The Role of Healthcare Work Environments in Shaping a Safety Culture

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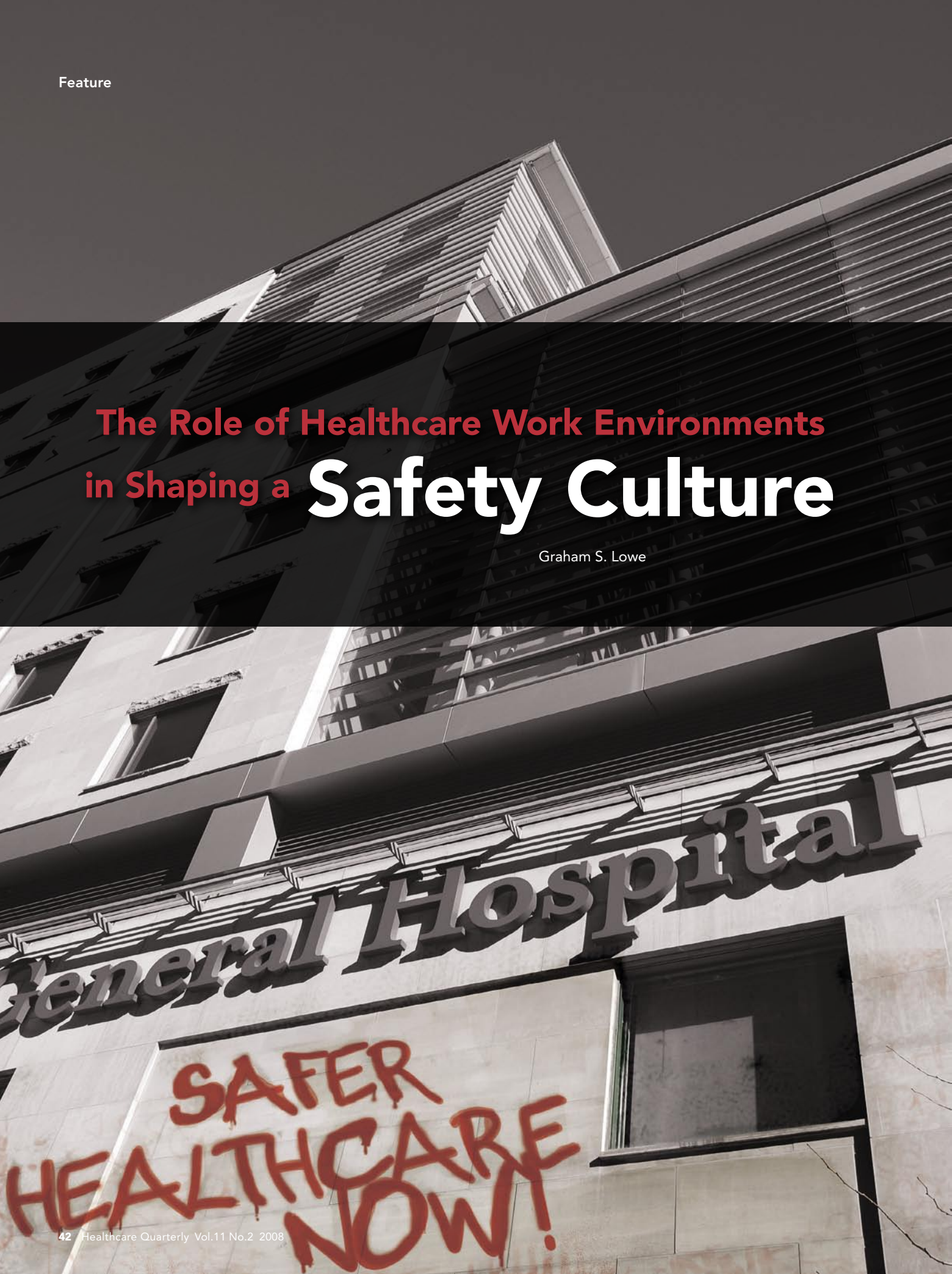


Patient safety is a basic goal of all Canadian healthcare organizations. Yet we still have much to learn about the determinants of safety. One of the biggest knowledge gaps is how workplace factors influence safety outcomes. As the 2004 Canadian Adverse Events Study suggested, "The greatest gains in improving patient safety will come from modifying the work environment of healthcare professionals, creating better defenses for averting [adverse events] and mitigating their effects." (Baker et al. 2004: 1685). Echoing this point, the US Agency for Healthcare Research and Quality (AHRQ) concluded that working conditions affect patient outcomes, including safety (AHRQ 2003). However, little is known about the causal mechanisms by which work environment factors that influence employee behaviour also have implications for patient safety.

Safety cultures move beyond a "blame and shame" mentality.

Calls for a "safety culture" are increasingly common in discussions of how to improve patient safety. Healthcare quality experts point out that research on healthy workplaces identifies similar factors affecting both occupational health and safety and organizational performance (Sainfort et al. 2001). In Canada, healthcare leaders are being urged to act on the considerable evidence linking the working conditions of nurses, particularly staffing ratios and skill mix, to patient outcomes such as satisfaction, morbidity and mortality (Nicklin and Graves 2005). By integrating quality and safety within human resource strategies, greater improvements should be realized in the well-being of healthcare providers and the people they serve. At least in theory, this should contribute simultaneously to human resource and system performance goals.

Research and interventions to improve patient safety draw on the model for a culture of safety developed in high-hazard industries, such as commercial aviation and nuclear power. In a safety culture, everyone is accountable for achieving safety goals and is aware of the importance of safety (Leape 2005). Safety is more than a priority; it is embedded in the organization through shared values and beliefs, and its importance is continuously communicated. Organizational learning is supported as a means for maintaining safety. Safety cultures move beyond a "blame and shame" mentality. The key is to create a non-punitive learning environment where healthcare practitioners are able to communicate errors without fear of reprisal and feel they can take action to fix unsafe conditions in their work context (Leape 2005).

AHRQ conducted a systemic review of the research evidence from 115 studies on the impact of healthcare working conditions on patient safety (AHRQ 2003). Five categories of working conditions were examined: staffing, workflow design, personal and social factors, physical environment and organizational factors. The review concluded that specific working conditions affect outcomes that are related to patient safety and that some working conditions affect rates of medical error. AHRQ recommended that improved patient outcomes could be achieved by organizational changes, such as increasing staffing levels for nurses, reducing interruptions and distractions and improving information exchange within and across hospital and non-hospital settings. This point is echoed by the US Institute of Medicine of the National Academies, which recommended improvements in nurses' work environments, adequate staffing levels, mandatory limits on nurses' work hours and strong nurse leadership at all levels (Institute of Medicine of the National Academies 2003). It also recommended the development of management structures and systems that foster trust and staff involvement in decision-making. A more recent synthesis of research on nurse-sensitive patient outcomes concluded that adverse events decline as the levels of registered nurse staffing and skill mix increase (Stone et al. 2005). The links to quality of work life are through appropriate workloads and full scope of practice.

AHRQ attempted to find a consensus measure of organizational climate that fits diverse healthcare settings and could be related to patient safety. Six studies involving 80,000 workers in acute care, home care, long-term care and primary care settings were combined to test a new integrative model of safety climate derived from patient safety studies (Stone et al. 2005). Climate encompasses perceptions of leadership, decision-making and work norms. Culture is broader, referring to shared norms, values, beliefs and assumptions. According to this research, the same factors contributing to positive outcomes for employees also affect service quality processes and outcomes. These factors include cultures and climates "that have supportive and empowering leadership and organizational arrangements, along with positive group environments" (Stone et al. 2005: 468). Outcomes examined in this research include absenteeism, patient satisfaction, the use of evidence-based clinical practices and performance. However, more research is needed to understand how these outcomes are interrelated.

Other patient safety studies also suggest that a culture that values and supports communication, openness, learning and collaboration is the foundation for patient safety and healthcare quality (West et al. 2006). Training, guidelines, information technology and regulation all contribute to meeting safety goals. More fundamentally, "safety culture is a performance shaping factor that guides the many discretionary behaviours of healthcare professionals toward viewing patient safety as one of their highest priorities" (Nieva and Sorra 2003: ii17). For example, a study of 15 California hospitals concluded that short-term

interventions are ineffective unless management structures and the culture of the organization give high priority to safety (Singer et al. 2003). This requires breaking down organizational barriers and silos separating managers and front-line workers.

The purpose of this article is to clarify the role of healthcare work environment factors in creating a culture of safety, using survey evidence from allied health professional and technical workers in Alberta. Three practical questions are addressed:

1. To what extent does a safety culture exist in healthcare organizations in a Canadian province?
2. What specific features of the work environment contribute to a safety culture?
3. Do unique occupational or organizational characteristics influence work site safety cultures, or does a general safety culture model apply across the healthcare system?

Answers to these questions provide practical insights about how actions to improve specific work environment factors also build stronger safety cultures. To the author's knowledge, this is the first study of its kind undertaken in Canada. Specifically, the study is unique in three respects. First, it considers a broad range of allied health professions not previously the focus of either patient safety or work environment research. Second, it examines a comprehensive set of work environment factors. And, third, it provides recent Canadian evidence directly relevant to ongoing discussions of patient safety.

One in five reported a low probability of an incident being reported – surely cause for concern.

The Study

The focus of this research is allied health workers who are members of the Health Sciences Association of Alberta (HSAA). Data come from the 2006 HSAA Work Environment Survey, sponsored by the union and conducted by an independent consultant, the Graham Lowe Group Inc. The survey provided evidence that HSAA and the employers are using collaboratively to improve the work environments of allied health workers (Lowe 2006). The underlying assumption of the study is that work environment improvements will benefit the health system as a whole.

A mail questionnaire was sent to 12,000 HSAA members at their home address. The questionnaire contained measures of work environment factors, job characteristics, work experience and health and wellness either drawn from the research literature or designed specifically for this study. Data were collected during March and April 2006. In total, 5,131 completed questionnaires were returned, for a response rate of 43%, which is acceptable for a mail survey of this kind and certainly is within the response rate range usually achieved by healthcare employers when conducting internal employee surveys.

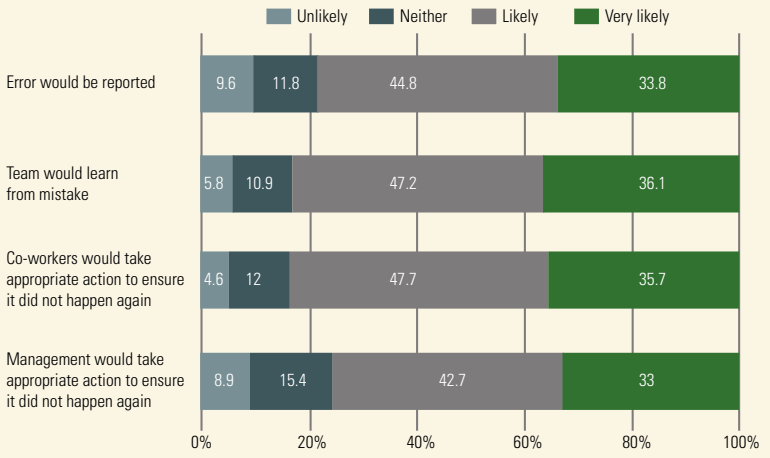
HSAA represents dozens of health professional, para-professional, technical and support occupations throughout the Alberta health system. From the 40 job classifications included in the 2006 HSAA Work Environment Survey, 27 are the focus of this analysis, comprising a sub-sample of 4,347 healthcare employees (Table 1), or 85% of all survey respondents. Most in the sub-sample (69%) worked in hospitals, 24% in laboratory

Table 1. Health occupations included in study

Occupation	Number	%
Laboratory technologists/medical laboratory technologists	765	17.6%
Occupational therapists	378	8.7%
Pharmacists	347	8.0%
Respiratory therapists	343	7.9%
Physical therapists	333	7.7%
Social workers	293	6.7%
Medical radiation/radiology technologists	282	6.5%
Laboratory assistants/attendants/helpers	279	6.4%
Speech-language pathologists/therapists and audiologists	216	5.0%
Dietitians/nutritionists	183	4.2%
Combined laboratory/radiography technologists	150	3.5%
Emergency medical technicians/ paramedics	111	2.6%
Psychologists	108	2.5%
Radiography technologists	81	1.9%
Recreation therapists	76	1.7%
Diagnostic sonographers/medical sonographers	72	1.7%
Public health inspectors	57	1.3%
Cardiology technologists	56	1.3%
Others (occupations with <50 survey respondents)	217	5.0%
Total	4,347	100%

services and the rest in community health, emergency medical services and long-term care. The largest job classifications in the sub-sample are laboratory technologists and medical laboratory technologists (17.6%), occupational therapists (8.7%), pharmacists (8.0%), respiratory therapists (7.9%), physical therapists (7.7%), social workers (6.7%) and medical radiation and radiology technologists (6.5%). Employees in the selected occupations are of particular interest for understanding safety issues because their work has a direct impact on patient and client outcomes at various points along the healthcare continuum. The employees excluded from the analysis performed jobs that have less direct impact on patient and client safety (e.g., clerks, record-keeping technicians, instructors and administrators).

Figure 1. Safety culture indicators



n ranges between 4,338 and 4,353.

Source: Data from the Health Sciences Association of Alberta 2006 Work Environment Survey.

Four indicators of safety culture were developed in consultation with HSAA. The indicators capture three phases of error prevention: reporting, learning from the mistake and the taking of remedial action by both employees and management to reduce the risk of reoccurrence. All respondents were asked the following: "If someone working in your area made an error that put patient or client safety at risk, how likely is it that (a) the error would be reported? (b) your work team would learn from the mistake? (c) your co-workers would take appropriate action to ensure this did not happen again? and (d) management would take appropriate action to ensure this did not happen again?" Each question was answered using a five-point Likert-type scale (very unlikely, unlikely, neither likely nor unlikely, likely, very likely).

These measures draw on the academic and practical literature in three important respects. First, the focus is on organizational-level incidents rather than individual-level incidents affecting occupational safety (Reasons 1998). Second, all four measures are leading indicators and, in this sense, can be viewed in a logic model of patient safety as determinants of adverse events (Flin et al. 2000). Third, a basic insight about safety cultures underpins this approach to measurement: a strong safety culture depends on each employee making safety a habit (Anderson and Lorber 2006).

Assessing Safety Culture

Figure 1 reports overall responses to the four safety culture indicators. Over 80% of respondents said it was likely or very likely that an error that put patient or client safety at risk would be a reported in their work area. However, only 34% said this reporting would be very likely. This finding has implications for health employers, raising two issues: (1) what constitutes an acceptable standard of reporting? and (2) can any uncertainty be tolerated in whether an incident will be reported? Note also that just over one in five (21.4%) reported a low probability of an incident being reported – surely cause for concern. Looking at actions flowing from the reporting of an error, between 33 and 36% of respondents said their team would learn from the mistake and that co-workers and managers would take appropriate action to ensure the error did not happen again. However, less than half of the respondents considered these follow-up actions to be likely. Based on these findings, the health system goal should be to increase as fast as possible the proportion of employees in the "very likely" category.

Given our interest in measuring the concept of a safety culture, statistical techniques suited to this purpose were used to create a safety culture scale by combining the four specific survey questions described above. (Principle component factor analysis confirmed that the four indicators measure the same underlying concept. Item factor loadings were between .72 and .88. The scale reliability alpha = .84. The scale had a range of 4–20, a mean of 16.24 and a standard deviation of 3.01. The distribution of respondents across the three categories was as follows: 31% = low, 34% = medium and 35% = high. Low scores were between 4 and 15.9; medium scores were between 10 and 17.9 and high scores were between 18 and 20). All of the analysis below uses this safety culture scale, dividing respondents into three categories (low, medium and high) based on safety culture scale scores. Given our focus on the conditions supporting strong safety cultures, it is important to point out that 35% of respondents scored high (between 18 and 20) on the 20-point safety culture scale.

Work Environment Foundations of Safety Culture

The HSAA Work Environment Survey provides an opportunity to examine specific employee characteristics and workplace factors associated with a strong or weak safety culture. To explore this, we did extensive correlation analysis of a wide range of measures, including work stress, workload, employee demographics, occupation and employer. The results (not reported) showed statistically significant variations that are not surprising but have not been previously tested with data. For example, survey respondents who reported high levels of stress most days at work had lower scores on the safety culture scale than did co-workers with moderate or low levels of stress. Similarly, respondents reporting difficulties keeping up with their workloads had lower safety culture scale scores. Younger (under age 25) and older (age 55 and older) workers were more likely than other age groups to have high scale scores, as were females (compared with males). Employees in laboratory services had higher scores than did employees in other types of healthcare organizations. There also were variations across the 14 employers in the study (all major healthcare employers in Alberta), with employees in dedicated laboratory services (e.g., Canadian Blood Services, Calgary Laboratory Services) scoring higher. Some occupations – notably nuclear medicine technologists, radiation therapists, combined laboratory and radiography technologists, cardiology technologists, laboratory and medical laboratory technologists, recreation and exercise therapists and laboratory assistants – also scored higher than other groups did. Workers with supervisory responsibilities had higher scores than did respondents in non-supervisory roles.

However, multivariate analysis, discussed below, revealed that very few of these two-way relationships mattered when all these factors were simultaneously considered along with underlying work environment factors. Both the bi-variate correlations and multivariate analysis confirmed that specific work environment factors were consistently and significantly associated with safety culture. To illuminate these work environment correlates of a safety culture, five core concepts of a quality work environment were identified, informed by workplace research and based on an extensive correlational and multivariate analysis of the HSAA data. These concepts were measured using multi-item scales (Table 2).

Previous research on healthy, high-quality healthcare environments informed the measures used in the HSAA survey as well as the development of the five work environment scales above (Lowe 2002, 2007). Investigations of a wide range of measures of job characteristics, organizational change, workload, stress, training and development and healthy and safe workplaces identified these five concepts as the key work environment underpinnings of a safety culture.

Figures 2–6 report the proportion of respondents in the top quartile of each scale for the three levels (high, medium, low) of safety culture. For example, 56% of respondents scoring high on the safety culture scale have high levels of teamwork compared with 21% of those with low safety culture scores. The same pattern is found for fair processes, supportive supervisors, people leadership and learning environments. Put simply, respondents who are in the top quartile of each of these scales are significantly more likely to report a safety culture. The consistency and

Table 2. Work environment concepts and measures*

Fair Processes in Workplace, Team or Unit
Rules and policies are fairly applied.
Rules and policies are consistently applied.
The hiring and competition process is fair.
Rules and policies make sense.
Work is assigned fairly and equitably.

Teamwork
My co-workers are friendly and helpful.
My co-workers treat me with respect.
Communication is good among the people I work with (in workplace, team or unit).
There is a high level of interdisciplinary collaboration (in workplace, team or unit).
There is adequate opportunity to discuss professional practice issues (in workplace, team or unit).

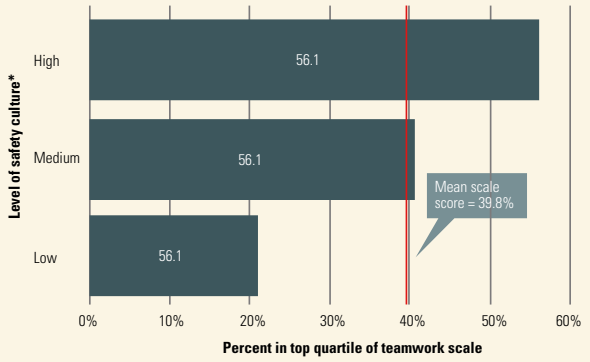
Learning Environment
I take initiative in my job.
I learn new ways to do my job better.
I feel that I fully contribute my skills, knowledge and abilities.

Supportive Immediate Supervisor
My supervisor listens to and acts upon my suggestions and ideas.
My supervisor encourages teamwork.
My supervisor encourages me to be innovative in how I do my job.
My supervisor supports my career development.
My supervisor provides timely and constructive feedback on my job performance.
My supervisor helps me achieve a work-life balance.
My supervisor shares information.
My supervisor creates a work environment free of harassment and discrimination.

People Leadership by Senior Management
Those in senior management actively seek employees' ideas about how to do things better.
Those in senior management take employees' interests into account when planning changes.
Those in senior management make employees feel valued for the contributions they make to patients and clients.
Those in senior management effectively communicate to employees about changes that will affect them.
Those in senior management set realistic performance goals for my area.

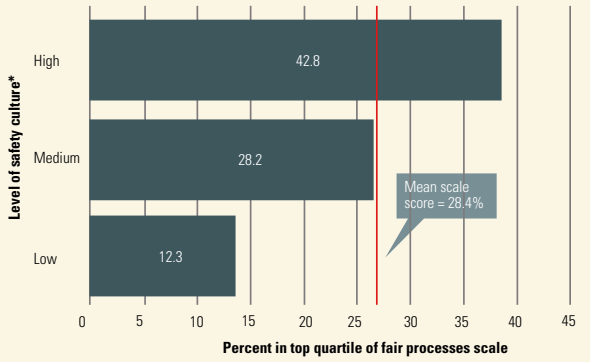
*All items were answered on five-point Likert-type scales (e.g., ranging from strongly agree to strongly disagree and from never to very often). Scale reliability alphas: fair process = .85; teamwork = .79; learning = .74; supportive supervisor = .92; leadership = .91. All scales were developed using principal component factor analysis.

Figure 2. Teamwork scale by levels of safety culture



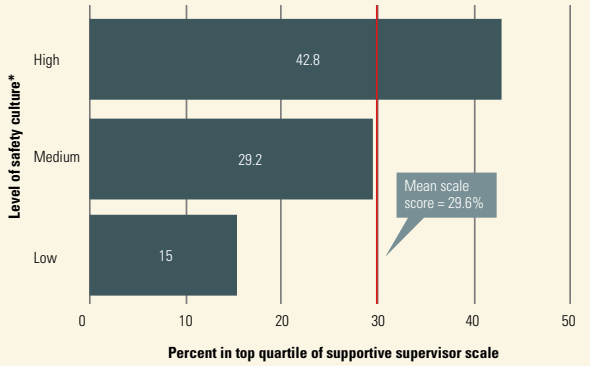
*Differences statistically significant, chi-square test, $p = .000$. $n = 4,169$.
Source: Data from the Health Sciences Association of Alberta 2006 Work Environment Survey.

Figure 3. Fair processes scale by levels of safety culture



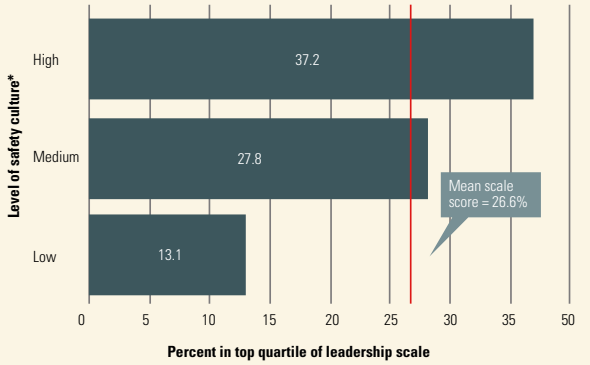
*Differences statistically significant, chi-square test, $p = .000$. $n = 4,225$.
Source: Data from the Health Sciences Association of Alberta 2006 Work Environment Survey.

Figure 4. Supportive supervisor scale by levels of safety culture



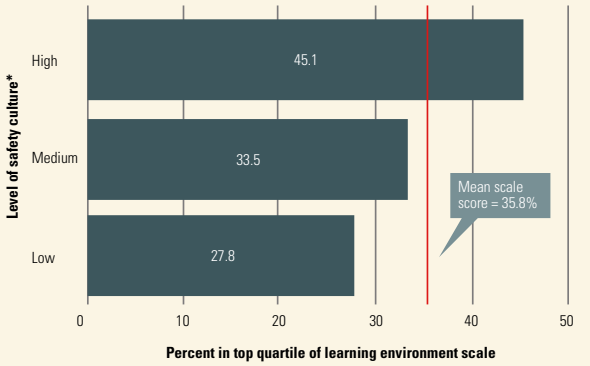
*Differences statistically significant, chi-square test, $p = .000$. $n = 4,186$.
Source: Data from the Health Sciences Association of Alberta 2006 Work Environment Survey.

Figure 5. People leadership scale by levels of safety culture



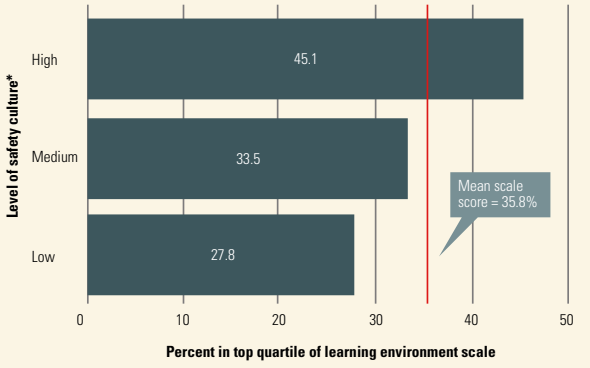
*Differences statistically significant, chi-square test, $p = .000$. $n = 4,020$.
Source: Data from the Health Sciences Association of Alberta 2006 Work Environment Survey.

Figure 6. Learning environment scale by levels of safety culture



*Differences statistically significant, chi-square test, $p = .000$. $n = 4,280$.
Source: Data from the Health Sciences Association of Alberta 2006 Work Environment Survey.

Figure 7. Relationship between safety culture and perceptions of overall quality of service



*Differences statistically significant, chi-square test, $p = .000$. $n = 4,276$.
Source: Data from the Health Sciences Association of Alberta 2006 Work Environment Survey.

strength of these relationships is indeed striking, especially given the robust measures we are using (statistically validated multi-item scales). While the HSAA survey captures only one point in time and does not therefore permit conclusions about cause and effect, these findings nonetheless suggest an underlying causal logic. In short, the five healthcare work environment dimensions we have examined are obvious levers that management can use to develop safety-focused workplace cultures.

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As further confirmation of this, we also found evidence of a safety-quality connection (Figure 7). Respondents were asked, "In the past 12 months, how would you rate the overall quality of the service provided by your team or area?" Answers were rated on a five-point Likert-type scale ranging from poor to excellent. Over 83% of employees in areas with strong safety cultures reported very good or excellent overall service quality – almost double the rate in the weak safety culture group (46%).

As a final step in this analysis, we examined the influence of the five work environment scales on safety culture, taking into account other workplace, employee and job characteristics. A regression equation containing demographic measures (e.g., seniority, gender), occupational group, employer, stress, workload, supervisory responsibilities, trust in senior management and full-time or part-time status along with the five work environment scales was used to predict scores on the safety culture scale. All five work environment scales had a significant net impact on safety culture, with by far the strongest effect found for teamwork, followed by fair processes.

Overall, the importance of work environment factors, especially teamwork and fair processes, overshadowed that of any other influences on safety culture that we measured.

Overall, the importance of work environment factors, especially teamwork and fair processes, overshadowed that of any other influences on safety culture that we measured. Employer-specific effects were negligible, with two exceptions: employees at Calgary Laboratory Services and the Alberta Cancer Board tended to have stronger safety cultures, even after accounting for other factors, although the influence on safety culture scores was very small. Similarly, while five of the 26 occupations examined (respiratory therapists, social workers, occupational therapists, physical therapists and dietitians) scored lower on the safety culture scale, after taking account of other factors, these occupational effects were very small. The only other measure to have a significant net effect on safety culture was gender: women were slightly more inclined to report a safety culture than were men. Taken together, these employer, occupation and gender effects accounted for very little variation (3%) in safety culture scores compared with teamwork and fair processes, which together account for 21% of the variation in safety culture scores (adjusted R^2 for the final regression equation = .274).

Beyond confirming the importance of teamwork, fair organizational processes, effective supervision and people leadership and learning for supporting a safety culture, it is interesting to consider the practical implications of other findings from this analysis. It is perhaps not surprising that the Alberta Cancer Board and Calgary Laboratory Services have unique characteristics as organizations that focus employees' attention on safety, given the kind services they provide. Nor is it surprising that occupations such as social work and occupational therapy are less likely to involve strong safety cultures, considering that the role of these professionals in patient and client care inherently involve fewer safety risks. The gender difference needs further research because, on the surface, this seems to imply that women are more responsive to safety issues than men. If this were to bear out in future research, it would have implications for safety education and training.

A Safety Culture Strategy Model

To expand this discussion, it is useful to consider how a safety culture contributes to key employee outcomes that, increasingly, are strategic goals for healthcare employers. Considering the serious recruitment and retention challenges faced by healthcare employers, this is an important connection to make. This comprehensive perspective on safety culture is captured in the logic model presented in Figure 8.

As documented, safety and service quality go hand in hand. A more comprehensive view of safety culture is suggested by the specific indicators comprising the work environment scales. These indicators are not only key drivers of a safety culture; they also are associated with employee outcomes, such as

Figure 8. Safety culture strategy model

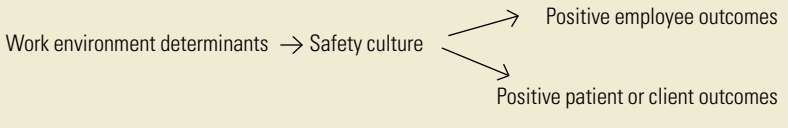

Table 3. Relationship between safety culture and strategically important employee outcomes*

	Safety Culture Scale Score (%)		
Strategically Important Employee Outcomes†	**Low**	**Medium**	**High**
Safe work environment (agree/strongly agree)	62.0	76.9	85.3
Healthy work environment (agree/strongly agree)	33.0	49.3	60.5
Proud to be working for my employer (agree/strongly agree)	32.0	47.7	59.8
Very committed to my employer (agree/strongly agree)	30.7	45.0	55.0
Satisfied or very satisfied with job	58.5	73.6	79.7
Look forward to going to work often or very often	39.9	53.0	63.5

*n = 4,266–4,282.

†All relationships reported between each employee outcome and the safety culture scale are statistically significant, chi-square test, p=.000.

Source: Data from the HSAA 2006 Work Environment Survey.

commitment and satisfaction. This sheds light on the "positive employee outcomes" component of the model in Figure 8. Table 3 documents six employee outcomes that enhance the quality of work life: a healthy and safe work environment and employee pride, commitment, satisfaction and engagement. Furthermore, these outcomes also contribute to healthcare employers' human resource goals – in other words, they are strategically important for system performance.

Just as with the relationships between work environment factors and safety culture, employees who have high scores on the safety culture scale also report having a healthier and safer work environment. They also are more committed to their employer, take greater pride in their work and are more satisfied with and engaged in their jobs compared with co-workers with low safety culture scale scores. Especially notable is the strong link between a safety culture from a patient or client perspective and a safe work environment for employees. While these findings are correlations only, their consistency and strength do suggest that safety cultures and positive employee work experiences are linked. However, more research is required to unravel the causal dynamics of this relationship.

Conclusion

To summarize the key findings, a high-quality work environment is a cornerstone of a healthcare safety culture. For the wide range of allied health professional and technical workers examined in this study, it appears that teamwork, fair workplace processes, supportive and people-centred supervision and leadership and a learning environment contribute to a culture that values safety. Furthermore, this safety culture itself is associated with a positive quality-of-work-life outcomes for employees – they experience their work environments as healthy and safe, are more satisfied and have pride in what they do. And employers also benefit from safety cultures because of the links to commitment and engagement. This model of safety culture needs to be tested in other healthcare settings and with other healthcare occupations, but the fact that this sample was diverse in both respects adds weight to this conclusion.

In terms of organizational strategy, these research findings underscore the importance in healthcare of creating healthy organizations. A healthy organization is defined as "one whose culture, climate and practices create an environment that promotes employee health and safety as well as organizational effectiveness" (Lim and Murphy 1999: 64). Figure 8 reflects the logic of a healthy organization and could be expanded to show how work environment characteristics influence the development and utilization of an organization's people capacity – including the capacity to proactively address safety issues – which is required to achieve the organization's goals. The findings also highlight the importance of teamwork – now often described as collaborative, inter-professional, patient-centred care – as a pathway for health system renewal (Health Council of Canada 2006). A prerequisite for inter-professional teams is a work environment that closely mirrors the safety culture measured in the HSAA study.

At the health policy level, several provinces are creating long-term health human resource strategies with explicit goals for healthy, or high-quality, workplaces. For example, in Alberta, a provincial health policy initiative by the regional health boards created a provincial human resources action framework, the Strengthening People Strategy. Furthermore, health quality councils (HQCs) in Alberta, Saskatchewan, Ontario and New Brunswick have mandates to monitor and publicly report on health system performance. A broad interpretation of the mandate of HQCs would include key determinants and outcomes of quality care from the providers' perspective. HQCs have the potential to create a more effective monitoring, reporting and accountability framework that includes key indicators for healthcare providers. This article provides evidence for integrating human resource practices and work environments as key determinants of quality and safety outcomes at the organizational level.

This direction is being advocated by the Quality Worklife–Quality Healthcare Collaborative, a multidisciplinary coali-

tion of healthcare leaders and national organizations that are working together to develop an integrated action strategy to transform the quality of work life for Canada's healthcare providers. (Partner organizations include the Canadian Council on Health Services Accreditation, Canadian College of Health Service Executives, Canadian Nurses Association, Canadian Healthcare Association, Canadian Federation of Nurses Unions, Canadian Medical Association, Canadian Health Services Research Foundation, Association of Canadian Academic Healthcare Organizations, Academy of Canadian Executive Nurses, National Quality Institute and Health Canada – Office of Nursing Policy.) The coalition defines a healthy healthcare workplace as "a work setting that takes a strategic and comprehensive approach to providing the physical, cultural, psychosocial and work/job design conditions that maximizes health and well being of healthcare providers, quality of patient outcomes and organizational and system performance" (Quality Worklife–Quality Healthcare Collaborative 2007) The coalition's call for standardized measurement processes and indicators builds on the Canadian Council on Health Services Accreditation's efforts to integrate quality of work life into accreditation standards (Nicklin and Barton 2007). Some of the quality work-life indicators proposed by the collaborative and the council are similar to the measures used above to examine work environment determinants of safety cultures. A meaningful step toward achieving both safety and quality-of-work-life goals would therefore be to include measures of safety culture drivers and outcomes in existing or planned employee surveys in healthcare settings.

Acting on this study's findings depends on a strong commitment from top management to take the actions needed to address the work environment drivers of safety. This commitment must be continuously communicated and, most important, consistently reinforced in all management decisions and actions. These are preconditions for any successful quality or safety improvement initiative to enhance organizational effectiveness in healthcare. For example, research on 464 National Health Service Trusts in the United Kingdom identified "best practices" for organizational effectiveness (Zairi and Jarrar 2001). The leading practice was the style of management, based on leadership attributes that included rebuilding trust and the ability to address stress and help others during organizational change. The two management practices most aligned with organizational effectiveness were "total staff involvement with open communication" – the underpinnings of a healthy psychosocial work environment – and a safety culture.

Strong leadership on a quality work environment agenda is essential to get the buy-in of managers and supervisors at all levels. Mid-level and front-line managers often lack appropriate incentives or skills to champion workplace improvements. Historically, these groups have been most resistant to organizational change, in part because they lack the resources to respond positively to change. Moreover, it is well documented that supportive supervision – defined by good communication skills and support for employee learning and development – is a defining feature of a healthy workplace (Duxbury and Higgins 2001; Lowe and Schellenberg 2001). A successful safety-focused work environment strategy must therefore ensure that all managers and supervisors have the time, encouragement and training needed to be effective people leaders, support teamwork and learning and ensure fair workplace processes.

Making use of the above evidence for decision-making and action requires bridging what organizational experts call the "knowing-doing gap" (Pfeffer and Sutton 2000). Two of the greatest barriers to moving from talking to action are a perceived shortage of time and the dead weight of inertia created by entrenched systems, practices and ways of thinking. Strong collective will is needed to implement and sustain safety cultures. Given the momentum created in recent years by the patient-safety movement, the time has never been better to integrate the goals of safety and improved work environments. HQ

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References

Agency for Healthcare Research and Quality. 2003. *The Effect of Health Care Working Conditions on Patient Safety* (AHRQ Summary, Evidence Report/Technology Assessment No. 74.) Rockville, MD: Author.

Anderson, G.M. and R.L. Lorber. 2006. Safety 24/7: *Building an Incident-Free Culture.* Lafayette, LA: Results in Learning.

Baker, G.R., P.G. Norton, V. Flintoft, R. Blais, A. Brown, J. Cox, E. Etchells, W.A. Ghali, P. Hébert, S.R. Majumdar, M. O'Beirne, L. Palacios-Derflingher, R.J. Reid, S. Sheps and R. Tamblyn. 2004. "The Canadian Adverse Events Study: The Incidence of Adverse Events among Hospital Patients in Canada." *Canadian Medical Association Journal* 170(11): 1678–86.

Duxbury, L. and C. Higgins. 2001. *Work-Life Balance in the New Millennium.* Ottawa, ON: Canadian Policy Research Networks.

Flin, R., K. Mearns, P. O'Connor and R. Bryden. 2000. "Measuring Safety Climate: Identifying the Common Features." *Safety Science* 34: 117–92.

Haberfelde, M., D. Bedecarré and M. Buffum. 2005. "Nurse-Sensitive Patient Outcomes: An Annotated Bibliography." *Journal of Nursing Administration* 35(6): 293–9.

Health Council of Canada. 2006. *Health Care Renewal in Canada: Clearing the Road to Quality.* Annual Report. Toronto: Author.

Institute of Medicine of the National Academies. 2003. *Keeping Patients Safe: Transforming the Work Environment of Nurses.* Washington, DC: Institute of Medicine.

Leape, L.L. 2005. "Preventing Medical Error." In D. Mechanic, L.B. Rogut, D.C. Colby and J.R. Knickman, eds., *Policy Challenges in*

Modern Health Care. Piscataway, NJ: Rutgers University Press.

Lim, S.-Y. and L.R. Murphy. 1999. "The Relationship of Organizational Factors to Employee Health and Overall Effectiveness." *American Journal of Industrial Medicine* Suppl. 1:64–5.

Lowe, G.S. 2002. "High-Quality Healthcare Workplaces: A Vision and Action Plan." *Hospital Quarterly* 5(4): 49–56.

Lowe, G.S. 2006. *Creating a Quality Work Environment. Results from the HSAA 2006 Work Environment Survey.* Edmonton, AB: Health Sciences Association of Alberta.

Lowe, G.S. 2007. *21st Century Job Quality: Achieving What Canadians Want.* Ottawa, ON: Canadian Policy Research Networks.

Lowe, G. S. and G. Schellenberg. 2001. *What's a Good Job? The Importance of Employment Relationships.* Ottawa, ON: Canadian Policy Research Networks.

Nicklin, W. and E. Graves. 2005. "Nursing and Patient Outcomes: It's Time for Healthcare Leadership to Respond." *Healthcare Management Forum* 18(1): 9–13, 40–5.

Nicklin, W. and M. Barton. 2007. "CCHSA Accreditation: A Change Catalyst toward Healthier Work Environments." *Healthcare Papers* 7(Special issue): 58–63.

Nieva, V.F. and J. Sorra. 2003. "Safety Culture Assessment: A Tool for Improving Patient Safety in Healthcare Organizations." *Quality and Safety in Health Care* 12(Suppl. 2): ii17–23.

Pfeffer, J. and R.I. Sutton. 2000. *The Knowing-Doing Gap. How Smart Companies Turn Knowledge into Action.* Boston, MA: Harvard Business School Press.

Quality Worklife–Quality Healthcare Collaborative. 2007. *Within Our Grasp: A Healthy Workplace Action Strategy for Success and Sustainability in Canada's Healthcare System.* Ottawa: Author.

Reasons, J. 1998. "Achieving a Safe Culture: Theory and Practice." *Work and Stress* 12(3): 293–306.

Sainfort, F., B.T. Karsh, B.C. Booske and M.J. Smith. 2001. "Applying Quality Improvement Principles to Achieve Healthy Work Organizations." *Joint Commission Journal on Quality Improvement* 27(9): 469–83.

Singer, S.J., D.M. Gaba, J.J. Geppert, A.D. Sinaiko, S.K. Howard and K.C. Park. 2003. "The Culture of Safety: Results of an Organization-Wide Survey in 15 California Hospitals." *Quality and Safety in Health Care* 12(2): 112–8.

Stone, P.W., I.M. Harrison, P. Feldman, M. Linzer, T. Peng, D. Roblin, J. Scott-Cawiezell, N. Warren and E.S. Williams. 2005. "Organizational Climate of Staff Working Conditions and Safety – An Integrative Model." In Advances in Patient Safety: From Research to Implementation (Vol. 2). Rockville, MD: *Agency for Healthcare Research and Quality.*

West, M.A., J.P. Guthrie, J.F. Dawson, et al. 2006. "Reducing Patient Mortality in Hospitals: The Role of Human Resource Management." *Journal of Organizational Behavior* 27: 983–1002.

Zairi, M. and Y.F. Jarrar. 2001. "Measuring Organizational Effectiveness in the NHS: Management Style and Structure Best Practices." *Total Quality Management* 13(7–8): 882–9.

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