had data on the antenatal steroids measure; many hospitals may not have any eligible patients for this measure. Hospitals with higher birth volume, those in urban counties, and those with private, nonprofit ownership or system affiliation were more likely to report the perinatal measures ( $p < 0.001$ ). Across states, reporting rates varied considerably. By hospital volume, performance varied more on the antenatal steroids measure (78.0% to 91.5%) than on the breast milk feeding measure (48.4% to 49.5%) and the elective delivery measure (2.5% to 3.0%).

**Conclusions:** Expansion of the minimum birth volume threshold nearly doubles the number of accredited hospitals required to report the Perinatal Care measures to The Joint Commission. However, 485 accredited hospitals with obstetric services that are either critical access hospitals or have fewer than 300 births annually are still exempt from reporting. Although many rural hospitals remain exempt from reporting requirements, the measures offer an opportunity for both rural and urban hospitals to assess and improve care.

bacteremias in high-risk newborns)

■ PC-05 Exclusive breast milk feeding (Exclusive breast milk feeding during the newborn's entire hospitalization)

An additional measure—PC-05a Exclusive breast milk feeding considering the mother's initial feeding plan—was retired effective with October 1, 2015, discharges.<sup>5</sup>

All hospitals paid under the Medicare Prospective Payment System (PPS) have been required to report PC-01 to the Centers for Medicare & Medicaid Services (CMS) as part of the Hospital Inpatient Quality Reporting Program, effective with January 1, 2013, discharges.<sup>6</sup> PC-01 is also a measure in the CMS Medicare Hospital Value-Based Purchasing Program. In addition, PC-01, PC-02, and PC-03 were included in the CMS 2015 Core Set of Maternity Measures for Medicaid and the Children's Health Insurance Program (CHIP).<sup>7</sup>

The purpose of this study was to analyze which accredited hospitals are currently reporting the Perinatal Care measures to The Joint Commission, to describe their performance on these measures, and to discuss the potential implications for lower-birth-volume hospitals of the expanded minimum threshold for required reporting of these measures.

## Methods

### DATA

Data on all accredited hospitals in the United States that reported the Perinatal Care measures from April 1, 2014, through March 31, 2015, were downloaded from the Joint Commission Quality Check® website. The publicly available measures for this time period were PC-01 Elective delivery; PC-03 Antenatal steroids; PC-05 Exclusive breast milk feeding; and PC-05a Exclusive breast milk feeding considering mothers' initial feeding plan. The data provided measure-specific eligible patients and actual performance rates at the hospital level. We excluded PC-05a from the analysis because it was retired in 2015.

To identify all hospitals that were potentially eligible to report the Perinatal Care measures, we relied on several data sources. We used 2014 Medicare Provider of Services (POS) data on provision of obstetric services and fiscal year 2012 American Hospital Association (AHA) Annual Survey data on the number of births and obstetric service status to identify hospitals providing obstetric services. We checked hospital websites to verify the status of hospitals that were missing data or that reported not providing obstetric services in AHA and POS. We defined hospitals providing obstetric care as nonfederal, general, medical/surgical hospitals with at least 10 births annually and providing obstetric services by staff or under arrangement. The Joint Commission also accredits 48 Department of Defense

hospitals that provide obstetric services, most of which are located in urban areas (data from those hospitals are included in establishing the national rate for each of the measures). These hospitals were not included in this analysis.

### DATA ANALYSIS

The hospital-level Perinatal Care measure data were linked to data on hospital location, organizational characteristics, and services from the AHA Annual Survey and Medicare POS databases, using a combination of Medicare Provider Number, hospital name, address, and zip code.

Hospitals were categorized by annual birth volume (< 300 births, 300–1,099 births, and 1,100 births and over) using AHA Annual Survey data. Hospital ownership (public, private nonprofit, or private for-profit ownership) and Joint Commission accreditation status came from the POS data and the Quality Check website. CAHs were identified using the Flex Monitoring Team CAH database.<sup>8</sup> Hospitals paid under the Medicare PPS were categorized as rural or urban on the basis of their location in nonmetropolitan or metropolitan counties, as defined by the federal Office of Management and Budget.<sup>9</sup>

For each perinatal measure, we compared reporting by hospital characteristics, including annual birth volume, hospital type, ownership, and system affiliation, using Fisher's exact tests. The comparison of performance between groups for each hospital characteristic was based on two-group *t*-tests. We also calculated the percentage of Joint Commission-accredited hospitals with obstetric services that reported each measure and the median performance for each state. We defined reporting on a measure as reporting data for at least one patient, and the performance rate as the percentage of eligible patients in a hospital who received care. Lower values represent better quality for the elective delivery measure; higher values indicate better care for the other three measures.

## Results

### ACCREDITED HOSPITALS WITH OBSTETRIC SERVICES

We identified a total of 3,084 hospitals providing obstetric services in 2014 (Table 1, page 181). Both urban (85.0%) and rural PPS hospitals (78.1%) were more likely than CAHs (39.1%) to provide obstetric services. Overall, 77.7% of hospitals providing obstetric services were Joint Commission accredited. Urban (89.4%) and rural PPS hospitals (76.6%) with obstetric services were much more likely to be accredited than CAHs (37.2%).

**Table 1. Hospitals Providing Obstetric Services and Joint Commission Accreditation Status in 2014**

Type of Hospital	All Hospitals (N = 4,420)		Hospitals with Obstetric Services* (N = 3,084)	
	Total	No. (%) with Obstetric Services	Accredited (%)	Not Accredited (%)
Critical Access Hospitals	1,335	522 (39.1)	194 (37.2)	328 (62.8)
Rural PPS Hospitals	875	683 (78.1)	523 (76.6)	160 (23.4)
Urban PPS Hospitals	2,210	1,879 (85.0)	1,679 (89.4)	200 (10.6)
All Hospitals	4,420	3,084 (69.8)	2,396 (77.7)	688 (22.3)

PPS, (Medicare) Prospective Payment System.

\* Defined as nonfederal, general, medical/surgical hospitals with at least 10 births annually and providing obstetric services by staff or under arrangement.

**REPORTING OF PERINATAL CARE MEASURES**

For April 1, 2014, through March 31, 2015, discharges, 66.8% of all 2,396 Joint Commission–accredited hospitals with obstetric services reported data on at least one eligible patient for the elective delivery measure, and 67.3% reported data on the exclusive breast milk feeding measure (Table 2, below). Fewer hospitals had data on the antenatal steroids measure; many hospitals do not have eligible patients meeting the criteria for inclusion in this measure.

Hospitals with higher birth volumes were significantly more likely to report all three perinatal measures ( $p < 0.001$ ). Among the 965 hospitals with 1,100 and over live births annually, 73.3% reported the antenatal steroid measure, while 96.3% reported the elective delivery measure and 96.2% reported the breast milk feeding measure. Among the 988 hospitals with 300–1,099 births (those that will be affected by changing the minimum threshold for required reporting to 300 births per year), 56.5% reported the elective delivery and breast feeding measures, and 11.3% had data on the antenatal steroid measure during the study period.

Urban PPS hospitals were more likely than CAHs and rural PPS hospitals to report all three perinatal measures. The largest difference was for the antenatal steroid measure, reported by 47.5% of urban PPS hospitals and only 7.3% and 1.5% of rural PPS hospitals and CAHs, respectively, which likely reflected variation by hospital type in the number of eligible patients for this measure.

Public hospitals were less likely than private non-profit or for-profit hospitals to report the elective delivery and exclusive breast milk feeding measures ( $p < 0.001$ ). Reporting rates for the antenatal steroid measure did not differ significantly by hospital ownership. System-affiliated hospitals were more likely to report the three

perinatal measures than unaffiliated hospitals. By state, reporting rates for the perinatal measures ranged from 33.3% to 100.0% for the elective delivery measure, from 40.0% to 100.0% for the breastfeeding measure, and from 8.0% to 71.4% for the antenatal steroid measure (see Appendix 1, available in online article, for individual state rates).

**Table 2. Reporting of Perinatal Care Measures, April 2014–March 2015, by Hospital Characteristics**

	Joint Commission–Accredited Hospitals with Obstetric Services	No. (%) of Hospitals Reporting Data on at Least One Eligible Patient		
		Elective Delivery	Exclusive Breast Milk Feeding	Use of Antenatal Steroids
<b>All Hospitals</b>	2,396	1,601 (66.8)	1,613 (67.3)	838 (35.0)
<b>Annual Birth Volume*</b>				
< 300	443	114 (25.7)	127 (28.7)	19 (4.3)
300–1,099	988	558 (56.5)	558 (56.5)	112 (11.3)
1,100+	965	929 (96.3)	928 (96.2)	707 (73.3)
<b>Hospital Type*</b>				
CAH	194	41 (21.1)	47 (24.2)	3 (1.5)
Rural PPS	523	261 (49.9)	268 (51.2)	38 (7.3)
Urban PPS	1,679	1,299 (77.4)	1,298 (77.3)	797 (47.5)
<b>Hospital Ownership*</b>				
Public	390	220 (56.4)	223 (57.2)	123 (31.5)
Not-for-profit	1,588	1,115 (70.2)	1,123 (70.7)	583 (36.7)
For-profit	418	266 (63.6)	267 (63.9)	132 (31.6)
<b>System Affiliation*</b>				
Affiliated	1,695	1,173 (69.2)	1,182 (69.7)	632 (37.3)
Not Affiliated	701	428 (61.1)	431 (61.5)	206 (29.4)

CAH, critical access hospital; PPS, (Medicare) Prospective Payment System.

\* Within each category (annual birth volume, hospital type, hospital ownership, and system affiliation), differences in the percentage of hospitals that had reportable data on each measure are significant ( $p < 0.001$ ; Fisher's exact test) except for differences in the use of antenatal steroids by hospital ownership, which were not significant.

**Table 3. Reporting of Perinatal Care Measures April 2014–March 2015 by Combination of Hospital Type and Birth Volume**

Joint Commission–Accredited Hospitals with Obstetric Services			No. (%) of Hospitals Reporting Data for at Least One Eligible Patient		
Annual Birth Volume	Hospital Type	No. of Hospitals	Elective Delivery	Exclusive Breast Milk Feeding	Use of Antenatal Steroids
< 300	CAH	152	28 (18.4)*	34 (22.4)*	2 (1.3) <sup>†</sup>
	Rural PPS	141	48 (34.0) <sup>‡</sup>	54 (38.3) <sup>§</sup>	0 (0.0) <sup>†</sup>
	Urban PPS	150	38 (25.3)	39 (26.0) <sup>  </sup>	17 (11.3) <sup>*‡</sup>
300–1,099	CAH	42	13 (31.0) <sup>*†</sup>	13 (31.0) <sup>*†</sup>	1 (2.4) <sup>†</sup>
	Rural PPS	359	192 (53.5) <sup>§</sup>	193 (53.8) <sup>‡</sup>	29 (8.1) <sup>†</sup>
	Urban PPS	587	353 (60.1) <sup>  </sup>	352 (60.0) <sup>‡</sup>	82 (14.0) <sup>*‡</sup>
1,100+	Rural PPS	23	21 (91.3)	21 (91.3)	9 (39.1) <sup>†</sup>
	Urban PPS	942	908 (96.4)	907 (96.3)	698 (74.1) <sup>*</sup>

CAH, critical access hospital; PPS, (Medicare) Prospective Payment System. Comparisons were conducted with Fisher's exact test.  
 \* Significantly different from rural PPS hospitals with the same birth-volume level at  $p < 0.01$ .  
<sup>†</sup> Significantly different from urban PPS hospitals with the same birth-volume level at  $p < 0.01$ .  
<sup>‡</sup> Significantly different from CAHs with the same birth-volume level at  $p < 0.01$ .  
<sup>§</sup> Significantly different from urban PPS hospitals with the same birth-volume level at  $p < 0.05$ .  
<sup>||</sup> Significantly different from rural PPS hospitals with the same birth-volume level at  $p < 0.05$ .

Table 3 (above) shows the relevance of hospital type in assessing reporting rates by birth volume. Among all accredited hospitals with < 300 births annually, CAHs were significantly less likely than rural PPS hospitals to report the elective delivery (18.4% versus 34.0%,  $p = 0.003$ ) and breast feeding measures (22.4% versus 38.3%,  $p = 0.004$ ), while rural PPS hospitals were significantly more likely than urban PPS hospitals to report the breast feeding measures (38.3% versus 26.0%,  $p = 0.03$ ). In the 300–1,099 birth volume category, CAHs were significantly less likely than either rural ( $p < 0.01$ ) or urban ( $p < 0.001$ ) PPS hospitals to report the elective delivery and breast feeding measures; rural PPS hospitals were less likely than urban PPS hospitals to report the elective delivery measure (53.5% versus 60.1%,  $p = 0.04$ ); and both CAHs (2.4%,  $p < 0.001$ ) and rural PPS hospitals (8.1%,  $p = 0.007$ ) were less likely than urban PPS hospitals (14.0%) to report the antenatal steroids measure. There were no CAHs in the 1,100-and-over birth volume category, and differences between rural and urban PPS hospitals in reporting were not statistically significant, except for the antenatal steroid measure (39.1% versus 74.1%,  $p < 0.001$ ); as noted earlier, most lower-birth-volume hospitals do not have any eligible patients for this measure.

**PERFORMANCE ON PERINATAL CARE MEASURES**

The overall elective delivery rate was 2.8% (Table 4, page 183).

No significant differences occurred in performance across groups defined by hospital characteristics. However, the large standard deviations indicate wide variation in individual hospital rates within each group.

On the exclusive breast milk feeding measure, the overall performance rate was 48.8%; performance did not differ significantly by hospital birth volume. Rural and urban PPS hospitals performed similarly, while CAHs had higher rates of exclusive breast milk feeding (59.4%) than rural (44.4%) and urban (49.3%) PPS hospitals ( $p < 0.001$ ). Private nonprofit hospitals had a higher rate of exclusive breast milk feeding (51.5%) than public (43.6%,  $p < 0.001$ ) and private for-profit hospitals (41.8%,  $p < 0.001$ ).

The overall performance rate on the antenatal steroids measure was 89.6%. Hospitals with 1,100 or more births accounted for the majority of reporting hospitals and had significantly higher performance (91.5%) than those with

300–1,099 births (78.0%,  $p < 0.001$ ). Performance was also significantly higher for urban PPS hospitals (90.3%) than rural PPS hospitals (75.2%,  $p < 0.001$ ).

**Discussion**

We found significant differences in reporting on the Perinatal Care measures among accredited hospitals on the basis of hospital characteristics, including birth volume and hospital type. This variation likely reflects the different requirements for hospitals based on type and birth volume. Specifically, CAHs are not required to report Perinatal Care measures to The Joint Commission, and at the time these data were reported, the minimum threshold for required reporting was 1,100 live births annually.

The Joint Commission's overall decision to have different quality reporting requirements for CAHs is consistent with current CMS policy, which requires only PPS hospitals, not CAHs, to report inpatient and outpatient quality measures. However, public reporting of relevant quality measures provides CAHs with an opportunity to demonstrate the quality of care they are providing, as well as to identify opportunities for improvement.<sup>10,11</sup>

The percentage of accredited PPS hospitals that did not report the elective delivery measure to The Joint Commission (29.2%) is somewhat surprising. Although it has been a voluntary measure for hospitals with fewer than 1,100 births, it is a required measure for all PPS hospitals in the CMS Hospital

Table 4. Performance on Perinatal Care Measures, April 2014–March 2015, by Hospital Characteristics

	Elective Delivery			Exclusive Breast Milk Feeding			Use of Antenatal Steroids		
	No.	Mean %	SD	No.	Mean %	SD	No.	Mean %	SD
<b>All Hospitals</b>	1,601	2.8	4.5	1,613	48.8	19.3	838	89.6	19.9
<b>Annual Birth Volume*</b>									
< 300	114	2.5	6.4	127	49.1	22.4	19	87.4	24.1
300–1,099	558	3.0	5.3	558	49.5	20.5	112	<b>78.0</b>	<b>30.9</b>
1,100+	929	2.8	3.5	928	48.4	18.1	707	<b>91.5</b>	<b>16.7</b>
<b>Hospital Type*</b>									
CAH	41	2.6	5.6	47	<b>59.4</b>	<b>20.0</b>	3	88.9	19.2
Rural PPS	261	3.2	6.0	268	<b>44.4</b>	<b>22.2</b>	38	<b>75.2</b>	<b>31.1</b>
Urban PPS	1,299	2.8	4.1	1,298	49.3	18.4	797	<b>90.3</b>	<b>19.0</b>
<b>Hospital Ownership*</b>									
Public	220	2.9	4.7	223	<b>43.6</b>	<b>21.0</b>	123	87.7	21.7
Not-for-profit	1,115	2.8	4.4	1,123	<b>51.5</b>	<b>18.5</b>	583	89.8	19.5
For-profit	266	2.9	4.4	267	<b>41.8</b>	<b>18.5</b>	132	90.5	19.9
<b>System Affiliation*</b>									
Affiliated	1,173	2.8	4.3	1,182	49.4	18.7	632	90.6	19.3
Not Affiliated	428	3.0	4.9	431	47.1	20.7	206	86.6	21.4
SD, standard deviation; CAH, critical access hospital; PPS, (Medicare) Prospective Payment System.									
* Significant differences ( $p < 0.05$ ; two-group $t$ -test) in the mean performance rates for hospitals in each category, in comparison to each of the other categories, are shown in <b>bold</b> .									

Inpatient Quality Reporting Program,<sup>6</sup> and multiple state Medicaid agencies have implemented initiatives focused on measuring and reducing elective deliveries.<sup>12–14</sup> In addition, efforts to reduce early elective deliveries have met with success across a range of hospital settings, including smaller-volume hospitals, within integrated health systems,<sup>15,16</sup> and through state-based initiatives.<sup>17–19</sup> However, lower-birth-volume hospitals, even if they are reporting the elective delivery measure to CMS, may have thought that other Joint Commission measure sets were more relevant for the populations they serve.

Expansion of the minimum threshold for reporting of the Perinatal Care measures in January 2016 almost doubles the number of accredited hospitals that are required to report these measures to The Joint Commission. In addition to the 965 hospitals with 1,100 or more live births currently required to report the perinatal measures, an estimated 946 accredited PPS hospitals with 300–1,099 annual births are required to report the measures under the expanded minimum threshold. For April 1, 2014, through March 31, 2015, 39.9% of the 587 urban PPS hospitals and 46.5% of the 359 rural PPS hospitals in this group did not report the elective delivery measure, while 40.0% of the urban PPS hospitals and 46.2% of the rural PPS hospitals did not report the breast feeding measure. Some hospitals

in the 300–1,099 annual-birth-volume group may not have any eligible patients for the antenatal steroids measure because the denominator is limited to deliveries at 24 to 34 weeks' gestation. However, attention to the particular challenges related to collecting and reporting data on the antenatal steroids measure may support hospitals that are newly required to submit the measure and have eligible patients.

Although expansion of the minimum threshold for required reporting will substantially increase the number of medium-volume hospitals reporting the perinatal measures, 485 accredited hospitals that are either CAHs or have fewer than 300 births annually (20.2% of accredited hospitals with obstetric services) are exempt from the requirement. The reporting requirement also does not apply to an estimated 688 hospitals with obstetric services not accredited by The Joint Commission. Our study does not dispute the Joint Commission decision to require reporting only for hospitals with 300 or more births but rather examines the implications of this decision for lower-birth-volume hospitals. Joint Commission-accredited hospitals with fewer than 300 births can voluntarily report the perinatal measures; as our analysis shows, more than one quarter of these hospitals did report the early elective delivery and breast feeding measures during 2014–2015. Efforts to support hospitals in perinatal

quality improvement could focus on encouraging smaller-volume hospitals that are not currently reporting these measures to The Joint Commission to collect and analyze their data internally and on exploring alternative ways for them to report and benchmark their data with peer hospitals.

This study identified significant differences in performance on the perinatal measures by hospital birth volume and type. Therefore, expansion of the minimum threshold for required reporting will likely have an impact on overall rates for the elective delivery and breastfeeding measures, and it will be important to compare performance for hospitals with similar birth volumes in future analyses.

Lower-birth-volume hospitals account for a significant proportion of hospitals providing obstetric care, particularly in rural areas.<sup>20,21</sup> Such hospitals may have different challenges in quality measurement and improvement in obstetrics. As measurement requirements expand to include more of these hospitals, attention should be paid to their particular needs. Overall, smaller hospitals have fewer resources to devote to quality measurement and improvement activities. Many lower-birth-volume rural hospitals have difficulty recruiting, retaining, and scheduling medical and nursing staff with specialized obstetric expertise.<sup>21–23</sup> For example, they are more likely to have family physicians and general surgeons doing deliveries, while higher-birth-volume hospitals are more likely to have obstetricians. Lower-birth-volume hospitals are also more likely than higher-birth-volume hospitals to have nursing staff who work in multiple areas of the hospital rather than exclusively in labor and delivery.<sup>23</sup>

Recognition is growing of the importance of measuring quality and implementing efforts to improve performance in all hospitals providing obstetric care, including CAHs and other small hospital settings. Many hospitals have room for improvement on the perinatal measures; quality initiatives have been shown to improve performance on these measures in a wide range of hospitals<sup>19,24–26</sup> and resources are available to help hospitals interested in implementing similar initiatives.<sup>27–30</sup> 

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Appendix 1a. Reporting of Perinatal Care Measures, April 2014–March 2015, by State

Appendix 1b. Median Performance and Reporting of Perinatal Care Measures, April 2014–March 2015, by State

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Appendix 1a. Reporting of Perinatal Care Measures, April 2014–March 2015, by State

	Total No. of Joint Commission–Accredited Hospitals with Obstetric Services*	Elective Delivery	Exclusive Breast Milk Feeding	Antenatal Steroids		Total No. of Joint Commission–Accredited Hospitals with Obstetric Services*	Elective Delivery	Exclusive Breast Milk Feeding	Antenatal Steroids
All Hospitals	2,396	66.8	67.3	35.0	MS	32	65.6	65.6	40.6
AK	15	33.3	40.0	13.3	MT	8	75.0	75.0	25.0
AL	44	63.6	63.6	29.6	NC	86	65.1	67.4	29.1
AR	28	57.1	57.1	28.6	ND	11	72.7	72.7	54.6
AZ	36	61.1	63.9	27.8	NE	22	59.1	59.1	31.8
CA	227	79.7	79.3	50.7	NH	11	54.6	54.6	18.2
CO	43	81.4	81.4	46.5	NJ	50	76.0	76.0	40.0
CT	28	67.9	67.9	42.9	NM	25	44.0	44.0	8.0
DC	7	100.0	100.0	71.4	NV	19	63.2	63.2	42.1
DE	5	60.0	60.0	60.0	NY	112	75.9	75.9	45.5
FL	106	73.6	73.6	47.2	OH	99	61.6	61.6	23.2
GA	83	54.2	55.4	36.1	OK	39	59.0	59.0	33.3
HI	13	61.5	61.5	15.4	OR	32	65.6	71.9	28.1
IA	28	50.0	50.0	25.0	PA	88	56.8	55.7	35.2
ID	13	61.5	61.5	30.8	RI	7	57.1	57.1	28.6
IL	97	70.1	70.1	32.0	SC	39	69.2	69.2	20.5
IN	55	69.1	69.1	30.9	SD	6	100.0	100.0	50.0
KS	30	63.3	66.7	23.3	TN	73	65.8	65.8	24.7
KY	51	58.8	60.8	19.6	TX	170	74.1	74.1	49.4
LA	46	76.1	76.1	43.5	UT	24	79.2	79.2	25.0
MA	46	63.0	67.4	19.6	VA	47	85.1	85.1	53.2
MD	33	84.9	84.9	51.5	VT	6	66.7	66.7	16.7
ME	15	60.0	60.0	13.3	WA	41	65.9	65.9	43.9
MI	70	54.3	54.3	27.1	WI	81	51.9	51.9	18.5
MN	58	53.5	55.2	22.4	WV	25	52.0	56.0	16.0
MO	55	61.8	60.0	23.6	WY	11	54.6	72.7	27.3

\* Defined as nonfederal, general, medical/surgical hospitals with at least 10 births annually and providing obstetric services by staff or under arrangement.



## Medication Safety

# Ambulatory Medication Reconciliation: Using a Collaborative Approach to Process Improvement at an Academic Medical Center

Caroline Keogh, MS, RN; Allen Kachalia, MD, JD; Karen Fiumara, PharmD, BCPS; Dorothy Goulart, MS, RN; Jonathan Coblyn, MD; Sonali P. Desai MD, MPH

Medication reconciliation is a standardized process of comparing a patient's prescribed medications to those medications that the patient is actually taking.<sup>1</sup> Medication reconciliation is one way to prevent adverse drug events (ADEs) that result from inaccurate medication lists and is one of the World Health Organization's top-five high-risk areas for standardization in patient safety.<sup>2,3</sup>

A number of barriers exist for licensed independent providers (referred to as *providers* throughout this article) in the ambulatory care setting to maintain accurate medication lists for all their patients. First, the ambulatory setting now serves more complex patients, with multiple medical providers prescribing medications, increasing the likelihood of having a potentially inappropriate medication on the medication list. In addition, patient self-reported medication lists may contain inaccuracies, thereby reducing their reliability.<sup>4</sup> Second, suboptimal communication between primary care providers and specialists, and among specialists, may potentially lead to medication list inaccuracies.<sup>5</sup> Finally, new federal government legislation and regulations in the United States have led to an expanding set of tasks, such as implementation of Meaningful Use<sup>6</sup> and the International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM),<sup>7</sup> expected of busy ambulatory providers during the office visit, which may distract from, and reduce the time available for, medication reconciliation.

Medication reconciliation, which The Joint Commission designated as National Patient Safety Goal 8 in 2004 (accredited organizations were to "accurately and completely reconcile medications across the continuum of care") in response to concerns regarding the prevalence of preventable ADEs during patient transitions, became a requirement for hospital accreditation in 2006.<sup>8</sup>

In 2006, accredited organizations were to "implement a process for obtaining and documenting a complete list of the patient's current medications upon the patient's admission to the organization and with the involvement of the patient," and providers were to communicate the complete list of medications

### Article-at-a-Glance

**Background:** Incomplete medication reconciliation has been identified as a source of adverse drug events and a threat to patient safety. How best to measure and improve rates of medication reconciliation in ambulatory care remains unknown.

**Methods:** An institutional collaborative improvement effort to develop and implement medication reconciliation processes was designed and facilitated across all 148 Brigham and Women's Hospital (Boston) ambulatory specialty practices: 63 underwent a more rigorous approach, a modified approach was undertaken in another 71 specialty practices, and a less intensive approach took place in the 14 primary care practices. The level of intervention varied on the basis of preexisting improvement infrastructure and practice prescription rates. Two electronically measured metrics were created to evaluate ambulatory visits to a provider in which there was a medication change: (1) Measure 1: the percentage of active medications prescribed by that provider that were reconciled; and (2) Measure 2: how often all the medications prescribed by that provider were reconciled. After the collaborative was completed, performance data were routinely shared with frontline staff and hospital leadership, and medication reconciliation rates became part of an institutional financial incentive program.

**Results:** For Measure 1, specialty practices improved from 71% to 90% (September 2012–August 2014; 24-month period). Primary care practice performance improved from 62% to 91% (December 2012–August 2014; 20-month period). For Measure 2, overall performance across all ambulatory practices increased from 81% to 90% during the first 12 months of the financial incentive program (October 2013–September 2014).

**Conclusion:** A collaborative model of process improvement paired with financial incentives can successfully increase rates of ambulatory medication reconciliation.

to the next provider of care when a patient transfers to another setting, even if that is a change in service or level of care within the same organization.<sup>8</sup> Since July 2011, medication reconciliation has been included in NPSG.03.06.01, for which the requirements are to obtain the information necessary to reconcile the patient's medications, identify and reconcile discrepancies, provide the patient with an accurate medication list as needed, and communicate to the next provider of care.<sup>9</sup>

The Joint Commission National Patient Safety Goal has spurred many medication reconciliation efforts, but much of this work has been focused on the inpatient setting.<sup>10</sup> ADEs occur in an estimated 12% to 17% of patients who are discharged from the hospital, highlighting the importance of medication reconciliation during transitions of care when medication changes are often made.<sup>3,11</sup> Medication reconciliation remains a priority for ambulatory patient safety efforts because of the risk for ADEs post-hospital discharge and the recognition that medication list accuracy is essential to providing good quality care. To address this ambulatory patient safety need, in 2012 Brigham and Women's Hospital (BWH; Boston) designed and facilitated an Ambulatory Medication Reconciliation Collaborative. The goal of this process improvement effort, as we describe in this article, was to develop and improve medication reconciliation processes across all 148 of the hospital's ambulatory practices.

## Methods

### SETTING AND COLLABORATIVE

BWH is an academic medical center with 793 hospital beds and 148 ambulatory practices. The collaborative was conducted from May 2010 through December 2013, and improvement efforts are still ongoing. During this time, we took a phased approach to medication reconciliation process improvement in the ambulatory setting, which included development of electronic measurement, a modified collaborative process, and sustaining improvement through linked financial incentives. This collaborative effort was led by the institution's patient safety [C.K., A.K., K.F., S.P.D.] and process improvement teams [D.G.], with close collaboration with ambulatory administration and nursing.

### DEFINING MEDICATION RECONCILIATION

We have defined *medication reconciliation* as a process of obtaining a list of the patient's home medications, comparing the home medications to those currently ordered in our ambulatory electronic health record (EHR), and documenting changes there, per Joint Commission NPSG.03.06.01. At BWH, home medication-list sources can include patient interview, patient's completing a previsit form and identifying changes to his or her

current medication list, pharmacy benefits information, or the patient's pharmacy. Any updates made to the patient's current ambulatory medication list can be seen by any provider using the ambulatory EHR. For the purpose of the collaborative, we limited the definition to focus on reconciling medications prescribed by the provider at visits during which a medication change was made. We worked with organizational leadership and leaders from several departments at BWH to develop the definition for a medication change. The definition for a medication change was finalized by taking into account both the BWH medication reconciliation policy and what would constitute a clinically relevant change to the medication profile for the patient.

In our process of medication reconciliation, providers review the EHR medication list for medications that they have prescribed during visits in which a medication change is made. A *medication change* was defined "as adding a new medication, discontinuing an existing medication, or changing the dose or frequency of an existing medication." In this first step in our process improvement effort, we chose to focus on visits with medication changes because we believed that such visits represented higher patient safety. Also, to engage all ambulatory providers in 148 ambulatory practices in this quality improvement process, we focused on reconciling only those medications prescribed by the provider. We developed our definition of medication reconciliation—and medication change—with the advice of a Medication Reconciliation Working Group, which was composed of representatives from patient safety, risk management, ambulatory administration, nursing, and pharmacy, as well as key departmental leadership, such as those in primary care.

### PILOT STUDY

In May 2010 we conducted a pilot study with the goals of developing best-practice guidelines for medication reconciliation at BWH and identifying barriers to completing medication reconciliation in the ambulatory setting. The pilot study, in which four distinct practice sites at BWH participated, helped us to identify several obstacles to reliably completing medication reconciliation. Specifically, we discovered that the EHR functionality did not fully support a standardized documentation process that was aligned with routine patient-provider work flow. As a result, a new module within the EHR was developed to better support medication reconciliation. This module was developed with input from providers who conducted medication reconciliation on a day-to-day basis, to ensure that the module was user-friendly and intuitive. The functionality within the medication reconciliation module ensured that a provider could easily indicate the status of an existing medication by

**Sidebar 1. Metrics**

	Measure	Numerator/Denominator
1.	For visits at which there was a medication change,* the % of medications prescribed by the provider on the patient's medication list that were reconciled	Number of medications on the patient's active medication list prescribed by the provider that were reconciled/Number of medications on the patient's medication list prescribed by the provider during a visit with a medication change
2.	For visits at which there was a medication change,* the percentage of visits where all medications prescribed by the provider were reconciled	Number of visits within which all medications prescribed by the provider were reconciled/ Number of visits with a medication change

\* A medication change is defined as the addition of a new medication, the discontinuation of an existing medication, or the change in a dose or frequency of an existing medication.

indicating that the patient is taking, not taking, or taking the medication differently than prescribed. These functions serve as a communication tool for support staff to a provider within an ambulatory practice or between providers at different ambulatory practices within Partners HealthCare. Without having to leave the module, the provider can edit, discontinue or renew existing medications on the medication list, or generate new prescriptions. The module provides information on the date of last reconciliation, with one-click access to the audit history for each medication. The enhancements were put into place in November 2011.

**ELECTRONIC MEASUREMENT**

To accurately and rapidly measure the results of our Ambulatory Medication Reconciliation Collaborative, we developed capability for electronic measurement. We worked closely with our hospital's Quality Data Management Team to develop electronic processes for the measures (on the basis of our definition of medication reconciliation) at the provider and practice levels (Sidebar 1, above). Medical directors, nursing directors, and practice managers of each ambulatory site had access to provider-level data for their practices that were accessible directly from the EHR by running a report. The patient safety team had access to practice-level data for all BWH ambulatory practice sites and served as the central resource for hospitalwide medication reconciliation efforts.

Only scheduled visits with a provider were eligible for inclusion in the two measures. For reconciliation actions to be counted as completed, providers had to take action on the EHR medication list on the same calendar day as the scheduled visit. Reconciliation actions (if recorded in the EHR) taken by sup-

port staff, such as medical assistants (MAs), were counted for measurement purposes. However, the expectation was for providers to review reconciliation actions taken by support staff. For example, support staff may assist by reviewing a list with a patient and then indicating what a patient is taking, not taking, or taking differently. The provider would then be expected to review.

**MEDICAL-ASSISTANT TRAINING**

During the collaborative, some providers found that the practice support staff, such as MAs, who were assisting with scribing of medication histories did not have the proper training for this role. To address this, we created a medication review training program for them with a curriculum taught by our pharmacy department. The curriculum entailed some elements of obtaining a "Best Possible Medication History," such as helpful open-ended questions to elicit information about medication list discrepancies or compliance, in addition to use of the EHR functionality for medication reconciliation. We also defined and addressed ambulatory staffing roles with policy changes.

Not all MAs attended the training, as not all practices asked their MAs to scribe medication histories. Practices with work flows that incorporate support staff sent MAs to training, while many practices have only providers completing medication reconciliation.

**IMPLEMENTING THE COLLABORATIVE**

After the EHR changes were implemented and MA training was completed, BWH used a collaborative model—a method for learning that brings together large numbers of teams seeking sustained improvement in a specific area—to catalyze process improvement.<sup>11</sup> We adapted the model to fit the needs of our ambulatory practices by condensing the time between each face-to-face session and reducing the prework required by practices before the first session.

The BWH Ambulatory Medication Reconciliation Collaborative started in April 2012 and brought groups of ambulatory practices together for three sessions, each session one month apart, addressing improvement in medication reconciliation processes. This effort was spearheaded by the institution's patient safety team and the process improvement team. Teams were placed into waves on the basis of similarity of practice design or use of support staff in the medication reconciliation process. Each wave, which ranged in size from 9 to 17 practices, occurred for a three-session period from April 2012 through March 2013. Teams were supported between face-to-face sessions by coaches from the patient safety team or ambulatory adminis-

tration through e-mail, huddles, phone calls, and team reports.

The collaborative was an improvement effort led by the Patient safety, performance improvement, and ambulatory administration teams, working alongside local and departmental leadership. Each ambulatory practice had one coach from either the patient safety or ambulatory administration teams. However, we did require that each team send representatives to attend three face-to-face meetings during the course of the collaborative period.<sup>11</sup> The representatives brought information and improvement ideas back to other practice staff who did not attend the collaborative, working on implementing these ideas using the plan-do-study-act (PDSA) model in their area. For example, after the first face-to-face meeting, teams implemented with one or two providers a process for medication reconciliation. Using data, team huddles, and coaching resources, the team would iterate on the process and re-implement a variation of the process with those same one or two providers until the process worked well. This was repeated with different phases of the project, such as spreading to more providers, after each face-to-face meeting.

The 63 ambulatory practices included in full waves of the collaborative represented 43% of the 148 participating practices. The lower-prescribing practices (71 practices), defined through visits with a medication change for which the provider was an original prescriber of at least one medication, such as those in the Department of Surgery, were included in a modified collaborative process. The remaining 14 primary care practices did not need the full collaborative model because of practice improvement knowledge already embedded within them. In the Division of Primary Care, each practice's leadership structure consisted of a "dyad" (medical director and practice manager or other administrative director), who had undergone formal process improvement training entailing Lean principles.<sup>12</sup> Thus, because they already had a robust process improvement model in place (within both their practice and department structures) for improvement of medication reconciliation rates, they were provided education, a toolkit, and coaching support. Appendix 1 (available in online article) summarizes the logistics and content of the collaborative sessions.

## **SUSTAINING IMPROVEMENT**

To sustain improvement, we provided data sharing, education, and financial incentives.

**Data Sharing.** After the final collaborative sessions were complete in April 2013, we began to send monthly performance data to practice leadership. Coaches from patient safety and ambulatory services used electronic measurement to pro-

vide improvement in medication reconciliation and to ensure that this remained a priority. The goal of this second intervention was to sustain and improve on initial improvement made during the collaborative period. Monthly e-mails included a run chart of practice-level data from March 2012 through the present, highlighting current performance compared to goal. In addition, medication reconciliation resources and coaching support were included.

**Education.** Medication reconciliation performance on Measure 2 was routinely shared at staff meetings and hospital leadership meetings during the 2012–2014 period. A succinct overview of medication reconciliation definitions, hospital policy, EHR functionality, and electronic measurement was provided to frontline staff to ensure that all providers and staff were aware of the importance of medication reconciliation. These education and data-sharing efforts coupled the monthly practice electronic data that local leadership received.

**Financial Incentives.** In December 2013, financial incentives for medication reconciliation were added to the mix. The institutional target was set to 90% performance on Measure 2: how often all the medications prescribed by the provider were reconciled. The overall performance during the measurement period determined the percentage of the financial incentive given to the departments at the end of the fiscal year; incentives were kept at the department level and not at the provider level. Data were aggregated and routinely shared with department chairs and department administrators to provide a higher level of accountability for local leadership.

## **Results**

### **COLLABORATIVE PARTICIPANTS**

Sixty-three ambulatory practices completed the full collaborative sessions between April 2012 and May 2013, 71 practices completed the modified collaborative sessions in April 2014, and the 14 primary care practices received their information from December 2013 to January 2014 (Appendix 2, available in online article). Some 22 provider and 36 administrative or other staff attended formal collaborative sessions. We presented progress updates at dozens of staff and faculty meetings and to numerous BWH senior leaders.

On the basis of the second six months of Fiscal Year (FY) 2014 (October 2013–September 2014), there were on average 22,884 visits each month with a medication change for which the provider was an original prescriber of at least one medication. For FY 2014, there were a total of 256,800 visits across nine departments with a medication change for which the provider was the original prescriber of at least one medication.

**MEASURES**

On Measure 1, participating practices improved from 71% pre- to 90% postcollaborative, while participating primary care practices improved from 62% to 91%. In October 2013 we shifted from Measure 1 to Measure 2. In October 2014 a financial incentive was created at the department level, with a systemwide performance target of 90%. Overall performance across the ambulatory practices for Measure 2 increased from 81% to 90% during the first 12 months of our financial incentive program. Figure 1 (right) shows September 2014 Measure 2 data at the department level in comparison to FY 2013 baseline data.

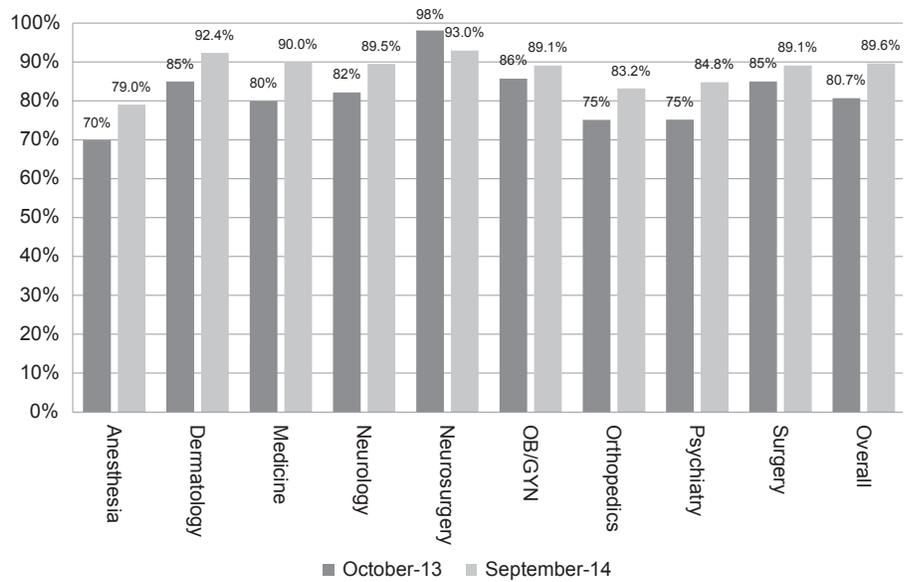
**Discussion**

Our quality improvement efforts regarding ambulatory medication reconciliation began in 2010, and we instituted our collaborative model in 2012. Several of our practices showed improvement toward goal after the initial collaborative intervention.

We then followed with an intervention focused on sustaining improvement through which we provided individual data to practice leadership on a monthly basis and educated providers about the initiative. Finally, we created a financial incentive aimed at departments, not individual providers, to further drive improvement. As stated, on Measure 1, collaborative practices collectively improved from 71% to 90%, and primary care practices improved from 62% to 91%, following our collaborative efforts and in the midst of our financial incentives.

To sustain the results we saw with our collaborative and financial incentive programs, we maintained monthly communication to departmental leadership on medication reconciliation performance through March 2015. In this e-mail, we would highlight overall hospital performance and specific departmental performance as it compared to all other departments. Within our largest department—the Department of Medicine—we took a more granular approach at the divisional level (for example, cardiology, pulmonary, gastroenterology) by sending provider-level data to divisions on a monthly basis, with performance compared over time, and by working directly with clinical and support staff within ambulatory practices on optimizing their work flows. We presented medication reconciliation data to the hospital senior leadership, departmental leadership, and

**Medication Reconciliation Performance by Department After the Introduction of Financial Incentives, Fiscal Year 2014 (October 2013–September 2014)**



**Figure 1.** For visits with a medication change, the percentage of visits in which all the medications originally prescribed by the provider were reconciled are shown (goal, 90%). OB/GYN, obstetrics/gynecology.

division leadership, as well as local ambulatory practice leadership, on an ad hoc basis, with an emphasis on the alignment of EHR functionality, hospital policy, and measurement. By aligning EHR work flows, policy expectations, and performance data, we gained support for the overall process from stakeholders.

In April and May 2015 the hospital underwent a major transition to a new vendor-based EHR, which involved the ambulatory EHR, inpatient, and billing systems. As all our providers and staff were being trained for the new EHR and were developing new work flows for all clinical processes, we suspended dissemination of medication reconciliation data. We are now working on refining our electronic measurement of medication reconciliation and modifying the approach to incorporate Meaningful Use and the hospital policy into a single measure. Because the new EHR has different functionality to indicate whether medication review and reconciliation was performed, we are developing educational materials for providers and staff to reflect the change in work flows. We are leveraging the lessons learned through our collaborative and financial incentive programs to develop the current road map for further improving medication reconciliation. Ambulatory medication reconciliation will again be part of the hospital financial incentive program for FY 2016.

Medication-list discrepancies are common in follow-up patient visits, between medications recorded in the medical record and medications reported by patients.<sup>13</sup> Many approaches have been tried to improve ambulatory medication reconciliation, involving nurses, medical assistants, pharmacists, and patients. For example, a study of primary care practices' medication reconciliation at Cleveland Clinic evaluated the accuracy between EHR medication lists and the list of medications that patients were actually taking. The use of MAs asking open-ended questions during medication review was significantly associated with medication-list agreement.<sup>14</sup> Currently, there is an ongoing cluster-randomized trial at community health centers to assess the role of a nurse-led strategy in reviewing medication lists, conducting one-to-one counseling with patients, and doing follow-up phone calls, with a primary outcome of blood pressure improvement.<sup>15</sup>

Although pharmacist-led medication reconciliation can be an important aspect of hospital discharge planning and transitions of care, a national survey conducted in 2012 of pharmacists showed that there are still significant barriers, often involving time and resources, to implement a consistent pharmacist-led approach among hospitalized patients.<sup>10</sup> A prospective study of a multifaceted approach to medication reconciliation was performed that included letters mailed to patients reminding them to bring their medications to their visit, verification and correction of the electronic medication list by patients, education of providers on how to do medication reconciliation, and audit and feedback of data to providers. This series of interventions among primary care patients led to a decrease in medication errors and discrepancies.<sup>16</sup>

Technology can also be employed to facilitate the medication reconciliation, such as introducing a postdischarge medication reconciliation tool into the EHR at the first ambulatory visit post-hospital discharge. For example, at the institution, a post-discharge medication reconciliation EHR tool compared and contrasted the preadmission and postdischarge medication regimens, allowing providers to review the medication list during vulnerable transitions of care.<sup>9</sup> A multidisciplinary approach has been moderately successful in increasing the accuracy of medication lists through training of the health care team, measuring performance, and increasing patient participation.<sup>17</sup> The use of personalized health records may be an important way for patients to become more engaged in maintaining medication list accuracy as the use of EHRs continues to increase; however, the impact on medication reconciliation remains to be seen.<sup>18</sup>

The strengths of our ambulatory medication reconciliation approach appear to be the use of a collaborative model and an

alignment of policy, EHR tools, and reliable electronic measurement. We found that a one-size-fits-all model for improvement interventions would not work for each department, or even within departments, given the large number of ambulatory sites we have, each with its own staffing and care models. We felt strongly that to engage our providers in the process of medication reconciliation, we needed to leverage the collaborative model and promote our vision of ideal-state medication reconciliation, through an incremental, practical approach.

After discussion with departmental leadership, for the first phase of our improvement effort, we set the same standard of reconciling only medications that the provider originally prescribed for primary care providers and specialists. This also avoided having providers attempting to reconcile medications with which they might not have been familiar. Yet we found that many of the providers in higher-prescribing-volume practices nevertheless reconciled a high percentage of the all medications on the medication list, not just their own.

Our approach aligned electronic measurement performance data with the BWH medication reconciliation policy, with the goal of garnering buy-in of our providers. By measuring visits with a medication change, we ensured that we were focusing on patient encounters (1) that aligned with clinical work flow, (2) in which ADEs were most likely to occur, and (3) that, as stated in our policy, medication reconciliation needs to be performed. This helped to create accountability and ensure standardization in approach for all departments and providers. In addition, the consistency in expectations for all providers regarding the process of medication reconciliation allowed specialists to engage in this effort more easily, as specialists did not need to take action on medications that they were not comfortable in reconciling. For example, cardiologists were not expected to reconcile a patient's rheumatologic medications.

There were some limitations to our approach to ambulatory medication reconciliation. First, other external mandates and internal hospital priorities, such as Meaningful Use and ICD-10-CM conversion and transition to new EHRs created pressures on provider time. These barriers affected attendance at the collaborative sessions as well as the spread and sustainment periods of this improvement project. Second, because of differences in how our departments are structured, there was variability in how our collaborative waves were set up. Leveraging the local leadership structure of a medical director and practice manager was quite effective in using the primary care department structure to roll out medication reconciliation efforts. It would have been beneficial to use departmental practice groupings for other waves of the collaborative to make use of the departmental

leadership during the initial interventions. While this was partially done for some departments and waves, it could have been more effective for others.

In addition, we did not mandate that medication reconciliation be conducted for all patients at every visit; providers are encouraged to review all medications at every visit. We do not know how well this process would work for a measure that required all providers to reconcile all medications at every visit. We did, however, see increased awareness of the importance of medication reconciliation across departmental leadership and frontline providers, as well as noting an increase in the percentage of visits with a medication change for which all the medications prescribed by a provider were reconciled.

## Conclusion

An ambulatory medication reconciliation collaborative approach was implemented, followed by the introduction of a financial incentive to develop a process for medication reconciliation across our diverse ambulatory practices. The rates of ambulatory medication reconciliation increased to 91% in primary care and 90% in specialty practices—a level of performance that required not one but multiple interventions over time. The collaborative was supported by several other interventions, including EHR enhancements, sustained coaching, and continuous measurement and reporting. Over time, our goal is to ensure that medication reconciliation occurs routinely at all visits and for all medications. However, this will require ongoing time, effort, and diligence on the part of providers, staff, and patients. ■

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## Online Only Content

<http://www.ingentaconnect.com/content/jcaho/jcjq>

See the online version of this article for

Appendix 1. Summary of Collaborative Session Design

Appendix 2. Ambulatory Practice Collaborative Time Line, May 2011–April 2015

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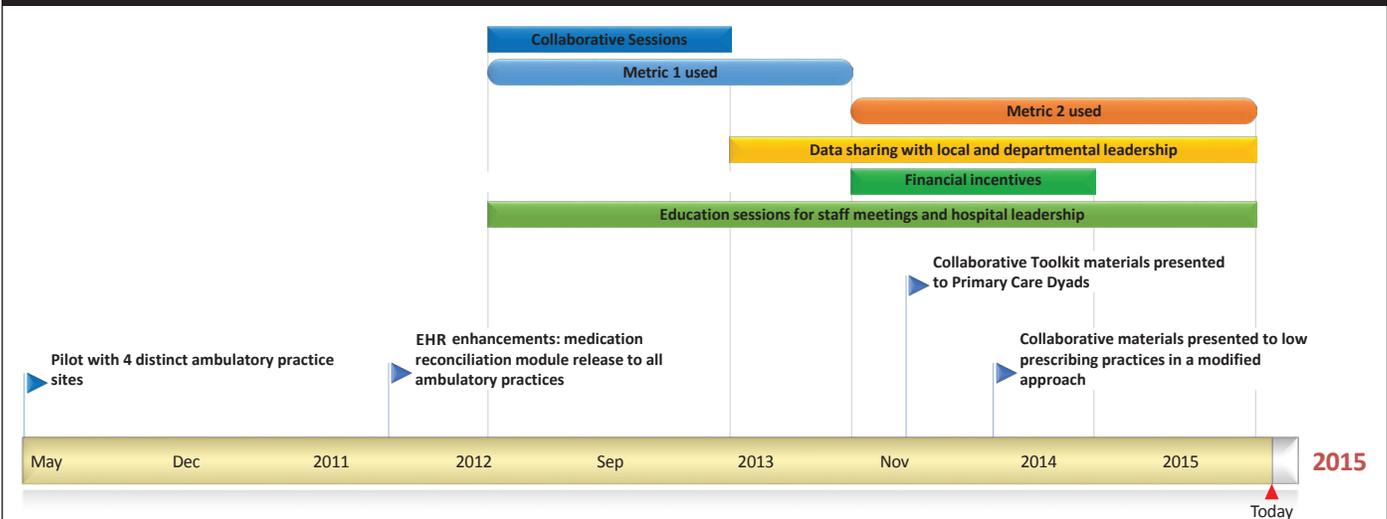
**Appendix 1. Summary of Collaborative Session Design**

	<b>Session 1</b>	<b>Session 2</b>	<b>Session 3</b>
Session length	6 hours (2.5 hours for MDs*)	2.5 hours	2 hours
Practice participants	<ul style="list-style-type: none"> <li>• MD*</li> <li>• Practice Manager or Nursing Director</li> <li>• Support Staff (Medical Assistants, Nursing, Operations Directors, Fellow)</li> </ul>		
Staff	<ul style="list-style-type: none"> <li>• Director of Patient Safety</li> <li>• Director of Performance Improvement</li> <li>• Medical Director of Ambulatory Patient Safety</li> <li>• Patient Safety Consultants</li> <li>• Project Specialists, Ambulatory Services</li> <li>• Executive Sponsors (Vice President of Ambulatory Clinical Services and Associate Chief Quality Officer)</li> </ul>		
Curriculum	<ul style="list-style-type: none"> <li>• GE Change Acceleration Process (CAP) Didactic</li> <li>• Action planning for rapid-cycle testing</li> </ul>	<ul style="list-style-type: none"> <li>• Report out by each team on rapid-cycle testing</li> <li>• Action planning for process spread (pilot phase to all providers)</li> </ul>	<ul style="list-style-type: none"> <li>• Report out from all teams on process spread</li> </ul>
Goal of session	<ul style="list-style-type: none"> <li>• Design medication reconciliation process</li> <li>• Rapid-cycle testing plan—Pilot with 1–2 providers</li> </ul>	<ul style="list-style-type: none"> <li>• Spread plan</li> <li>• Sharing of best practices and lessons learned in pilot</li> </ul>	<ul style="list-style-type: none"> <li>• Sharing of best practices and lessons learned in spread</li> </ul>
Location	Conference rooms on main campus		

\* MD, Medical Director (or his or her physician designee).

Online Only Content 

Appendix 2. Ambulatory Practice Collaborative Time Line, May 2011–April 2015



A time line of the collaborative is shown.

Primary care dyad, medical director and practice manager or other administrative director; EHR, electronic health record.

## Information for Authors

*The Joint Commission Journal on Quality and Patient Safety* serves as a peer-reviewed forum for practical approaches to improving quality and safety in health care. Areas of interest include organizational change and learning, performance improvement, performance measures, evidence-based medicine, timeliness and efficiency, teamwork and communication, and information technology.

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