Patient Safety Culture Improvement Tool: Development and Guidelines for Use

Mark Fleming and Natasha Wentzell

Abstract

The Patient Safety Culture Improvement Tool (PSCIT) was developed to assist healthcare organizations in identifying practical actions to improve their culture. This article describes the development process of the PSCIT and provides a guide to using the PSCIT. The tool is based on a safety culture maturity model, which describes five stages of cultural evolution, from pathological to generative. The PSCIT consists of nine elements that cover five patient safety culture dimensions, namely, leadership, risk analysis, workload management, sharing and learning and resource management. Each element describes the systems in place at each level of maturity, enabling organizations to identify their current level of maturity and actions to move to the next level. The PSCIT should be used with caution as there is currently a lack of reliability and validity data.

The importance of considering safety culture in patient safety improvement is widely accepted within the healthcare industry. The Institute of Medicine report *To Err Is Human* highlighted the importance of safety culture by stating that "health care organizations must develop a culture of safety such that an organization's care processes and workforce are focused on improving the reliability and safety of care for patients" (2000: 14). Pronovost and Sexton (2005) suggest that having a culture that promotes safety within your organization is an important and necessary precursor to improving the insufficiencies in patient safety. In January 2005, the Canadian Council on Health Services Accreditation (CCHSA) formally recognized the importance of culture in healthcare standards by including a culture of safety as one of their patient safety goals and also specifying five required organizational practices to promote a positive culture. The emphasis on creating the *right* culture to support patient safety is recognition that a poor culture is a significant risk factor that can threaten patient safety (Nieva and Sorra 2003) and that until the culture within healthcare changes, nothing else will (Vincent 2005). There are two fundamental assumptions underlying much of the safety culture research: (1) a positive safety culture is associated with improved safety performance (Clarke 1999) and (2) it is possible to improve the culture of an organization (Guldenmund 2000). Yet, there is a lack of empirical data on what a good culture looks like (Cox and Cox 1996) and how to develop a good safety culture (Parker et al. 2006).

Currently, patient safety culture is commonly assessed via self-completion questionnaires. This process typically involves mailing questionnaires to all staff and collating and calculating mean responses to items or factors (see Fleming and Hartnell 2007). Safety culture surveys provide much information about employee attitudes, but it is difficult to use the results to identify practical actions to improve the culture. In fact, safety culture

surveys have been likened to "describing the water to a drowning man; they tell you how bad things are but do little to help in solving the problem" (Fleming 2003). Therefore, there is a need to provide healthcare organizations with more solution-focused safety culture instruments. This can be achieved by identifying the organizational practices required to promote a positive patient safety culture since an effective way to improve a culture is by changing the organization's systems and processes.

Safety culture surveys have been likened to "describing the water to a drowning man; they tell you how bad things are but do little to help in solving the problem."

Schein (1990) argues that organizational culture is shaped through leadership action and systems that promote desired behaviours, including the following:

- Areas that leaders pay attention to, measure and control
- Deliberate role-modelling and coaching by leaders
- Operational criteria for the allocation of rewards and status
- Operational criteria for recruitment, selection and promotion
- The organization's design and structure
- Organizational systems and procedures

Schein's (1990) view of culture suggests that the patient safety culture is a reflection of the extent to which the above mechanisms support patient safety. For example, if managers are rewarded for reducing cost or cutting budgets with no consideration for quality or patient safety, this is likely to limit the priority they place on safety, which is a key component of safety culture (Flin et al. 2000; Zohar 2000).

Similarly, Parker et al. (2006) argue that safety culture is affected by organizational changes, such as a change in leadership or the introduction of new systems and processes. This suggests that safety culture is influenced by the systems, processes and practices of the organization. For example, an organization with a poor safety culture will have limited safety systems, while an organization with a positive culture will have many systems in place to promote patient safety. This argument suggests that it should be possible to assess the extent to which systems and processes promote a positive safety culture by evaluating organizational practices that influence the culture. This approach is supported by Zohar (2000) and Parker et al. (2006), who have demonstrated that safety culture consists of both concrete and abstract aspects. The concrete aspects of safety culture are tangible and observable and can therefore be used to develop a list of organizational practices that support a positive safety culture. More recently, Flin (2007) has argued that organizational indicators of a positive safety culture allow management to both monitor patient safety culture and influence patient safety outcomes. This argument is further supported by the recent development and initial validation of a safety culture improvement tool for the petrochemical industry by the current authors. This tool uses concrete organizational indicators to assess the maturity of the safety culture (Fleming et al. 2007). Based on the success of the petrochemical industry tool, we decided to develop a similar tool for healthcare. The Patient Safety Culture Improvement Tool (PSCIT) was developed to assess a number of important organizational practices that influence patient safety culture.

Developing the Tool

The development of patient safety culture indicators requires the specification of the cultural attributes that distinguish between "poor" and "good" safety cultures. Safety culture maturity models describe the stages of safety culture development (Fleming 2000). They are useful to organizations as they enable them to assess their current level of maturity (Paulk et al. 1993) and to identify areas of particular strength and weakness (National Patient Safety Agency and School of Psychological Sciences, University of Manchester 2006) and actions that need to be taken to reach the next level of maturity (Paulk et al. 1993). The safety culture maturity model of Ashcroft et al. (2005) describes the stages of safety culture development; thus, it is a useful framework to use for the basis of the patient safety culture indicators.

The safety culture maturity model used by Ashcroft et al. (2005) to develop the Manchester Patient Safety Framework was based on the work of Westrum (2004) and Reason (1998). Ashcroft et al. (2005) described five levels of culture: pathological, reactive, calculative, proactive and generative. At the pathological level of maturity, organizations see safety as a problem; they suppress information and focus on blaming individuals to support the personal needs, power and glory of those in charge. Organizations at the reactive level view safety as important but respond only after significant harm has occurred. Calculative organizations tend to be fixated on rules, positions and departmental territory. After a safety incident has occurred, information may be ignored by this type of organization and failures explained away or resolved, with no deeper inquiry into them. Organizations at the proactive level focus their efforts on anticipating safety issues before they occur by involving a wide range of stakeholders in safety. Generative organizations actively seek out information to understand why they are safe and unsafe. Inquiries into safety-related events serve as a means to attack the underlying conditions, not just the immediate causes of the failures. The characteristics of a high-reliability organization can be likened to the characteristics of an organization that has

reached the generative level of cultural maturity. This model can be used to describe how organizations at different levels of maturity approach safety culture improvement (Table 1).

Table 1. Patient safety culture maturity levels

Maturity Levels	Approach to Improving Patient Safety Culture
Pathological	No systems in place to promote a positive safety culture
Reactive	Systems are piecemeal, developed only in response to occurrences and/or regulatory or accreditation requirements
Calculative	Systematic approach to patient safety exists, but implementation is patchy and inquiry into events is limited to circumstances surrounding specific event
Proactive	Comprehensive approach to promoting a positive safety culture exists; evidence-based intervention implemented across the organization
Generative	Creation and maintenance of a positive safety culture are central to mission of the organization; organization evaluates the effectiveness of interventions and drains every last drop of learning from failures and successes and takes meaningful action to improve

Although this model provides a useful framework for safety culture improvement and general guidance on the nature of a positive culture, it does not specify the systems and processes associated with a positive patient safety culture. Therefore, patient safety culture indicators were developed by reviewing the literature on patient safety culture perception surveys and current guidelines on safety culture improvement (e.g., CCHSA Required Organizational Practices).

Patient safety culture is commonly assessed via a self-report perception survey (Fleming and Hartnell 2007). Reviews of patient safety culture instruments (e.g., Colla et al. 2005; Flin et al. 2006; Singla et al. 2006) have identified common cultural dimensions. Given that these instruments were developed independently using different populations, the common elements identified could be considered the fundamental building blocks of patient safety culture. Table 2 identifies the common dimensions from these patient safety survey reviews. From the literature review on patient safety culture surveys, five main patient safety indicators were identified and included in the PSCIT. To fully assess the systems and processes influencing patient safety, these five patient safety indicators were further broken down into more detailed elements of patient safety (see Table 2).

Consultation with Patient Safety Experts

The content and face validity of the original version of the PSCIT was tested by interviewing patient safety experts across

Table 2. PSCIT elements and common healthcare safety elements

Common Healthcare Safety Climate Elements	CCHSA Required Organizational Practices to Create Culture of Safety	PSCIT
Leadership (Colla et al. 2005; Flin et al. 2006; Singla et al. 2006)	Client/patient safety as a written strategic priority or goal Quarterly reports to board on client/patient safety	Patient safety leadership • Patient safety education and training • Patient safety performance evaluation
Safety systems (Flin et al. 2006; Singla et al. 2006) Risk perception (Flin et al. 2006; Singla et al. 2006)	One prospective analysis per year	Risk analysis: safety analysis systems
Job demands (workload issues) (Colla et al. 2005; Flin et al. 2006; Singla et al. 2006)		Workload management • Workload • Fatigue management
Organizational learning and occurrence reporting (Colla et al. 2005; Flin et al. 2006; Singla et al. 2006)	Reporting system for actual and potential adverse events Policy and process of disclosures of adverse events	Sharing and learning • Organizational learning • Incident reporting • Disclosure
Teamwork (Flin et al. 2006; Singla et al. 2006) Communication/feedback (Colla et al. 2005; Flin et al. 2006; Singla et al. 2006) Personal resources (e.g., stress management) and safety attitudes (Flin et al. 2006; Singla et al. 2006)		Resource management: teamwork training (interpersonal skills, teamwork and self-awareness)

CCHSA = Canadian Council of Health Services Accreditation; PSCIT = Patient Safety Culture Improvement Tool.

Canada. Experts were sent the PSCIT in advance of the interview and asked to evaluate the tool for clarity, the extent to which the indicators were objective and the completeness of the tool. They were also asked to consider the extent to which the indicators would differentiate between organizations at different levels of cultural maturity.

Five interviews with patient safety experts were completed. Interviews were conducted over the telephone or face to face and were tape-recorded with the participant's permission. During the interviews, participants commented on their ability to assess their own organization's maturity and benefits of using the PSCIT. The participants identified a number of potential improvements to the PSCIT, such as the need to clarify some of the terms used as they differ across organizations. All the participants indicated that the PSCIT covered the important aspects of patient safety culture and that it was easy to assess the maturity of their systems using the instrument. Participants also indicated that reviewing the PSCIT was a useful exercise. In the words of one participant, "This was excellent. I have identified a list of improvement actions." The PSCIT was revised as a result of the feedback provided during these interviews.

Using the PSCIT

The PSCIT was developed to enable healthcare organizations to assess the maturity of the systems currently in place to promote a positive patient safety culture. (See Appendix 1 at http://www.longwoods.com/product.php?productid=19604 for the revised PSCIT.) The PSCIT outlines increasing levels of cultural maturity and describes the systems associated with each level. The PSCIT provides organizations with a straightforward and structured process for reviewing the extent to which current systems promote a positive safety culture. Improvement actions are identified by comparing current systems with the practices associated with the next level of maturity.

For the best results, the PSCIT should be completed by a multidisciplinary team, consisting of those with expertise in the operation of current patient safety systems, those with budgetary authority and healthcare providers. The PSCIT can be used at the organizational or departmental level. The appropriate level of analysis depends on the organizational structure; the important issues are budgetary authority and the ability to implement new systems. For example, a surgical department could use the tool to identify opportunities for improvement as long as it has the autonomy to implement new systems such as leadership training. If departments or units do not have control over all the elements (e.g., leader performance evaluation), they should skip those elements that they cannot change and focus on evaluating the elements that they can improve.

Initially, team members should individually complete the tool, after which they should meet as a group to discuss their results and reach a consensus. For each element, the team should assess the level of maturity of each indicator (e.g., incident reporting) by reviewing each level of maturity (from 0 to 4) and choosing the maturity level that best describes the systems and

Figure 1. Example of a completed patient safety indicator from the PSCIT

Resource Management				
		Select Level		
Maturity Level	**Training**	**Clinical**	**Non-clinical**	**Managers**
0	No resource management training (interpersonal skills, communication, team working, personal awareness or decision-making) is provided.			
1	Information about resource management is provided to promote working effectively within a team environment.		M	
2	Knowledge-based interdisciplinary resource management training is provided.	L		M
3	Skill-based (includes practice, role play and feedback) resource management training is provided. The training program is developed/adapted to address the specific needs of the interdisciplinary team and is based on analysis of team working challenges.			
4	Resource management training includes practice in a simulated environment and is followed by behavioural observation of performance using validated indicators. Feedback is provided to all individuals after training, and a formal evaluation of the training's effectiveness is conducted.			

processes within their organization. Once the level of maturity has been chosen, the team should assess the degree of implementation within their organization. Thus, for every indicator, the team assesses the degree to which the systems described have been implemented across the organization or department by classifying it as low (i.e., implemented in less than a third of the organization/target group), medium (i.e., implemented in less than two thirds of the organization/target group) or high (i.e., implemented in over two thirds of the organization/target group) and inserting L, M or H in the box that corresponds to this level. Figure 1 provides an example of what one indicator from the PSCIT looks like upon completion. The next step in the process is to discuss the current systems and processes in more detail (e.g., why it was developed, how effective it is) and to consider barriers to moving to the next level of maturity. The team should only use the practices associated with the next level of maturity as a starting point for discussion and should not automatically adapt these practices as an action plan. The focus of the discussion should be the development of a strategic plan for improving the culture, including specific action plans that describe the steps the organization is going to take to reach the next level of maturity.

Conclusions

Creating a positive culture that promotes patient safety is one of the key challenges facing healthcare organizations. Recently, many healthcare organizations have conducted safety culture surveys to assess their current culture and identify areas for improvement. It is likely that these organizations have experienced similar difficulties as those encountered by other industries when they try to use their survey results to identify concrete actions to improve their culture (Fleming and Hartnell 2007). The PSCIT was developed to assist organizations in their efforts to improve their culture. It assesses the organizational practices, systems and processes related to nine patient safety culture elements. The results of the PSCIT provide a description of the current state of an organization's patient safety culture and can be used to develop strategic plans to improve its level of patient safety culture maturity.

The PSCIT has only recently been developed; thus, the psychometric properties (i.e., the reliability and validity) have not been determined. Therefore, this tool should be used with caution to facilitate discussion and support the identification of actions for cultural improvement. Given the early developmental stage, the PSCIT may not be a comprehensive assessment of patient safety culture and should be considered a guide; therefore, improvement teams should not limit the coverage of patient safety culture aspects they may wish to improve to those covered by this tool. The maturity model approach to safety culture improvement is only one way to improve patient safety culture and is offered as a tool that healthcare organizations can use on their journey to creating a positive safety culture. Additional research is currently being developed and conducted to address the lack of reliability and validity data. HQ

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Appendix 1. Patient Safety Culture Improvement: Self Assessment Tool

Completed by: _____
Date: _____
Level of Assessment (Organization/Department): _____

Safety culture consists of shared perceptions and beliefs about safety. These perceptions are formed in part by leadership priorities and systems that promote the relative importance of safety. Improving the culture involves organizational change by implementing new systems and processes. The first step in developing an action plan is reviewing the current systems in place to promote a positive patient safety culture. Once this has been established, then the organization must identify opportunities for improving current systems. This tool is designed to support improvement teams to develop a strategic plan for improving the culture. Initially, team members should individually complete the assessment and then meet as a group to discuss their results and reach consensus. Then, for each element, the team should consider ways of improving their current systems. It is often useful to use the description of the next highest level as a starting point for discussions, although teams should not simply use the descriptor of the next level as their action item.

Assess your current systems by selecting the maturity level corresponding to the most accurate description of the systems that exist within your organization. Indicate the degree to which it has been implemented across the organization/department by classifying it as low (L – implemented in less than a third of the organization/department), medium (M – implemented in less than two thirds of the organization/department) and high (H – implemented in over two thirds of the organization/department). For example, if you judged the "Patient Safety Leader Education and Training" for senior managers in your organization to be at level 1 and more than two thirds of senior managers had been provided with the information, you would insert an "H" in the box that corresponds to level 1 under the senior managers column. If you have no knowledge of a particular system, then leave that section blank.

Patient Safety Leadership

		Select Level			
Maturity Level	**Patient Safety Leader Education and Training**	**Senior Managers**	**Physician Leaders**	**Middle Managers**	**Front-Line Managers**
0	No patient safety education/training is provided to leaders.				
1	General information on patient safety, including how it is measured, policies and procedures, is provided to leaders.				
2	Leaders receive information about their role in improving patient safety. They receive nonrecurring knowledge-based training about leadership behaviours that promote patient safety.				
3	Leaders are taught interpersonal competencies (through skill-based training) to motivate colleagues and subordinates to improve patient safety. Training is recurrent (at least annual) and includes target setting to improve interpersonal skills.				
4	Leaders receive mandatory individualized patient safety leadership development based on upward appraisal and evaluation. There is a formal ongoing evaluation of leaders' behavioural change.				

Patient Safety Leadership cont'd

		Select Level			
Maturity Level	**Patient Safety Leader Performance Evaluation**	**Senior Managers**	**Physicians Leaders**	**Middle Managers**	**Front-Line Managers**
0	Leaders are not evaluated on patient safety.				
1	Promoting and assessing patient safety is included in the leaders' job description. Leader performance is evaluated following a significant patient safety event (e.g., unexpected death) within their area of responsibility.				
2	There is a formal system in place to monitor performance and performance reviews are conducted for leaders. Leaders' performance is monitored through regular discussions of cases and outcomes.				
3	Performance is routinely monitored using a variety of techniques (e.g., performance reviews, retrospective chart reviews). Input from colleagues is sought. Results from monitoring are discussed with individual being reviewed.				
4	Performance is monitored with leading indicators of patient safety. Ongoing and systematic observations of practice are conducted. The results from performance monitoring are used to develop individual learning plans. Peers routinely monitor each other's performance and provide constructive feedback for improvement.				

Workload Management

		Select Level			
Maturity Level	**Workload**	**Physicians**	**Nurses**	**Residents**	**Allied Health Professionals**
0	No consideration of the impact of workload on patient safety.				
1	Guidelines for the ratio of healthcare workers to patients are used to manage workload levels.				
2	Minimum healthcare worker–to–patient ratios are set based on available evidence and best practice. These levels are monitored closely and actions taken when minimum standards are not met.				
3	In addition to evidence-based minimum staffing levels, staffing decisions take into consideration client group's needs and the experience and skill mix of the healthcare team.				
4	There is a holistic approach to workload management that considers all the demands placed on healthcare workers, such as the intensity of the work environment (i.e., the tasks to be performed, number of client interactions), client acuity and the skill mix of the healthcare team. This approach involves providing additional resources for high-intensity situations, where treatment must be provided immediately and when members of the healthcare team are less experienced.				

Workload Management cont'd

		Select Level			
Maturity Level	**Fatigue Management**	**Physicians**	**Nurses**	**Residents**	**Allied Health Professionals**
0	No consideration of the impact of fatigue on patient safety.				
1	Fatigue is acknowledged as a patient safety risk factor. Fatigue-management efforts focus on limiting the number of hours worked per shift and per week.				
2	Strategic plan developed to redesign shift rotations (length and timing) that are increasing fatigue or are contrary to evidence and best practice.				
3	Fatigue-management plan (ensures shift rotation does not contribute to increasing healthcare worker fatigue) is implemented and monitored. This plan includes leading practices in fatigue management such as sleep contracts (formal agreements about the amount of sleep between shifts that encourage healthcare workers to rest while they are off shift).				
4	Fatigue is identified as a form of impairment influencing cognitive performance (e.g., decision-making, digit span). Performance is routinely monitored using validated instruments to provide information on the level of impairment and enables healthcare workers to self-assess their performance and take remedial action (e.g., request support from colleagues).				

Resource Management

		Select Level		
Maturity Level	**Training**	**Clinical**	**Non-clinical**	**Managers**
0	No resource management training (interpersonal skills, communication, team working, personal awareness or decision-making) is provided.			
1	Information about resource management is provided to promote working effectively within a team environment.			
2	Knowledge-based interdisciplinary resource management training is provided.			
3	Skill-based (includes practice and feedback) resource management training is provided. The training program is developed/adapted to address the specific needs of the interdisciplinary team and is based on analysis of team working challenges.			
4	Resource management training includes practice in a simulated environment and is followed by behavioural observation of performance using validated indicators. Feedback is provided to all individuals after training, and a formal evaluation of the training's effectiveness is conducted.			

Sharing and Learning

Maturity Level	Organizational Learning	Select Level
0	There are no systems in place to support organizational learning.	
1	Events that result in significant harm (e.g., wrong-site surgery) are investigated, and actions are specified to prevent the reoccurrence of this specific event.	
2	All event reports are investigated using validated tools and processes (e.g., root-cause analysis). Patient safety improvement actions are identified from the investigation and implementation tracked.	
3	An integrated investigation system is implemented (e.g., incident reporting system, retrospective chart reviews and clinical audit process). Detailed results of investigations for each department are discussed with staff on a regular basis, and summary results are shared across the organization.	
4	A comprehensive organizational learning system is in place that includes incident reporting, retrospective chart review and audits. The organization learns from both negative and positive outcomes by identifying the practices that protect patients as well as those that increase risk.	

Maturity Level	Incident Reporting	Select Level
0	There are no reporting systems in place.	
1	Incident report forms or electronic reporting system is available to enable staff to report patient safety events and concerns.	
2	Incident reporting system (either paper or electronic) is in place. Training on how to use the system is provided to all staff. Learning from reported incidents is used in patient safety training. Reports have the option for individuals to identify themselves so that additional information about the incident can be obtained.	
3	Independent incident reporting system is used to facilitate confidential (not anonymous) reporting. Managers identify common themes from the reports and discuss them at department meetings. There are mechanisms in place to provide information to all staff (e.g., monthly summaries are provided to all staff).	
4	Incident reporting system includes detailed description of the event. Events are coded by a human factors expert and follow-up discussions (e.g., by telephone) are conducted with the person who reported the incident. There is a formal process in place to track every incident and the outcomes associated with it. Incidents are used as learning tools; each incident is described to all staff members and the actions resulting from the report are explained.	

Maturity Level	Disclosure*	Select level
0	No disclosure policy in place.	
1	Disclosure policy in place as per the Canadian Council on Health Services Accreditation (CCHSA) guidelines.†	
2	Disclosure training offered to all staff (including physicians) including requirements under the policy.	
3	Disclosure training is given to all staff (including physicians). Patients and families of those involved in an adverse event provide input into the training and are consulted on an ongoing basis to seek feedback on how disclosure is managed.	
4	Use of retrospective chart audit to assess quality (and extent) of disclosure when harm has occurred.	

*The core elements of disclosure as identified by CCHSA are discussing the adverse event itself, acknowledging/apologizing for the adverse event, reviewing the actions taken to mitigate the circumstances, discussing the corrective action to prevent further adverse events and answering the questions of the patient/client and/or family.

†CCHSA (2007) guidelines state that a "formal (transparent) policy and process of disclosure of adverse events to patients/families, including support mechanisms for patients, family and care/service providers" must be implemented.

Risk Analysis

Maturity Level	Safety Analysis Systems	Select Level
0	No systematic use of safety analysis systems to promote patient safety.	
1	Safety analysis tools are used for major events. For example, retrospective analysis tools (e.g., root-cause analysis) are used to investigate the causes of events that resulted in significant harm (e.g., wrong-site surgery), and prospective analysis tools are used when planning major organizational changes such as a new building.	
2	Safety analysis tools are used frequently. The analysis is led by patient safety specialists with involvement of healthcare workers.	
3	A wide range of healthcare workers are competent in using safety analysis tools. Healthcare workers regularly use these tools to learn from incidents and identify ways of improving patient care.	
4	Safety analysis systems are integrated into the routine activities of healthcare workers; the effectiveness of the system is monitored. For example, actions identified during a prospective analysis are tracked to ensure they were implemented and worked as intended.	