

Healthy Workplaces and Productivity: A Discussion Paper

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Other activities include the development of a National Workplace Health Agenda which will further the work of organizational health and its relationship to productivity, sustainable development and reduced health-care costs.

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Abstract

This paper examines two health issues of crucial importance to practitioners and policy makers: the work environment and organizational factors that positively influence workers' health and well-being, and the relationship between healthy workplaces and productivity. Research in diverse disciplines agrees on the importance of supporting employees to be effective in their jobs in ways that promote, not compromise, their health. The ingredients include leadership that values employees as key assets, supportive supervision at all levels, employee participation, job control, communication, opportunities to learn, and a culture that gives priority to work-life balance and individual wellness. There is also evidence of causal links between working conditions, interventions designed to create healthier workplaces, employee health, and firm-level productivity. Studies suggest that successful healthy workplace initiatives are comprehensive in scope, integrated with other human resource programs, and have well-designed implementation strategies based on strong leadership, good communication and extensive participation. While significant knowledge gaps remain, these should not deter employers, employees and policy makers from taking action now to create healthy organizations.

Executive Summary

This paper addresses two questions using an interdisciplinary perspective: What are the work environment and organizational factors that positively influence workers' health and well-being? Are organizations that support the achievement of good health for their employees also more productive?

Answering the first question, research on workplace health promotion, family friendly workplaces, healthy organizations, job stress, high performance workplaces, and strategic human resources management converge around the importance of supporting employees to be effective in their jobs in ways that promote, not compromise, their health. The ingredients include leadership that values employees as key assets, supportive supervision at all levels, employee participation, job control, communication, opportunities to learn, and a culture that gives priority to work-life balance and individual wellness.

The answer to the second question is more qualified. Some initiatives, such as comprehensive workplace wellness programs, deliver impressive cost savings and positively influence productivity. High performance workplaces, while showing productivity dividends, less often reveal positive outcomes for worker health, mainly because such measures are not included in these studies. Overall, evidence points toward causal links between working conditions, interventions designed to create healthier workplaces, employee health, and firm-level productivity. We also know that successful healthy workplace initiatives are comprehensive in scope, integrated with other human resource programs, and have well-designed implementation strategies based on strong leadership, good communication and extensive participation.

However, significant knowledge gaps must be addressed. A future research agenda includes: examining the synergistic effects of combining specific health promotion interventions; analyzing the psychological links between job design and productivity-related outcomes such as learning and development, absenteeism, turnover, and job performance; using a wider range of outcome measures such as the psycho-social work environment and productivity outcomes in evaluations of workplace health promotion initiatives; greater focus on health and productivity issues in small workplaces, firms located in rural or isolated locations, in high-risk industries, and in non-standard employment; and examination of the larger economic and social benefits and costs of creating healthy workplaces.

These knowledge gaps should not deter employers, employees and policy makers from taking action now. We know enough about the connections between work environments, employee health and productivity to give much higher priority to creating healthy organizations and to justify investments in pursuit of this goal. Indeed, existing knowledge gaps would diminish more quickly if future initiatives were systematically documented, evaluated and disseminated. In this respect, shared learning is a prerequisite for creating healthy and productive workplaces.

For employers, the paper's central message is that workplace wellness programs can yield cost savings and productivity payoffs. However, the underlying determinants of health and productivity can only be altered through changes to job design, organizational systems, human resource management practices, and the overall culture of the workplace. The emerging healthy organization model can guide this, as can the high performance workplace model presented in human resource management research.

Another key implication for employers is the importance of integrating occupational health and safety, workplace wellness, work-family concerns, with other human resource management initiatives. A coordinated approach will increase the likelihood that change barriers are removed, and that the underlying organizational and work environment determinants of wellness and employee performance are addressed.

For policy makers, the paper's major insight is how healthy work environments contribute to the well being of individual workers and the performance of the economy. Healthy and safe work environments reduce the overall costs of health care, both public and private. Healthy organizations are ones that support workers to use their skills and talents, thereby contributing both to the quality of work life and performance. A far more explicit connection must be made between healthy work environments and Canada's success in a global, knowledge-based economy. Thus, governments can no longer afford to treat health, employment, and economic issues as separate policy spheres.

Beyond this basic challenge, policy makers should take an incremental approach to ensure that all Canadian workers can exercise their right to a healthy workplace. It is too simplistic to suggest that workplaces are either healthy or unhealthy, productive or unproductive. Both characteristics fall on continuums. Given the great diversity of workplaces in Canada, there will be numerous kinds of opportunities, small and large, to make improvements where it can be shown that benefits exceed costs. Governments can enable and facilitate in ways that maximize the number of workplaces that are moving toward the 'healthy' end of the continuum.

In light of growing concerns about the escalating costs of public and private health care, governments must also explore ways of including employers, unions, and professional associations – as well as individual workers – as partners in a variety of healthy workplace programs. Taking action now is crucial, for as evaluation studies show, it takes years for productivity-related health improvements to show up.

For researchers, the major implication is that they must push far beyond their disciplinary boundaries in order to contribute to meaningful change in workplaces. Improving workplace health depends almost entirely on management priorities and decisions, making it important that research be responsive to the concerns of employers. At the same time, much of Canada's economic and social policy rests on the assumption that productivity improvements are a means to improved living standards and quality of life. The practical challenge in framing an action-oriented workplace research agenda is striking the appropriate balance between the interests of employers, employees (and their unions and associations) and society as a whole.

Introduction

This paper synthesizes the current state of knowledge about healthy work environments and productivity. Two questions guide the paper: First, what are the work environment and organizational factors that positively influence workers' health and well-being? Second, are organizations that support the achievement of good health for their employees also more productive? Current public policy concerns about human capital development, quality of work life, and population health form the broader context for the paper. These policy issues highlight the growing importance of healthy work environments for both workers' well being and the economic performance of the nation.

Human capital is widely recognized as the key ingredient for productivity and innovation in a knowledge-based economy. Human resource management practices in firms are critical for human capital development and use. At the same time, there is growing awareness that some of the leading work trends of the past decade – work intensification, organizational restructuring, work-life imbalance – are detracting from these goals. Added to this are concerns among employers and health benefit providers about the rising costs of prescription drug and disability claims, hospitalization and related medical services, absenteeism, and low morale resulting from stressful working conditions.

The paper takes an interdisciplinary approach in order to offer a comprehensive analysis of the direct and indirect costs and benefits of healthy workplaces for organizations and employees. While the primary focus is on workplaces, the paper also raises some of the broader societal costs and benefits associated with healthy work environments, such as utilization of the public health care system and individuals' participation in learning and community activities.

The paper is organized into six sections:

- Section 1 offers an overview of the major perspectives on health, work and productivity.
- Section 2 addresses measurement issues in the areas of health outcomes and organizational-level productivity.
- Section 3 synthesizes the research on healthy and unhealthy workplaces, identifying their defining characteristics.
- Section 4 summarizes the key findings from research on the economic impact of unhealthy and healthy workplaces.
- Section 5 addresses the challenges researchers and practitioners face in trying to create workplaces that are healthy *and* productive.
- Section 6 offers recommendations aimed at employers, researchers, policy makers and other stakeholders.

1. Perspectives on health, work and productivity

The two questions guiding this paper are deceptively simple. In fact, the complexities of a 'healthy workplace' and 'productivity' render these concepts difficult to define and measure. Moreover, understanding the relationship between worker health and well-being, the organizational conditions that support this, and firm-level productivity requires an interdisciplinary perspective. So far, there is no unifying conceptual model that integrates all the essential factors. Different academic disciplines – health promotion, occupational health and safety, economics, management – have taken up pieces of the puzzle, with little cross-fertilization of research findings and ideas.

This paper offers a step toward an integrated, interdisciplinary perspective on key workplace health and productivity issues. As a start, it is useful to briefly review current thinking in the three relevant areas of research – workplace wellness, healthy organizations, and workplace productivity – identifying their points of intersection.

Workplace wellness

Workplace wellness emerged during the 1990s as a major concern for employers, especially in the U.S., marking an evolution away from the traditional occupational health and safety focus on injury and disease prevention. Programs designed to promote employee health and well-being are now found in an estimated 80 to 90 percent of medium and large size U.S. workplaces (Aldana 2001; Riedel et al 2001). The motivation for most employers is to bring down or contain the rising cost of health benefits, with the alternative being cut backs in benefits coverage. Some firms also view these programs as contributing to a culture that is supportive of employees. Less often, the main objective is to boost productivity (Powell 1999; Leonard 2001).

The rapid diffusion in the U.S. of workplace wellness programs designed to promote individual employees' health reflects the fact that many employers in that country have to pay a significant share of employees' health care costs. Still, other countries are also developing such programs. For example, prompted by growing concern in Japan about *karoshi* (death due to overwork), workplace health promotion programs are focusing on workers with a risk of coronary heart disease (Muto and Yamauchi (2001). Similar programs are still rare in Asia, however, with Singapore being an exception (Ho 1997).

Workplace wellness programs typically do not address the underlying factors that contribute to a healthy and safe workplace. Traditionally, this emphasis has been stronger in European than in North American approaches to occupational health and safety. Rather than being driven by cost-reduction imperatives, the European perspective is rooted in a social policy framework that views a safe and healthy work environment as a prerequisite for enhancing the quality of work and, in turn, contributing to the performance of the economy (Commission of the European Communities 2001).

While workplace wellness programs are not as widespread in Canada as in the U.S., the individual employee focus is similar in both countries. According to Buffett Taylor's 1999 National Wellness Survey of 422 employers in Canada, 17.5% of companies offer on-site wellness programs and 64% offer wellness initiatives, which include stop-smoking and stress courses, back pain management, and other ergonomic programs (Bouw 2002; also see http://www.hc-sc.gc.ca/hppb/fitness/work/trends_e.html). Health Canada's emphasis has been to encourage employers to adopt a more comprehensive approach to creating healthy workplaces. This has been supported by its partnership with the National Quality Institute and other organizations to create the Healthy Workplace Awards and the Workplace Health System, which assists employers to address psychosocial as well as physical work environment factors that affect employee health and safety (see www.hc-sc.gc.ca/whb; www.nqi.ca).

Workplace wellness initiatives have two major limitations. The first is a narrow focus on individuals' health-related attitudes and behaviour, often to the exclusion of job, organization and management factors that affect employee health and well-being (Johansson and Aronsson 1991; Polanyi et al 2000; Shane 2000). This individualistic emphasis has been interpreted by some unions as 'blaming the victim', and hence has met with their resistance (Baker and Green 1991; Chu, Driscoll and Dwyer 1997).

The second limitation is that workplace wellness is rarely integrated with other human resource management policies and practices into a comprehensive strategy for enhancing the work environment. Employee wellness, or more broadly, organizational health are not on the management research agenda – which is a major gap, given that the decision to launch a workplace wellness initiative rests with management (Lyden and Klengle 2000).

It is not surprising, then, that relatively few Canadian businesses treat employee wellness as a strategic issue. A survey conducted by the *Canadian HR Reporter* of senior human resource executives found that 11% said wellness and disability management are very important to top management in developing the organization's business strategy, while 27% said important. In terms of importance to the overall human resource strategy, wellness and disability management were considered to be important by 30% and very important by 16% (Hobel 2001). In short, employee health promotion is typically viewed by management as just that – a health issue.

Healthy organizations

Health promotion researchers increasingly are calling for a holistic approach that addresses underlying workplace and organizational factors. This shifts the focus from workplaces as sites for health promotion, to involving workers and managers jointly in creating a health promoting setting in the workplace (Chu, Driscoll and Dwyer 1997). This builds on the World Health Organization's definition of health promotion as "the process of enabling individuals and communities to increase control over the determinants of health and thereby improve their health" (Malzon and Lindsay 1992:9).

For example, Canadian researchers have called for an approach that promotes the workplace determinants of health (Polanyi et al 2000). This is informed by population health and ecological perspectives on health promotion, which examine how social, institutional and cultural environments support or constrain health promotion (Stokols 1992; Eakin Cava and Smith 2001). Of primary concern is the impact of work contexts on individuals' health. For example, an emphasis on the psychosocial impacts of jobs and work environments can be found in social epidemiological research on workplace stressors and cardiovascular disease risk (Belkic 2000: 307).

Indeed, one can identify an emerging healthy workplace perspective in the health promotion and epidemiological literatures (e.g., Chu et al 2001; Shannon et al. 2001; Golaszewski 2001). This model attempts to link healthy work environments to improved health outcomes for individual employees *and* improved business results. As Chu et al (2001: 155) observe, "The concept of the health-promoting workplace is becoming more important and more relevant as more private and public organizations increasingly recognize that future success in an increasingly globalized marketplace can only be realized with a healthy, qualified and motivated workforce." These researchers recommend using the concept of a 'health-promoting workplace' as one that balances customer expectations, organizational goals, employee skills and health needs.

Exemplary of this new direction is the concept of a healthy organization developed by the National Institute for Occupational Safety and Health (NIOSH), the U.S. occupational health and safety agency. As Lim and Murphy (1999: 64; also see Sauter et al 1996) explain: "A healthy work organization is defined as one whose culture, climate and practices create an environment that promotes both employee health and safety as well as organizational effectiveness." Healthy organizations are financially successful and have healthy workforces. NIOSH is coordinating research efforts in the U.S. to address major knowledge gaps regarding the impact of changing work organization on occupational safety and health risks, and how these can be reduced (U.S. Department of Health and Human Services, NIOSH 2002). To date, few published studies have used the healthy organization framework. Important developments include the application of quality improvement principles to achieve healthy organizations in the health care sector (Sainfort et al 2001).

In practical terms, an integrated approach to workplace health requires leadership by senior management and cooperation among diverse stakeholders, including occupational health and safety, human resources, health promotion, line managers and unions (Bachmann 2000: 7). Health goals must be embedded in corporate missions and values, and employees need to participate in program planning and evaluation (Chu, Driscoll and Dwyer 1997). The greatest challenge will be finding the right balance between management and work organization practices aimed at boosting productivity, on one hand, and the promotion of employee health and wellness goals, on the other hand. As a start, it is important to make the tradeoffs between these two sets of goals more explicit than they have been in the past.

Health and productivity

At the core of the healthy organization perspective is the relationship between healthy work contexts and organizational, rather than individual, outcomes. Productivity, or organizational performance, is one set of outcomes.

Most research linking employee health to productivity takes a conventional health promotion perspective. This reflects the expansion in the U.S. of workplace wellness programs in a drive to reduce employer medical care costs (Baker and Green, 1991). However, several major research initiatives in the U.S. are taking a broader perspective that integrates work environments, employee health and productivity.

For example, the Health Enhancement Research Organization (HERO) is a non-profit organization concerned with health promotion research, health and productivity and disease management (Brandt-Rauf et al, 2001). Furthermore, the University of Michigan's Health Management Research Centre has worked over the years with corporate partners in a long-term study of the costs and benefits of employee health promotion on productivity. Future research questions include: "What works? What are the early indicators of success? What strategic interventions result in changes in costs? What is the time period before savings can be expected? ... What is the optimal method of resource allocation for maximum results?" (Edington 2001: 348).

Reflecting these new research directions, health promotion professionals in the U.S. are now using the term 'health and productivity management' (Goetzel and Ozminkowski (2001). The goal is to integrate health promotion into all corporate functions, from human resources, benefits, employee assistance programs, occupational health and safety, workers' compensation, organizational development and business operations. These ideas have entered mainstream thinking in workplace health promotion. As the editor-in-chief of the *American Journal of Health Promotion* recently explained, the basic assumption is that: "human performance is higher when people are physically and emotionally able to work and have the desire to work. Higher levels of human performance lead to higher levels of productivity, which in turn can lead to higher profits" (O'Donnell 2001: 215).

However, there was little health research in the 1990s that examined productivity issues. Productivity was not a common key word in peer-reviewed articles published in the years 1993 to 1998. The most comprehensive overview to date of the literature on the relationships between workplace disease prevention and health promotion and productivity concludes that most studies focus on absenteeism as the key outcome, not on the more fundamental issue of work performance (Riedel et al 2001).

The authors of this review note, however, that the increased importance of human and intellectual capital in an information economy is shifting corporate thinking from an accounting approach to a "future-oriented, value-creating approach" (Riedel et al 2001: 168). Business decision-makers are starting to recognize that a healthy organization is a place where employees are satisfied and committed – and healthy – and that unhealthy

organizations have reduced profits and increased absenteeism (Lyden and Klengle 2000). Practitioner publications, such as *Business and Health*, argue that investing in health promotion is a way of boosting employee performance and reducing absenteeism (Lipold 2001).

While these are compelling reasons for employers to take a strategic approach to health issues, the uptake is slow. In part, this is because the pay-offs from healthy workplace initiatives often take years – too long for decision-makers focused on quarterly and annual returns on investment.

Workplace factors and productivity

Coming at the ‘healthy workplace – productivity’ link from the productivity side, we find little productivity research that addresses health issues. However, current thinking about human capital contributions to firm-level and economy-wide (aggregate) productivity provides an opportunity to include health issues on the agenda.

It is generally accepted that productivity growth in most Organization for Economic Cooperation and Development (OECD) countries has been far from stellar during the last three decades. One result is slow increases in living standards. This has motivated policy advisors and social scientists to more closely examine the factors driving productivity performance. Traditionally, good health was thought to arise from economic prosperity, but economists now propose that prosperity depends on a healthy population. Healthy citizens lead to healthy economies (Brandt-Rauf et al 2001). This idea should resonate now, given that individuals’ knowledge and skills are widely viewed as cornerstones of innovation and growth.

Behind this thinking is the new growth theory in economics, which focuses attention on firm-level contributions to growth. This theory explores how technology operates through ‘facilitating structures’ in the context of specific public policy frameworks. The focus on facilitating structures is important, because included here are human capital and organizational and managerial systems in firms (Lipsey 1996). If productivity growth depends on firm-level innovation (OECD 1998: 3), then the fundamental question is: What are the organizational and work environment factors that support individual employees to be innovative? Once that question is posed, the psycho-social work environment, work-family balance, and physical health and safety become important productivity issues.

The lack of a common theoretical perspective for examining workplace productivity poses challenges for workplace health researchers and practitioners (Gunderson and Hyatt 2002). There are three distinct perspectives on productivity: research on workers as individuals and as groups, focusing on their effectiveness and performance; research on organizations (firms) that focuses on outcomes related to costs and profits; and research on aggregate productivity. Each uses different units and levels of analysis, conceptual frameworks and research methodologies (Gunderson 2002).

In short, economic models of productivity have yet to adequately incorporate firm-level factors, including health-related conditions. Furthermore, the link between a nation's aggregate productivity and the performance of individual firms is not well understood. These two areas remain separate research domains. So while we can document work-related health costs nationally, there is no conceptual or empirical basis for showing how these costs in turn affect national productivity.

Health promotion researchers thus are constrained by the complexities of productivity and, as a result, tend to take a very narrow view of productivity outcomes. The most developed area examines the financial impact of workplace health promotion programs. Aldana's (2001) review of 72 peer-reviewed articles on this topic documents that the main productivity-related outcomes studied are employer health care costs and absenteeism. While both absenteeism and employer health care costs affect operating efficiency, neither capture current human-capital based conceptions of productivity, nor do they address how work environment factors affect these outcomes. But as Aldana (2001: 297) observes, "in an economy that is increasingly information-based, the concept of productivity is somewhat more difficult to quantify."

Clearly, here is a common challenge for economists and workplace health researchers to take up together. Or stated in the context of major policy priorities in Canada: What workplace conditions establish a virtuous circle connecting worker health and well-being with innovation and skill development? And furthermore, what are the most effective economic incentives that would lead employers to adopt healthy workplace practices (Gundersen and Hyatt 2002)?

2. Measuring Health and Productivity

With these conceptual points in mind, we can consider how to accurately measure individual health outcomes and productivity and the availability of appropriate data. This section of the paper synthesizes issues raised by researchers, providing useful criteria for practitioners to use in planning the evaluation and monitoring of employee health and workplace wellness programs. By reviewing research design and measurement limitations, we also are providing a solid basis for interpreting the studies reviewed in later sections of the paper.

Measuring the costs and benefits of workplace health promotion

Undoubtedly the most vexing – some would say contentious – issues in health promotion evaluation research concern the evidence standards and research designs required to establish causal relationships.

Some experts advocate randomized trials with wait-control groups as the strongest research design for intervention studies. However, there is considerable debate about the

appropriateness of randomized control trials in work organizations. Some researchers, managers and union officials argue this ideal is impractical: it is too expensive, too disruptive, compromises employees' privacy rights, does not control for the effects of rapid workplace and organizational changes, and adds little to what has already been documented about the efficacy of workplace health (Kristensen 2000; Ganster 1999; Shannon et al; 2001).

Different evidence standards seem to apply in workplaces. Consider the productivity claims by drug firms (Greensberg et al 2001). Currently, the U.S. Food and Drug Administration's framework for assessing productivity claims distinguishes two standards of evidence: substantial (at least two well controlled clinical trials producing results that are statistically significant and clinically meaningful) and 'competent and reliable scientific evidence'. Furthermore, economic evidence relevant to business decision making uses different standards, such as annualized lost time and lost wage estimates, resulting in different claims about productivity effects (Gunderson 2002). As Anderson, Serxner and Gold (2001: 281) aptly observe: "It is ironic that the need for well-documented ROI [return on investment] data has been a barrier to the growth of worksite health promotion, given its popularity with employees and modest cost ... Employer health plans routinely pay for extremely costly surgeries, medical procedures, and pharmaceutical agents based on no ROI data at all."

Other methodological problems highlight the difficulties of conducting workplace research that meets the clinical standards of medical research. These limitations include the self-selection of subjects into health promotion programs, the use of self-reports as assessment tools, and insufficient time to analyze the magnitude of outcomes (Golaszewski 2001; Pelletier 2001). On the latter point, it has been difficult for researchers to assess early cost savings from interventions or to predict when employers and participants can expect benefits (Edington 2001). This makes it important to include in evaluations early measures of success that indicate a program is tracking in the expected direction.

Measurement issues also arise regarding the costs of employee health and illness. Indirect costs (i.e., work loss and productivity) of employee illness can be assessed from the perspective of the worker, the employer or society (Berger et al 2001). The components to indirect costs – mortality, morbidity and reduced productivity – have a different significance from each of these perspectives. For employers, direct costs include employee health benefits, the costs of administering the plan, costs of firm funded preventative and palliative health services. Indirect costs include wage replacement programs (including short and long term disability and workers' compensation), death benefits, life insurance and pension costs for premature mortality, costs of turnover and diminished productivity, quality, competitiveness, as well as the impact of preventative illness or death on morale and organizational effectiveness (Walsh 1991).

Cost effectiveness of workplace health promotion initiatives vary widely because so many different methods for calculating costs are used. This limits comparability and generalizability (Golaszewski 2001; Pelletier 2001). There is also the problem of 'high

cost analysis', due to medical claims data being highly skewed and violating statistical assumptions of normality (i.e., a small percentage of employees incur a large percentage of medical costs). Moreover, health promotion advocates and senior managers often assume, erroneously, that health promotion or management programs produce uniform financial results (Ozminkowski et al 1999).

Underscoring the importance of these methodological issues is the fact that business decision makers require 'hard' economic data to justify health promotion investments. In this regard, it is useful to consider the U.S. Centres for Disease Control and Prevention (CDC) approach to investigating the financial impact of workplace illness prevention and health promotion (Harris et al 2001).

The CDC defines the cost effectiveness of an intervention as the ratio of an intervention compared with an alternative as the net costs (program costs, illnesses averted) divided by net health outcome (both based on intervention-alternative comparison). The cost-effectiveness ratio is relative, based on comparisons with an alternative (i.e., no intervention or an alternative intervention). Cost benefit analysis is also commonly used, assigning a monetary value to all program outcomes. Realistically, cost-benefit information should be only one of many inputs for decisions about resource allocations in workplaces. Even though the picture is incomplete, over the past 15 years, the evidence from increasingly rigorous studies supports rather than refutes the economic benefits of workplace health promotion.

Hard evidence about program efficacy will sway neither the skeptics nor the committed among employers. For example, some organizations that have a strong culture of valuing employees may commit to healthy workplace objectives based on these values alone. Others may be influenced by the perceived need to have wellness programs in order to attract and retain staff, especially if their competitors do. From a policy perspective, it therefore is important to provide a variety of arguments, information and other resources that will build employers' commitment to healthy workplace practices.

Measuring productivity

Turning to productivity, a number of researchers have been developing performance indicators to measure the impacts of a range of workplace practices on firm-level performance (Gunderson 2002). Examples include gross or net sales per worker, the ratio of physical input to output, and the scrap rate and uptime for production equipment. The choice of the outcome variable is constrained by the data available for the firms or industries under study (Triplett 1998).

The extensive research on the benefits of employee training offers a useful example. Researchers have had difficulty collecting quantitative measures of performance outcomes for trends in revenues, profitability and productivity (Betcherman et al 1997). One reason is that in multi-establishment firms, these data tend not to be available at the establishment level, but rather at a division or company-wide level – a unit of analysis

that is too aggregate to capture intra-firm variations in workplace practices. Black and Lynch (2000) have gone further than most in assessing the net benefits of training investments, using a unique longitudinal data set that tracks firm-level training along with financial results.

In studies of workplace innovation, such as job redesign, teams, reduced hierarchy, or the delegation of responsibility, it is difficult to measure productivity accurately and consistently (OECD 1999). Just how intensively and widely these practices are used vary by firm, industry and nation in ways that require a careful assessment of the specific ingredients of each practice. Furthermore, it is plausible that well-performing firms are the ones that can afford to invest in training and other progressive workplace practices. Documenting this is complicated by the absence of research on workplace innovation failures – a comment that applies equally to workplace health promotion (Shannon et al 2001).

A better understanding of how healthy work environments affect productivity also requires more detailed analysis of individual worker's job performance than presently available. Brinkerhoff and Dressler's (1990:16) statement, "productivity reflects results as a function of effort," sounds simple. However, efficiency (input to output) and effectiveness (the process of getting a task done) do not necessarily equate with productivity, because the latter takes into account the end cost of the product or service. For example, working harder may not have the same productivity payoffs as working smarter, which may not require more time or effort. Both kinds of effort may vary in their effects depending on the specific organizational context.

In this sense, 'productivity' depends on an individual's job performance (Jex 1998). In assessing how work environments contribute to worker well-being, it is important to distinguish between 'task' and 'contextual' performance (Parker and Wall 1998). The latter refers to helpful coworkers, communication, 'intrapreneurship', innovative activities, initiative, adaptation to change, and flexibility. These reflect workplace social relationships and are critical as more organizations depend on team work for their success (Yeatts and Hyten 1998: 59-62).

Although none of the above research is health-related, we can find several fruitful connections between discussions of productivity and workplace health. Supportive managers are a key ingredient of effective teams, just as they are crucial to employee well-being (Duxbury and Higgins 1997). The healthy organization model draws on the population health literature dealing with environmental influences. This mirrors organizational performance research which tries to situate individual workers in their workplace context. As Demming (1986) argues, most variance in worker performance is due to the attributes of work systems, not individuals.

Furthermore, in organizational behaviour research there are many unanswered questions about how job designs affect contextual features of performance (Parker and Wall 1998). Yet at the same time, workplace innovation studies suggest that greater employee

participation and autonomy affect learning and skill development, which in turn may contribute to productivity (Bélanger 2000; Black and Lynch 2000).

For health researchers, there are familiar issues in this discussion of productivity measurement. One point of convergence is that many innovative work organization practices and job designs are documented to make jobs less stressful and healthier (Karasek and Theorell 1990; Cooper et al. 2001). However, productivity is not a key outcome in stress research, just as employee stress is not a consideration in studies of productivity-enhancing organizational change. That said, there is some fertile common ground when it comes to employee absenteeism – a topic we shall now consider.

Measuring productivity-related health outcomes

Absenteeism is the most common surrogate measure of productivity in studies of the economic impact of workplace health promotion (Edington 2001). Absenteeism includes personal illness days, short and long term disability, and workers' compensation days. Absenteeism is measured through employee self reports and employers' administrative data. Most medium-size and large employers track short and long term absences in their management information systems. Absenteeism data also are available at the national level through Statistics Canada's Labour Force Survey.

However, absenteeism is illustrative of the challenges researchers and organizations face attempting to create accurate, meaningful measures of health-related employee behaviour. The crux of the issue is captured by University of Michigan researchers in studies at Steelcase and Xerox. While this research found a strong relationship between health risks and absenteeism, it also highlighted the complexities of employee productivity. For one thing, "not all absent employees are automatically nonproductive and not all employees present are automatically 100% productive" (Edington 2001: 346). For these reasons, Greensberg et al (2001) recommend developing a 'gold standard' employee productivity measure, using archival or administrative data (e.g., from employers' databases) to validate employee self-reported data. Administrative data is useful for tracking productivity and illness trends, but very few published studies have used such data to measure productivity in workplaces.

There are other caveats to bear in mind when using absenteeism as an employee productivity-related health indicator. For instance, the impact of absences will vary depending on how work is organized. Work team members may cover for ill coworkers by increasing their output. In situations such as influenza outbreaks, an entire team can be affected. Wage or salary costs of absenteeism therefore will reflect the productivity impacts, given this spillover from one employee to coworkers. Moreover, the costs of replacing chronically absent workers are rarely factored in (Greensberg et al 2001; Conti and Burton 1994; Barnett et al 2000).

At the same time, employees often under-report absenteeism, especially when it is for family-related reasons (Duxbury et al 1999). Employers' records of absenteeism do not

reflect informal practices in some workplaces, such as taking vacation days for family reasons. Firms track disability days more accurately than short-term illnesses (Greensberg et al 2001). Evidence showing that absenteeism is positively related to voluntary turnover should be an incentive for employers to take a closer look at absenteeism and its causes in unhealthy work situations. In this regard, it is important to note that absenteeism is an early sign of withdrawal from the organization (Morrow et al 1999).

Finally, absenteeism data are highly skewed because most employees are not absent at all while a relatively small number are frequently absent. Thus, when profiling the 'health' of a workplace, absenteeism data should complement other outcomes, such as self-reported health or stress, that capture more variation in the entire employee population.

There is also the problem of presenteeism: coming to work when sick or injured, resulting in not working to full capacity. This is perhaps the most difficult employee productivity indicator to accurately estimate. This has major implications for estimating the costs of work-life conflict in Canada, given that such conflicts can result in distractions at work rather than absences (MacBride-King 1990; Duxbury et al 1999). Depression can contribute to presenteeism, having a significant impact on work performance by impairing one's ability to function effectively while at work (Druss, Schleisinger and Allen 2001).

In summary, measuring productivity and employee health within workplaces is an inexact science. Cause-and-effect relationships are complex to model. Establishing ideal research conditions in dynamic workplace settings is difficult. Nonetheless, employers can make use of basic research tools to profile the 'health' of their work environment, monitor and evaluate workplace wellness interventions, and document direct and indirect effects on a range of organizational results. While these data and measures may fall short of the highest standards found in medical literature, it is important that employers supported by research partners and governments craft cost effective tools that meet organizational and employee needs. It is also useful to bear in mind that we are not starting with a blank slate. Whether it is in program design, or in evaluation, healthy workplace initiatives must build on existing knowledge and practices in the traditional area of occupational health and safety.

The health care sector provides useful lessons in this regard. The U.S. President's Advisory Commission on Consumer Protection and Quality in the Health Care Industry identified serious injury rates and morale problems, arguing that organizational culture affects the capacity of any organization to function well (Eisenberg, Bowman and Foster 2001). A Quality Interagency Task Force coordinates quality measurements and improvement strategies in federal agencies involved in health care, focusing on the sector's workforce. This research connects healthy work environments, employees' health, and the quality of patient care. In this way, heavy workloads, stress and fatigue among health care workers can be linked to patient safety and the overall quality of care (Aiken et al 2001; Bauman et al 2001). The Canadian Nurses Association and the Canadian Council on Health Services Accreditation also are addressing these issues,

including quality of worklife indicators in the accreditation of healthcare organizations (Lowe 2002). Steps such as this will enable practitioners and researchers to better understand how employee well-being is directly linked to organizational performance.

3. Characteristics of Healthy and Unhealthy Organizations

Above all, this discussion of methodological issues underscores that the research on health and productivity does not account for the influence of work contexts. This calls for a shift in focus from the individual to the workplace, so that we can more fully understand the effects of jobs and work organization on workers' health (Shannon et al, 2001). The healthy organization perspective, outlined above, addresses the major weakness in many typical workplace health promotion interventions by illuminating the environmental determinants of health and well-being. From this perspective, workplaces are contexts that support health and wellness among employees, thereby contributing to organizational performance and financial success.

Job stress and productivity

Productivity and health have been important themes in job stress research for several decades. Indeed, Karasek and Theorell's (1990:2) influential book, *Healthy Work* is subtitled *Stress, Productivity, and the Reconstruction of Working Life*. The authors call for "new models of the psychosocial work environment, addressing both stress and productive behaviour." A prominent argument in this book, and subsequent research using its job strain model, is that traditional bureaucratic and Taylorist (i.e., 'scientific management') work organization and management principles stifle the full use of human capital. It is crucial, therefore, that workers and employers find the optimal balance between job demands and high decision making autonomy so that the goals of individual well-being and productivity can be simultaneously achieved.

There is abundant evidence that working conditions in which workers experience the combination of high job demands and low decision making latitude are associated with a range of psychological and physical health problems (e.g., Belkic 2000; Marshall et al 2001; Jex 1998; Robson et al 1998; Wilkins and Beaudet 1998). The 'demand-control' model of stress has been used to predict the risk of heart disease, depression, and other illnesses for which lost productivity costs can be calculated. These relationships are stronger if workers participate in the design and implementation process.

In terms of effective interventions, research suggests that work redesign that provides greater autonomy and decision-making authority, more skill discretion, social supports, and decreased physical and psychological demands is associated with better mental health and increased job satisfaction. This strategy for reducing or preventing stress in workplaces also contributes to reduced absenteeism, which is perhaps the most direct impact of stress on productivity.

Beyond this, evidence linking less stressful work designs to performance is inconclusive (Parker and Wall 1998). A thorough review of job stress studies concluded that, despite extensive documentation of the impact of job stressors on health, the effects of these stressors on organizational performance are not well understood (Jex 1998:91). Stress research focuses on individuals, so the literature has paid little attention to a key question: “Do *organizations* perform more poorly when individual employees, as a group, experience many workplace stressors?” (Jex 1998:92). For this reason, a stronger research focus on the psycho-social work environment at the organizational level is long overdue.

Existing studies point to the kinds of organizational consequences of work-related stress that we would expect to find. These include direct costs (absenteeism, turnover, strikes/work stoppages, quality/quantity of output, accidents) and indirect costs (job dissatisfaction, low commitment, distrust, animosity, aggressiveness) (Quick et al 1997). For example, high levels of stress within and between work units of a firm can affect customer satisfaction and employee turnover (Ryan et al 1996). Some studies of the impact of workplace health promotion programs on employer health care costs and illness-related absenteeism have specifically found stress to be a risk factor (Aldana 2001; Sharples et al 1996). Research on nurses documents that heavy workloads contribute to job strain, with short term productivity increases outweighed by long term health costs and absenteeism (Canadian Health Services Research Foundation 2001). Estimates for the U.S. and Great Britain suggest that as much as half of absenteeism cases could be stress-related; in Canada, excessive job demands are associated with increased absenteeism (Duxbury and Higgins 1999).

Most workplace stress interventions are still at the individual level, despite calls from researchers to address underlying causes of stress (Kristensen 2000). Several workplace intervention studies that examine the impact of changes in psycho-social job characteristics on stress take into account work reorganization and employee participation in the change process (Kristensen 2000; Israel, Schurman and House 1991). More generally, research on restructuring, downsizing, mergers, introduction of information technology and other workplace transformations in the past decade do not examine the impacts of this change on the psycho-social or physical work environment, and in turn, how this affects worker’s health and well-being.

Workplace stress is a growing concern among employers. Indeed, 83% of the firms participating in Buffett Taylor’s 1999 National Wellness Survey cited stress as a major health risk (Bouw 2002). Another survey found that business and labour leaders perceived increased levels of workplace stress in their organizations during the late 1990s (Canadian Labour and Business Centre 2000). However, while virtually all reviews of workplace stress research call for more interventions at the organizational level, there is little discussion of why this does not happen. Certainly, sufficient evidence has accumulated so far to make the stress-health-productivity causal chain a high priority for action-oriented research supported by employers.

Work-life balance

A related field of research is work-life balance. Work-family programs have become popular with many employers in the past 15 years, creating what is labelled the ‘family responsive workplace’ (Glass and Estes 1997; Hochschild 1997; Osterman 1995). Just as in the case of workplace wellness interventions, family friendly policies raise many similar issues regarding what makes a difference for employee well-being and productivity.

Most large organizations have one or more programs that address workers’ needs for greater schedule flexibility. However, flextime and other piece-meal interventions yield few benefits for the organization without a range of supporting policies. While research on flexible work schedules suggests these can reduce absenteeism (Dalton and Mesch 1990), crucial to the effectiveness of any work-family program is supervisor support and “advocacy” from upper management (Glass and Estes 1997:301). Canadian research (Duxbury and Higgins 1997, 1999, 2001) confirms that achieving work-life balance in organizations depends most of all on supportive front-line supervision.

The barriers to work-life balance are numerous (Glass and Estes 1997). For instance, workers will not take advantage of work-family policies if they perceive negative consequences for their careers. Management training therefore must be part of work-family program implementation. Organizational factors also influence the adoption of work-family programs, just as with workplace wellness programs. Adopters of these programs are more likely to be large firms with in-house human resource administration who have competitors with similar policies. A big incentive to implement work-family policies is the reduction of turnover rates. This matters more for employers with high performance work systems that invest heavily in training, have a skilled workforce, internal labour markets, and seek high employee commitment.

A 1999 Conference Board of Canada survey of employers showed that few (30%) evaluate flexible work arrangements and even fewer (13-18%) evaluate child care benefits, eldercare/other dependent care benefits, or special leave policies (Bachmann 2000). In short, employer data on the effectiveness of work-life balance programs is scant. This may not be an impediment, however, given that human resource professionals are trying to shift senior management’s focus away from the financial impact, arguing that work-life programs are “an investment that contributes to longer-term strategic objectives” (Bachmann 2000: 8).

Some employers have moved in this direction by using the ‘service-profit chain’ concept. This documents how changes in any policy or practice at points along the chain impact on strategic goals. A good example is the First Tennessee Bank, a leader in the area of assessing the impact of increased worker flexibility. The bank’s data show that positive customer responses increased 50% after flexible scheduling changes had been implemented. The result was improved employee retention, which contributed to

customers' desire to deal with the same staff member. This is a useful practical example of how employers can document the health and productivity benefits of workplaces that support employees' work-life balance.

Insights from High Performance Workplace models

In this section, we expand our understanding of a healthy organization by drawing on studies of high performance workplaces and innovative human resource management (HRM) practices. These areas of inquiry have the opposite limitations to those documented above in workplace wellness and stress research: an emphasis on how working conditions influence organizational performance, but little or no attention to individual employee outcomes such as health and well-being. Nevertheless, as we will see below, the potential for cross-fertilization between organizational and workplace health research is very promising.

We know that a long list of job and workplace factors impact employee health and well-being. This list includes physical conditions, ergonomic aspects of a job, temporal aspects of the work day and tasks, work content, work group relations, supervision, financial compensation, and organizational systems (Amick and Kasl 2000). However, it has been difficult for health researchers to capture the 'synergies' among these factors at the job and workplace levels. Here is where the literature on high performance workplaces (HPW) can make useful contributions. While this research rarely examines health-enhancing workplace factors explicitly, it nonetheless complements the workplace health literature by providing a detailed analysis of the relationship between specific workplace innovations – some of which are known to reduce stress – and their impact on productivity.

A key insight emerging from studies of high performance workplaces is that improved organizational performance is systematically correlated with the use of specific 'bundles' of human resource management practices (e.g., Becker and Huselid 1998; Ichniowski, Shaw and Prenzushi 1997; MacDuffie 1995). For example, a comparison of Japanese and U.S. steel mills identified a common 'high performance' model of HRM practices built around problem solving teams, job rotation, extensive employee orientation, continuous training, extensive labour relations, communication, employment security, and gain-sharing or 'pay for knowledge' (Ichniowski and Shaw 1999). Steel finishing lines using this model in the U.S. had superior performance to plants using traditional approaches. Canadian research on this high performance workplace model adds additional elements, such as a corporate emphasis on improved employee health, reduced stress and work-family balance (Betcherman et al 1994). Related research on job enrichment and participation shows positive effects, including increased satisfaction, reduced absenteeism, minor accidents, motivation, self-esteem, and commitment (Goddard 2001).

Human resource management practices that encourage employee involvement (EI) are central to high performance workplaces. There is considerable research on EI documenting how it contributes to productivity. Freeman and Rogers (1999) argue that while EI schemes are diverse, ranging from self-directed work teams to total quality

management and worker suggestion programs, employee participation can raise productivity by communicating workers' suggestions about improvements in working conditions in ways that management take seriously. Freeman and Rogers (1999) and other studies find that EI has a modest positive effect on productivity, in the range of 2% to 5%.

These modest effects also were found in recent Canadian research, using Statistics Canada's 1999 Workplace and Employee Survey (WES) (Leckie 2001). The WES defined EI in terms of flexible job design, problem-solving teams, task teams or joint labour-management committees, and self-directed work teams. The latter is thought by experts to have the greatest potential to give workers control over decision making (Bélanger 2000). The incidence of these four EI practices in workplaces with 10 or more employees was low, ranging from a high of 29% for flexible job design to a low of 9% for self-directed work teams. Two key findings are, first, that employees participating in EI programs are more satisfied with their jobs, and second, that these programs have only weak effects on productivity based on measures included in the WES.

Studies of the impact of HPW systems on employees show mixed findings that continue to be debated (Godard 2001; Osterman 2000). What is unique about the Canadian WES is its inclusion of worker outcomes, given that most research on high performance workplaces focuses exclusively on employer outcomes (Godard 2001). So the best we can conclude is that high performance workplaces sometimes include wellness and work-life balance programs. Beyond that, it is difficult to determine the contributions of such programs to employee health, and in turn, how this influences performance. Unfortunately, there are no high quality Canadian data that can help unravel these causal links.

Still, there is a plausible argument to be made that high performance work practices could be associated with better employee health. Scandinavian work-life research and practice support this hypothesis, given its strong emphasis on the dual goals of work quality and productivity (Johnson and Johannson 1991; Sandberg 1998). This has been achieved largely through legislation that provides workers in Sweden and Norway with direct participation in shaping their working conditions. This gives workers influence over factors affecting health and safety, and involvement in designing jobs in ways that balance positive psycho-social outcomes with efficiency and productivity criteria.

Important questions remain unanswered. In terms of the Scandinavian research, more study is needed of the preconditions for achieving both health and productivity benefits (Sandberg 1998). Similarly, a review of international high performance workplace studies concluded that future research must examine the mechanisms by which specific management and work organization practices are linked to positive worker and firm outcomes (Wood 1999). This partly reflects a lack of comparability across studies, due to differences in:

- whether or not other human resource management systems are included as comparisons,
- the definition of a high performance or 'high involvement' work system,

- how human resource practices are measured,
- whether and how the relationship between practices are measured,
- units of analysis (company vs. workplace or establishment), and
- the type of performance measure used.

Future research must seek to identify a consistent ‘bundle’ of high performance work practices that impact both quality of work life and firm performance.

To summarize, all these points are relevant for workplace health. Research focusing on the workplace determinants of health and wellness places considerable emphasis on the same organizational, job, and management practices that feature prominently in high performance workplace studies. Furthermore, there are parallels with job redesign strategies that reduce stress by increasing employee involvement in their jobs by expanding decision-making control.

Workplace research also offers health promotion researchers with cautions in this regard. For example, productivity gains from employee involvement schemes may result because EI can require workers to put in greater work effort (Freeman and Rogers 1999; Rinehart et al 1997). In this scenario, the resulting work intensification could undermine both employee well-being and productivity. This is precisely the kind of issue that requires interdisciplinary collaboration. The next section reviews an emerging model in the health promotion field that may provide a bridge in this regard.

The emerging healthy organization model

The types of human resource management strategies examined in the high performance workplaces and employee involvement research, reviewed above, are becoming a central focus in emerging models of healthy organizations. This is most visible in discussions of how to benchmark human resource practices to achieve healthy workplaces and enhance organizational effectiveness (Browne 2000).

Benchmarking involves looking outside an organization to assess and incorporate the ‘best practices’ in a process of innovation. Human resource management benchmarking examines the relationship between HRM practices and indicators of a firm’s performance, such as profitability, productivity, turnover, product/service quality, cost savings, customer satisfaction, and improvements in sales or customer service. A limitation of this approach is its focus on organizational outcomes. It is only possible to identify progressive HRM practices by including employee outcome measures such as well-being and health (Browne 2000).

The concept of organizational health, discussed earlier, can help in this regard because it combines organizational performance with employee health and quality of work life (Sauter et al 1996). Practices distinguishing healthy work organizations include continuous improvement, career development, human resource planning and fairness. A review of the work factors which empirical studies have linked to health and well-being

(Amick and Kasl 2000), indicates that many reflect an organization's human resource management practices. These include: physical working conditions, ergonomic aspects of a job, temporal aspects of the work day and tasks, work content, work group relations, supervision, economic rewards, and organizational factors.

For example, the NIOSH model of healthy work organizations has been used in health care organizations to improve the quality of the work environment, and at the same time, the quality of patient care (Sainfort et al 2001). These dual objectives are met through a process of continuous quality improvement, expanded from its original focus on products and services to include the quality of the work environment. Yet, very few studies have examined individual employee health and organizational health in the same framework. One of these is a NIOSH study of a large manufacturing firm in the U.S. (Murphy and Cooper 2000). The same management practices predicted both organizational effectiveness and employee stress outcomes: continuous improvement, strategic planning, career development, human resource planning, and fair pay and rewards. In addition, the following organizational climate variables predicted both sets of outcomes: innovation, cooperation, diversity, conflict resolution, and a sense of belonging.

This broad organizational focus also can be found in the field of occupational safety, where researchers are beginning to examine how work and organizational characteristics influence safe work practices. For example, Parker, Axtell and Turner (2001) examined factors that fit the high performance workplace model: job autonomy, role conflict and role overload, job security, supportive supervision, training adequacy, and communication quality. Overall, a supportive management style, greater job autonomy for workers, and better communication and information sharing increased safe working practices. The study documents that these work characteristics promote safer work though increased organizational commitment – a key variable in organizational behaviour research. At least one other study (Gemignani 1998) suggests that the psychological dimensions of work, in this case job satisfaction, can affect accident rates.

However, no consensus exists on the best indicators to measure the health of an organization (Chu, Driscoll and Dwyer 1997). In addition to the job, work environment and human resource management factors identified above, it is important to incorporate psycho-social dimensions of work. For example, a survey of Canadian business and labour leaders found that 70% of respondents agreed that good working relationships and high morale are the leading measures of a healthy workplace (Canadian Labour and Business Centre 2000). Furthermore, commitment and trust in organizations depend on healthy and supportive work environments, and can have positive impacts on absenteeism, turnover and morale (Lowe and Schellenberg 2001).

Better data would facilitate exploration of all these issues. In Canada, Statistics Canada's Workplace and Employee Survey (Leckie et al 2001) would be the ideal vehicle for assessing the relationship between organizational and work environment characteristics, individual employees' health, and workplace performance. However, a major limitation

of the WES is that it does not include any health-related measures – an omission that could be rectified given that WES is an on-going survey.

In summary, while the research we have reviewed contains useful insights about what contributes to making organizations healthy, or unhealthy, there is no handy list of ‘best practices’ that can guarantee results. We can, however, draw some firm conclusions about the best way to tackle workplace health and productivity issues. There is a need for a comprehensive, multidisciplinary approach that integrates a focus on work environments with individual health outcomes and organizational performance. The healthy organization model takes us in this direction. Above all, our discussion emphasizes the strong influence exerted by management practices and work organization on firm performance *and* employee well-being. Practically speaking, this suggests the need for much more collaboration between human resource management, health promotion and occupational health professionals.

4. Economic Impact of Unhealthy and Healthy Workplaces

In this section, we briefly review the economic costs of healthy and unhealthy workplaces. The models outlined below assess the financial costs and benefits of workplace health promotion or the costs of illness and injury. We begin by reviewing estimates of the overall costs of unhealthy and unsafe workplaces. Then we consider the research that documents returns on investment to workplace wellness programs. Finally, we briefly review employers’ attempts to ‘manage’ the costs of preexisting employee health problems through workplace programs. The key point is that healthy and safe workplaces can have productivity-related benefits by reducing employers’ operating costs, reducing the overall costs of health care, and enhancing employee performance.

Costs of unhealthy and unsafe workplaces

There is no doubt that reducing the risk of workplace injury, morbidity and mortality will yield large benefits for the economy, the health care system, and for individuals and their families.

Estimates of annual job-related injury and illness in the U.S. are huge. Probably the most accurate estimates show that job-related deaths from injury, nonfatal injuries, deaths from disease, and illnesses amount to USD\$65 billion in direct costs and USD\$106 billion in indirect costs in 1992. The Health Enhancement Research Organization estimates that stress, which has many work-related causes, accounts for about 8% of total health care expenditures (Anderson, Serxner and Gold 2001). Injuries cost USD\$145 billion and illnesses USD\$26 billion (Leigh et al 1997). The biggest direct costs are medical, while the biggest indirect costs are lost earnings. These are conservative estimates, however, because they do not include the costs of pain and suffering or in-home care provided by family members.

Similar evidence, although not as comprehensive, can be obtained for other countries. In Australia, for example, estimates of the direct costs of workers' compensation are 1.5% of GNP and about 20% of total health care costs (Chu, Driscoll and Dwyer 1997). Duxbury, Higgins and Johnson (1999) estimated that work-life conflict in Canada in 1996-97 cost organizations roughly CAD\$2.7 billion in work absences and the health care system approximately CAD\$425.8 million in physician visits. This is the first attempt in Canada to assign a cost value to work-life conflict nationally.

Specific types of occupational injuries also have been thoroughly examined in terms of their economic costs. Specifically, work-related musculoskeletal disorders of the neck and upper extremities (i.e., repetitive strain injury) may result from increased workloads either due to reduction in the workforce or work intensification. The U.S. National Institute for Occupational Safety and Health estimated that over \$2.1 billion yearly in workers compensation costs, and \$90 million in indirect costs such as hiring, training, overtime, administration, result from upper limb musculoskeletal disorders in the U.S. (Cole et al., 1997: 5). However, imprecise estimation methods likely understate the full costs of work-related musculoskeletal disorders to workers, firms, and society.

In the health care sector, needle sticks cause one-third of all work injuries among hospital employees and 8-9% of all hospital employees are stuck annually, with an estimated cost of about \$100 per case exclusive of follow-up costs (Baker et al 1991: 92). While addressing this type of injury may seem straight forward, the causes are multi-faceted. Therefore, solutions must address training and job assignment, proper record keeping of injuries and near misses, feedback systems to correct problems, involvement of workers in identifying solutions, the ergonomic design of tasks and work environments, and effective personal protective equipment. Baker et al (1991: 93), observing that “(t)here can be little question that an injured worker reduces productivity,” caution against using productivity incentives that increase the chance of injury.

This approach to estimating the costs of workplace-related injury and illness is well established. Recent research focusing on workplace change adds a new dimension to our understanding of the costs of unhealthy workplaces. Thus, if we define a ‘healthy workplace’ by what it is *not*, we would have to include management strategies such as restructuring and downsizing. Research shows that while these strategies are driven by cost reduction, they indirectly affect economic productivity by imposing higher direct and indirect health costs.

For example, studies of workplace stressors and cardio-vascular disease risk conclude that downsizing and excessive overtime have negative health effects (Belkic 2000: 316). Corroborating research includes a longitudinal cohort study of the impact of downsizing on employee health, which found sickness absence rates 2.17 times higher after downsizing (Kivimäki et al 2000). This study attributes these negative health effects to changes in work and social relationships that increased physical job demands and job insecurity and reduced job control. Organizational performance also can be affected. As Woodward et al (1999) found, hospital reorganization in Ontario increased employee

stress and reduced the perceived quality of patient care, possibly because of diminished work role clarity and teamwork effectiveness.

One of the most thorough examinations of the effects of new productivity and quality-enhancing work systems on worker health is the CAMI study, sponsored by the Canadian Autoworkers Union (Rinehart et al 1997). The CAMI factory was a new joint-venture between GM and Suzuki in Ontario. The longitudinal study documents the impact on workers of the factory's lean production methods, which are widespread in North American auto plants. What's unhealthy about lean production is that it seeks productivity gains in a system that uses fewer workers. Despite deteriorating labour relations, reduced worker commitment, and rising injury rates, the plant was able to maintain high output. This was achieved mainly by an intensified work pace and increased physical demands, putting significant strain on workers.

Conditions at the CAMI plant led to a 5-week strike and, ultimately, negotiated improvements that addressed occupational health problems. The larger lesson from this and the other research just reviewed is clear: designing work systems without paying careful attention to their impact on employees' health can result in significant human and economic costs.

The financial benefits of workplace health promotion programs

There is abundant evidence that workplace health promotion programs yield improved health outcomes for employees and reductions in employer health care costs. This extensive area of research provides solid support for a link between healthy workplaces and productivity. The single biggest limitation, noted earlier, is an emphasis on the costs and benefits of changing individual health attitudes and behaviour. Key findings from this research are summarized in this section.

Golaszewski (2001) reviews 12 studies published between 1980 and 2000 selected by a panel of experts as being the most influential in offering evidence for or against the financial impact of workplace health promotion programs. The review provides "moderate" support for the economic value of such programs. The strongest evidence is for reduced employer health care costs and absenteeism. In contrast, recruitment and retention benefits lack empirical support in these 12 studies.

Pelletier (2001) reviews 15 U.S. studies of clinical- and cost-effectiveness of comprehensive health promotion and disease management programs at worksites published between 1998-2000. Interventions included: exercise and fitness programs, back care, weight control, health risk assessment, mammography, prostate cancer screening and referral, educational programs, immunization, hemochromatosis screening, headache screening, prenatal education, and a range of comprehensive wellness programs. The weight of the evidence confirms that multi-component or comprehensive interventions have higher clinical effectiveness and cost effectiveness compared with single factor disease management programs, such as smoking cessation. This review

concludes that there is “moderate to strong evidence” that comprehensive health promotion and disease management programs show clinical- and cost- effectiveness.

Details of the financial benefits of these programs can be found in return on investment (ROI) studies (Ozminkowski et al 1999; 2001). An ROI evaluation of a comprehensive health management program at Citibank, in California, examined the firm’s medical expenditures for close to 23,000 employees, comparing expenditures on health management program participants with expenditures on non- participants over 38 months. The program was designed to help employees improve health practices and behaviours, reducing prevalence of preventable disease, help them better manage their chronic medical conditions, and reduce demand for unnecessary or inappropriate health services. This program returned \$4.56 for every dollar invested. This was mainly due to the low cost of the program, high participation rates among employees, the inclusion of education and awareness building, and the provision of more intensive resources to high-risk groups.

Numerous other peer-reviewed studies support these conclusions. For example, the Health Enhancement Research Organization (HERO) database was used to analyze the relationship between health risks and medical expenditures at six large employers, where staff had been offered a health promotion-disease prevention program at some point during the 6-year study period (Goetzel et al 1998). Comparing high and low risk groups for depression and stress, the high-risk groups had 70% and 46% respectively higher annual medical expenditures after adjusting for age, gender, race, education, and job type.

Bertera (1990) used a pretest/post-test control group design to assess the impact of a comprehensive worksite health promotion program on full-time workers in a large, multi-location industrial firm. The study focused on absenteeism outcomes among ‘blue collar’ employees. The program emphasized healthy lifestyles, fitness, nutrition, stress management, smoking cessation, health risk surveys, safety, and counseling. The two-year program netted 11,726 fewer disability days in program sites compared to non-program sites, with a return on investment of \$2.05 for every dollar invested.

The University of Michigan’s Health Management Research Centre has worked with various partners in a long-term study of “the costs and benefits of health and productivity” (Edington 2001:341). The Centre’s extensive longitudinal database is used to address the question ‘what works?’ The most important indicator of program success is employee participation in multiple programs. As well, participation over extended periods is necessary to achieve long-term cost savings. Interventions designed to address underlying causes of unhealthy work environments require senior management commitment to succeed, rather than high levels of employee participation, as in the case of programs aimed at individual lifestyle changes. The Centre tracks health risks and behaviours such as job and life satisfaction, stress, perception of health, body mass index, alcohol consumption, smoking, seat belt use, physical activity, blood pressure, existing medical problems, cholesterol, and drug use. Health Risk Assessments calculate an ‘overall wellness score’, which is directly related to health costs. For example, a 1-point

change in the wellness score was associated with a \$30 annual change in health care costs per employee in a manufacturing plant.

A 15-year old National Wellness Program, a joint initiative between DaimlerChrysler and the United Auto Workers union, used a third-party provider to deliver health promotion and prevention programs to 90,000 employees in 35 US locations (Hutchins 2001). There are on-site health and fitness providers at all sites with more than 500 staff. Programs include nutrition, lifestyle counseling, fitness, injury prevention, mental health, driver safety, smoking cessation, as well as screening, awareness campaigns, incentive programs, and follow-up. A key feature of the program is its flexibility in meeting needs of different work schedules and occupational groups. The program won the 2000 Everett Koop National Health Award and has won gold medals from the Wellness Councils of America. Outcome measures include lower health risks, participation, and employee satisfaction. Researchers evaluating the program found that employees who completed one, two or three health risk assessments had on average lower health care costs of between \$112.89 and \$134.22. Over time, participants had lower health care costs of between \$5 and \$16 per month compared to non-participants.

Other studies are worth mentioning in brief. The Employee Benefit Research Institute determined that Citibank reduced health risks and saved between \$4.56 and \$4.73 for every dollar spent on its health education and awareness program (Leonard 2001). Glaxo Wellcome's health promotion program saved about \$1 million in 1998 and substantially reduced absences for medical reasons. A University of Michigan study at Steelcase Corporation found that for every employee who had excessive alcohol consumption, the firm spent \$597 more annually in health costs. For every employee who was sedentary, the cost was \$488; hypertension cost \$327; smokers cost \$285 (Powell 1999).

Exercise/fitness programs are also documented to have net financial benefits, including reduced healthcare costs, absenteeism, injury rates, turnover and improved job performance, productivity and morale (DiNubile and Sherman 1999). Studies on all these outcomes suggest that 'intangible factors', such as employee satisfaction, may also help in recruitment and retention. Reviews of the financial impact show cost/benefit ratios ranging from \$0.76 to \$3.43 and from \$1.15 to \$5.52 when fitness programs are part of a comprehensive health promotion strategy. The major limitation of fitness programs, however, is low participation rates.

The above-mentioned studies are from the U.S., reflecting pressures on employers there to reduce employee medical costs. Comparable Canadian evidence is less plentiful, largely because many of the health costs that U.S. employers would cover in benefits plans are absorbed in Canada by the publicly funded health care system. The one exception to this would be prescription drug costs, which are included in many Canadian medical benefits provided by employers. However, there are no published analyses of health promotion or illness management programs in this country that specifically focus on such costs.

Fortunately, there is information available on the organizations that received the National Quality Institute's Healthy Workplace Awards in Canada (National Quality Institute;

Bachmann 2000). At MDS Nordion, a comprehensive workplace health program resulted over several years in a reduction in absenteeism from 5.5 to 4 days per employee and turnover declined to half the industry average. Telus saved \$4.5 million in 1998 through efforts of its Corporate Health Team focus on individual health, or \$3 for every dollar spent. From another study, examining eight organizations in the Halifax area, we learn that for every \$1 invested in a comprehensive wellness program designed to reduce risk of heart disease, employers saw a return of \$1.64, and even more for higher risk employees (smokers), where it can be \$4. An employee survey found a small drop in absenteeism and increased productivity after three months in the program (Brown 2001).

Employers often do not directly link financial returns from health promotion to their overall goals. As stated by the manager of Health and Productivity at Chevron Corporation, in California, “The return we have achieved has not always been well documented from a financial point of view, but the consensus from our management is that health promotion has added to Chevron’s financial success by helping achieve Chevron’s goals” (Whitehead 2001). Chevron is developing a standardized disability management system company-wide. An integrated database will have several advantages. Specifically, it will enable managers to easily view lost time rates, show the links between health promotion and reduced absences and productivity, and identify targeted programs that have the largest impact on employees’ health.

To summarize, the research documents cost-benefit ratios of between USD \$3 and \$8 for every \$1 invested in health promotion programs within 5 years of being launched (Aldana 2001; Goetzel et al 1998; Anderson, Serxner and Gold 2001). Realistically, it is fair to say that comprehensive workplace wellness initiatives have a high potential to benefit both employees and the organization. Yet, even this evidence fails to convince skeptics that investments in health promotion programs will yield cost savings (Ozminkowski and Goetzel 2001). This partly reflects the costs and logistical and ethical constraints of conducting research in real work settings, compared with laboratories. Regardless, some employers will remain unconvinced of the need for healthier workplaces.

Individual health risks and productivity

Another stream of research examines attempts by employers to ‘manage’ employee illnesses that are not work-related. The studies reviewed in this section illustrate the link between employee health status and productivity. In particular, these interventions show how employers have designed programs to address the resulting productivity implications of pre-existing health problems.

The effect of medication usage on productivity is one focus of this literature. For example, Cockburn et al (1999) evaluated the impact of different illness treatments on worker productivity, analyzing retrospectively medical claims utilization data and work output among 682 insurance claims processors in a large insurance company. They compared employees who received prescriptions for sedating antihistamine medications,

with coworkers receiving non-sedating medication, and controlled for the effects of worker and job characteristics. Workers' output was measured by computer, making this a unique setting to study the impact of medication on productivity. Workers using sedating antihistamines experienced an average 8% reduction in daily output in the 3 days after receiving the prescription, compared to overall average productivity of these same workers, while the non-sedating drug use group experienced a 5% increase in productivity.

Burton et al (2001) studied the relationship between allergies and productivity among telephone customer service operators at a large U.S. financial services corporation, using data from a computerized productivity measurement system. The productivity of workers with allergies decreased as much as 10% during peak pollen season. Based on average daily compensation, this amounts to a loss of USD \$52 per affected employee per week. Employees using antihistamines were more productive than were those not using medication. The authors calculate the return on investment of providing drugs to allergy sufferers (average cost of \$18 per week) to be 2:1. These findings lend support to company-sponsored wellness programs that can address this issue.

Another research focus is depression, which is not surprising given that it accounts for over half of all mental healthcare diagnoses. World Health Organization projections suggest that mental illness is expected to become the second leading disease burden globally, after heart disease (Dewa and Lin 2000). More disability days are depression-related than are related to chronic physical health problems such as heart disease, diabetes, high blood pressure or low back pain (Conti and Burton 1995). Within workplaces, depressed workers have 1.5 to 3.2 more short-term disability days in a 30-day period than other workers. Mental and emotional conditions are increasingly a cause of long-term disability. However, while evidence links mental illness to decreased productivity, it is not clear now this happens or how it differs from the impacts of physical illness.

Illuminating in this regard are the findings from the 1990-1 Ontario Health Survey's Mental Health Supplement (a sample of 4225 employed individuals ages 18-54). This survey shows that while physical health had the largest impact on workdays lost, individuals with mental health problems were more likely to go to work and have difficulty functioning in their jobs. It is estimated that 8% of the Ontario workforce experiences more than 2 months annually of decreased productivity due to depression. This study, along with others (e.g., Druss, Schleisinger and Allen 2001), document that depression can have a significant impact on work performance, mainly through 'presenteeism' or reduced effectiveness in one's job.

Perhaps the most widespread initiative by employers to address pre-existing employee health risk factors is smoking cessation programs. These have been used in workplaces for close to two decades. In fact, the elimination of smoking from most workplaces in North America marks a significant public health milestone (Lowe 1996). There is overwhelming evidence that smoking increases annual health care costs, much of which is borne by employers in the U.S. (Max 2001).

The medical costs of smoking in the U.S. range from 6% to 14% of annual personal health care costs. Studies that examine employee-related costs focus on lost productivity, health care costs, and health insurance costs. For example, a study of telephone customer service workers estimated that smokers lost an average of 4.1 hours per week due to illness related absences, short-term disability and lost productivity (the latter is the largest component, at 3.5 hours). However, there is no national study in the U.S., or elsewhere, that empirically estimates the costs of smoking in the workplace, especially productivity-related costs.

To summarize, we can extract two basic insights from this research. First, when individuals bring pre-existing health conditions into the workplace, there is the potential for working conditions to exacerbate the health problem. An obvious example of this is when workers suffering from depression are in stressful jobs. And second, there are specific steps employers can take to support employees to address their medical needs, reducing symptoms in ways that have positive effects on productivity.

5. Steps to Creating Healthy Workplaces

So far, our discussion has examined concepts, measures, and research findings from a wide range of research related to healthy workplaces and productivity. This section will synthesize some of the practical points raised in these earlier discussions.

For practitioners and policy makers, it is essential to step back from the academic details and draw out lessons that can lead to action. In this regard, the emerging model of healthy workplaces calls for a multidisciplinary perspective that addresses the twin goals of employee well-being and business success. To help us move in this direction, this section is organized around three themes:

- what works based on what we know,
- barriers and facilitators to creating healthy workplaces, and
- major knowledge gaps that must be addressed if we are to successfully advance a healthy workplace agenda.

What works

The ‘healthy organization’ model, discussed above, provides a useful launching point for future initiatives, due to its multidisciplinary approach and comprehensive scope. These features enable practitioners to address underlying organizational and workplace conditions that are prerequisites for achieving employee health goals and productivity. The greatest challenge is that this model requires employees and managers to think about the workplace far more holistically. A healthy organization is one in which employee health and well-being is viewed by all decision makers as an important goal in its own

right, and at the same time, one that directly contributes to the overall performance of the organization. In any case, this new thinking requires a major shift in an organization's culture.

What this means is that actions required to create a healthy organization must address all aspects of how work is organized and managed. Programs that deliver tangible improvements to employee health outcomes and productivity cannot simply be 'added on'. Rather, they require systemic change in an organization's structures, processes and culture. This is suggested in a review of firms that have 'leading practices' in health promotion related to performance and productivity (Riedel et al 2001). These firms exhibit ten distinguishing features:

- 1) Health and productivity management strategies are aligned with the firm's business strategies using an interdisciplinary approach;
- 2) Leaders or champions show vision and make things happen;
- 3) Interdisciplinary team members are enthusiastic about health promotion;
- 4) Senior management strongly supports this integrated approach and provides resources;
- 5) Business operations managers are key members of the team;
- 6) Prevention and health promotion staff are closely involved;
- 7) Improving the quality of work life is expected to increase productivity and cost containment will follow;
- 8) Data integration happens later in the process;
- 9) Ongoing communication among team members and senior management keeps health promotion in the forefront; and
- 10) There is constant improvement and learning from others.

What this list describes is the *process* for achieving change. As such, healthy organizations are created and sustained through strong leadership, coordinated and collaborative efforts, support from all levels of management, and on-going communication and learning. However, too little emphasis is given in the workplace health promotion literature to the process of change. Health promotion practitioners should heed the advice of human resource management experts, who argue that 'people practices' must be aligned with organizational goals if they are to impact performance (Becker, Huselid and Ulrich 2001:9).

Looking more closely at cutting-edge human resource management practices, we discover further insights about 'what works'. Health promotion professionals will no doubt recall that 'best practices' were a major preoccupation in the area of human resource management during the 1990s. However, the notion of 'best practices' has become the subject of considerable debate in the academic human resource management literature. This debate deserves our brief attention, for it has clear practical implications for any wellness or health promotion initiative in organizations.

While practitioners in the areas of human resource management and workplace health promotion are now addressing the links between working conditions and productivity, research in the former area has progressed furthest. This is captured in the debate around whether high performance management systems outperform traditional systems, or if optimal performance is more contingent on firm characteristics (Wood 1999). Is there a set of internally consistent high performance or high involvement practices that are universally effective? Alternatively, is it the strategic fit of a particular human resource management system within a firm's context and goals that matters more in this regard?

While the debate is not resolved, it challenges the idea of a 'one size fits all' set of best practices. In this regard, health promotion practitioners would be well advised to consider four points, or guiding principles, from the current human resource management and high performance workplace literatures:

- 1) The model of a high performance workplace moves beyond a focus on individual employee attitudes and commitment to include skills, work structures, performance management, and rewards;
- 2) The likelihood of performance improvements resulting from human resource management practices is significantly increased when these practices are introduced not piecemeal but as integrated bundles;
- 3) Human resources must have a central role in an organization's strategy, and it is here that contributions to performance can be enhanced; and
- 4) The process of implementing human resource management innovations is critical to their overall success.

To summarize, we have seen in the workplace health promotion literature many examples of programs that meet health and financial criteria for success. We have highlighted how evaluations of the financial impact of workplace health promotion programs underscore the importance of having comprehensive programs that take a multi-pronged approach to addressing health and wellness issues – a point reinforced in human resource management research. Beyond this, what the above principles suggest is that employers will need to adapt programs from other organizations to their own unique contexts and must carefully plan the implementation process, recognizing that the process itself is a key determinant of success. Senior managements' support is critical, as is the active participation of employees, unions, and other key stakeholders in planning and implementation.

Barriers and facilitators to creating healthy workplaces

Successful organizational change strategies remove barriers to the proposed change, and take full advantage of existing conditions that enable the change. Often, change barriers and enablers are flip sides of the same coin. For example, we noted that strong leadership supporting a model of a healthy organization is a prerequisite to action. Conversely, a lack of leadership support makes such change very difficult. This section provides an overview of several major change barriers to creating healthy workplaces: resistance, information, incompatible practices, organizational size, and non-standard work. The intention is to stimulate further thinking about barriers at the workplace and broader policy levels that stand in the way of creating healthy and productive workplaces.

Organizational Change

The resistance to organizational change is often subtle and emanates from multiple sources. Managers in existing facilities have entrenched interests to protect. Therefore, they are more likely to avoid the risks and uncertainties inherent in any workplace change initiative because these could jeopardize their authority. This observation leads some organizational experts to conclude that performance-enhancing innovations – which would include healthy work environments – are easier to implement in 'green-field sites', where there is new management, new labour relations and newly recruited workers (Pfeffer 1994: 193).

Managers' unwillingness to decentralize and delegate authority downward is a major barrier to the diffusion of flexible and participative work arrangements (Smith 1997), which are key ingredients of a healthy organization. The cooperation or resistance of front-line managers is often a critical factor in the success of any organizational change. The solution is to include these groups as key partners in the change process from the start, providing the necessary training and support for them to make active and positive contributions.

Information

Lack of adequate information often prevents organizational innovation. It's difficult for managers to take a new approach if they are not aware of the need to change or of the alternatives. Employers should track the following factors, ideally using external benchmarks, because each has a bearing on the ability to achieve larger strategic goals: employee health outcomes, the costs of health benefits plans, absenteeism, and the quality of the work environment. Few Canadian firms systematically track these organizational and individual health indicators. Consequently, employers will not see a need to invest in detection and prevention because their accounting systems are unable to measure the economic impact of employee health (Pratt 1999; Nagel and Cutt 1999).

However, even when good financial data on health costs are available, employers may not act unless the organizations' values, culture and mission support improved workplace health. Therefore, additional information on what has worked in similar organizations, and why, is also required. The dissemination of such information could enable more change by identifying meaningful economic incentives, to which employers may respond more positively than they would to attempts at increased regulation (Viscusi 1992).

Incompatible practices

There are many examples of organizations engaging in contradictory human resource management practices, where one initiative cancels out the possible benefits of another. Downsizing and restructuring are the classic cases of this. In health care, hospitals attempted to introduce total quality management programs and other service improvements in the 1990s during periods of downsizing, with the latter canceling out any benefits of the former (Lam and Reshef 1999). Also in health care, initiatives to improve the quality of patient care may have limited effect because of the heavy staff workloads created by cost-cutting and downsizing (Eisenberg, Bowman and Foster 2001).

In other sectors, the use of pay incentives to encourage overtime work may have detrimental effects on workers' health and safety over the long-run. For some workers, the immediate financial gains may outweigh longer-term health consequences. For example, the frenetic pace and long hours demanded in the high tech sector (before the 'bubble burst' in 2001) was identified by researchers as unsustainable, given the level of creativity and productivity these firms needed to survive (Duxbury, Dyke and Lam 2000).

The general lesson in this case is the need to align an organization's people practices, so that the goals of wellness or health promotion initiatives are supported rather than undermined by other practices.

Firm size

A key finding in high performance workplace research is that innovative human resource management practices are most widely adopted in larger organizations. Similarly, large organizations also pay higher wages and offer more generous benefits. They are also more likely to be unionized, which gives workers further protections in terms of occupational health and safety. Thus, small enterprises typically are not sites for human resource management innovation or progressive health promotion practices (Eakin, Cava and Smith 2001).

While there are exceptions to this general pattern, more must be done to document the incentives and conditions that encourage small employers to adopt healthy workplace practices. Most organizational and health promotion research tends to focus on large rather than small organizations. From a policy perspective, this raises issues about how all workers can be provided with healthy and safe working conditions regardless of the characteristics of their workplace.

Non-standard work

A related barrier from a public policy perspective is the growing proportion of workers who are not 'employees' in the traditional sense, but rather are self-employed, contract or temporary workers (Lowe and Schellenberg 2001). One-quarter of the workforce in Canada performs non-standard jobs. Most are not protected by employment standards or occupational health and safety laws and regulations. This growing diversity of employment arrangements complicates workplace health policy, underscoring the earlier point that there is no universal set of best practices. Some occupational health researchers have begun to address the unique health and safety issues faced by these workers (Quinlan and Mayhew 1999; Rebitzer 1998). However, far more research is required to document the work environments (often their homes), health status, and job performance of different types of non-standard workers before any causal connections can be drawn from these sets of variables.

Knowledge gaps

We have already emphasized that information is a barrier to creating healthy workplaces. Access to good information documenting the impact of health-enhancing work environments on productivity would build the 'business case' some employers need to justify changing engrained practices. Governments can play an important role by serving as a clearinghouse for such information, treating it as a 'public good' and freely disseminating it. First, though, the major knowledge gaps need to be identified. This

section synthesizes the knowledge gaps and outstanding research questions we have mentioned in earlier sections into a future research agenda.

In basic terms, this paper has examined two sets of relationships: between workplace factors and employee health, and between employee health and organizational productivity. On the first of these relationships, researchers are now concluding that there is adequate evidence for making causal connections between workplace factors and health outcomes (Shannon et al 1999). Future research must focus on which interventions work best to improve employee health and under what conditions these improvements are greatest (Riedel et al 2001).

However, claims about the connections between employee health and productivity are more tentative. While it is clear that employee health and productivity-related outcomes are related, we need to learn more about the nature and dynamics of this relationship. The present challenge will be to link these workplace health initiatives to organizational results.

The most promising direction for research and practice is the healthy organization model. This represents a giant step beyond workplace wellness interventions and preventative occupational health and safety programs, given the model's comprehensive and interdisciplinary approach. The model has the potential to link health and productivity outcomes within a single framework, focusing on the nature of the causal relationships between health and productivity. This will help to illuminate common organizational characteristics affecting both performance outcomes and employee health and well-being outcomes (Sainfort et al 2001).

Organizational and human resource management researchers also have much to contribute to our understanding of the factors that support a healthy organization. However, this literature would be far more useful to the health promotion community if it included a wider range of employee outcomes, including health and wellness (Godard 2001). For progress to be made, it is essential to break down 'silos' in organizations to achieve co-operation on workplace health issues across all levels, functions and professions (Bachmann 2000). Thus, the time is ripe for a common agenda for research and action for researchers and practitioners in occupational health and safety, workplace wellness, human resource management and organizational change.

To facilitate this multi-disciplinary approach, five practical research directions that require combined expertise from these diverse areas are listed below:

- 1) What are the possible synergistic effects of combining specific health promotion interventions? In this regard, high performance workplace research is directly relevant, given its focus on 'bundling' human resource management practices. Job stress also raises common issues.
- 2) Given the importance of job design for the psycho-social work environment (Shannon et al 1999), what are the psychological links between job design and

- productivity-related outcomes such as learning and development, absenteeism, turnover, and job performance (Parker and Wall 1998)?
- 3) Organizational and workplace health researchers could expand their range of outcome measures. Specifically, evaluation studies could include standard assessments of the psycho-social work environment and productivity outcomes such as customer satisfaction ratings and other quality measures (e.g., Eisenberg, Bowman and Foster 2001).
 - 4) What are the highest priority occupational health issues in small workplaces, firms located in rural or isolated locations, in high-risk industries, and in non-standard employment (Chu et al 2001: 165; Quinlan and Mayhew 1999)? How are these occupational health issues related to worker productivity? And what incentives and policy interventions would be most effective in creating solutions?
 - 5) At a macro level, what are the broader economic and social benefits and costs of creating healthy workplaces? This is a fundamental policy question because it addresses the organic link between work, health, and productivity for communities and society as a whole.

6. Conclusion and Recommendations for Action

This paper has addressed two questions: What are the work environment and organizational factors that positively influence workers' health and well-being? And are organizations that support the achievement of good health for their employees also more productive? The approach to answering these questions was interdisciplinary, drawing widely on workplace wellness, healthy organizations, and workplace productivity research.

The answer to the first question is somewhat ambiguous. Diverse research literatures – from workplace health promotion, family friendly workplaces, healthy organizations, job stress, high performance workplaces, and strategic human resources management – converge around the importance of supporting employees to be effective in their jobs in ways that promote, not compromise, their health. Broadly stated, the ingredients include leadership that values employees as key assets, supportive supervision at all levels, employee participation, job control, communication, opportunities to learn, and a culture that gives priority to work-life balance and individual wellness. These are the defining features of a high quality workplace (Lowe 2000). The greatest future challenge for practitioners and researchers alike is to integrate the insights from these now separate areas.

The answer to the second question is more qualified. The science is still evolving. Some initiatives, such as comprehensive workplace wellness programs, deliver impressive cost savings and positively influence productivity. High performance workplaces, while showing productivity dividends, less often reveal positive outcomes for worker health, mainly because such measures are not included in these studies. Overall, the weight of the available evidence points toward there being causal links between working

conditions, interventions designed to create healthier workplaces, employee health, and firm-level productivity. We also know that successful healthy workplace initiatives are comprehensive in scope, integrated with other human resource programs, and have well-designed implementation strategies based on strong leadership, good communication and extensive participation.

However, we have documented significant knowledge gaps that must be addressed. Yet, these gaps should not deter employers, employees and policy makers from taking action now. As other researchers have concluded, enough is known about the connections between work environments, employee health and productivity to give much higher priority to creating healthy organizations and to justify investments in pursuit of this goal. Existing knowledge gaps would diminish more quickly, of course, if future initiatives were systematically documented, evaluated and disseminated. In this respect, shared learning is a prerequisite for creating healthy and productive workplaces.

As a call to action, the paper raises important practical implications for employers, employees, and policy makers. Such implications and recommendations are summarized below in an effort to stimulate public discussion and, ultimately, actions aimed at creating healthy organizations.

Implications for employers

For employers, the paper's central message is that workplace wellness programs can yield cost savings and productivity payoffs. However, the underlying determinants of health and productivity can only be altered through changes to job design, organizational systems, human resource management practices, and the overall culture of the workplace. The NIOSH healthy organization model offers this approach; the high performance workplace model has the potential to do so as well. We know that well designed interventions to create healthy workplaces make can a positive difference.

Recommendation 1: *Employers and practitioners involved in workplace health promotion and human resource management need not wait for new research to take action.*

Recommendation 2: *It is important to integrate occupational health and safety, workplace wellness, work-family, with other human resource management initiatives.*

A coordinated approach will increase the likelihood that change barriers are removed, and that the underlying organizational and work environment determinants of wellness and employee performance are addressed. Strong leadership on all these issues, supportive supervisors at all levels of an organization, and a culture that highly values employees are the enabling conditions for creating and sustaining healthy workplaces.

Recommendation 3: *Supervisory training should be a key investment in any healthy workplace initiative.*

In terms of focused interventions, employers seeking to enhance the workplace determinants of good health must ensure that supervisors understand that their behaviour, especially how they listen and respond to employees' needs, is a key determinant of a healthy workplace.

Recommendation 4: *Employers need to mine their own administrative data to diagnose, benchmark and track key indicators of employee health and productivity.*

This is the first step toward analyzing how, and under what conditions, health and productivity are causally related. This information is invaluable in designing healthy organization interventions that 'fit' the unique needs and context of the organization.

Recommendation 5: *In order to ensure all labour market participants in Canada have the opportunity to work in a health environment, governments must assist in providing the tools and resources for employer associations, sector councils, professional associations, unions and other stakeholder groups to meet healthy workplace goals.*

Obviously, the suggestions in this document present significant burdens for small employers and, moreover, are largely irrelevant for workers in non-standard jobs. This underscores the importance of establishing a healthy workplace as a right for all workers, not just those in large organizations with better resources. A failure to do this would be to passively accept that the provision of a healthy workplace will become another benefit enjoyed by select groups of workers, likely those already in advantaged positions in the labour market.

Implications for policy makers

For policy makers, we have emphasized the importance of healthy work environments for the well being of individual workers and for the performance of the economy. Healthy and safe work environments reduce the overall costs of health care, both public and private. Healthy organizations support workers to use their skills and talents in their jobs, thereby contributing both to the quality of work life and performance. A far more explicit connection must be made between healthy work environments and Canada's success in a global, knowledge-based economy. The federal government's innovation strategy claims that "(k)nowledge is the main source of competitive advantage, and it is people who embody, create, develop and apply it" (Canada 2001: 4). Healthy organizations are the contexts in which knowledge is turned into competitive advantage. Such organizations also contribute to the overall quality of work life – which itself may be a precondition for workers putting more effort, knowledge and skill into their jobs.

Recommendation 6: *Federal and provincial governments can no longer afford to treat health, employment, and economic issues as separate policy spheres.*

An integrated approach is urgently needed to ensure that all Canadian workers can exercise their right to a healthy workplace. It is too simplistic to suggest that workplaces are either healthy or unhealthy, productive or unproductive. Both characteristics fall on continuums. Given the great diversity of workplaces in Canada, there will be numerous kinds of opportunities, small and large, to make improvements where it can be shown that benefits exceed costs. The task for governments is to enable and facilitate actions that maximize the number of workplaces moving toward the ‘healthy’ end of the continuum.

Recommendation 7: *In light of growing concerns about the escalating costs of public and private health care, governments must explore ways of including employers, unions, and professional associations – as well as individual workers – as partners in a variety of healthy workplace programs.*

Acting now is crucial, for as we know from evaluation studies, it takes years for productivity-related health improvements to show up.

Recommendation 8: *Governments must carefully assess which economic incentives could encourage employers to take workplace health goals more seriously.*

Compelling rationale for policy interventions based on such incentives could be provided by future research on the public costs of unhealthy workplaces.

Recommendation 9: *Governments must strengthen existing efforts to support research and dissemination, particularly aimed at making the case to employers that there are short-term and long-term economic benefits to creating healthier workplaces, and costs associated with not doing so.*

Playing a more active role as knowledge broker and partnership builder requires, above all, a commitment to a holistic and multidisciplinary approach to workplace health issues.

Recommendation 10: *Specific initiatives in this direction could include having Health Canada sponsor employee health outcome measures for inclusion on Statistics Canada’s Workplace and Employee Survey and expanding the range of work environment measures in the Canadian Community Health Survey.*

Both these surveys provide excellent national and provincial benchmarks and trends. However, one focuses on workplaces and the other on health, so what’s needed are efficient ways to strike a better balance in this regard.

Recommendation 11: *The Canadian Institutes for Health Research and the Social Sciences and Humanities Research Council must be encouraged to provide more opportunities for boundary-spanning research.*

This entails bringing together teams across academic disciplines, and involving practitioners and employers as partners on projects that examine the links between

workplace health and productivity in search of practical solutions. The basis for this collaborative research agenda is laid out in the previous section.

Implications for researchers

Recommendation 12: *Researchers must push far beyond their disciplinary boundaries if they are to contribute to meaningful change in workplaces.*

For researchers, the knowledge gaps and conceptual and methodological challenges of conducting health-related research in workplaces present a large future agenda. To reiterate a dominant theme in the paper, an interdisciplinary approach is needed.

Recommendation 13: *The practical challenge in framing an action-oriented workplace research agenda is striking the appropriate balance between the interests of employers, employees (and their unions and associations) and society as a whole.*

Too much of an emphasis on ‘productivity’ or ‘innovation’ risks losing sight of workers’ basic concerns about the quality of their work lives. However, considering that the goal of improving workplace health depends almost entirely on management priorities and decisions, it is important that research be responsive to the concerns of employers (Harris et al 2001). To this end, an important research question in its own right is what makes managers committed to improving workplace health and safety (Shannon et al 2001:329). At the same time, we must bear in mind that much of Canada’s economic and social policy rests on the assumption that productivity improvements are a means to improved living standards and quality of life.

Recommendation 14: *Health promotion researchers must focus more attention on workplaces as sites for improving the determinants of health and wellness.*

This addresses pressing policy issues, just noted. Better evidence is needed to illustrate how, and under what conditions, healthy workplaces reduce the costs of health care and, through this, have economic and social benefits. Healthy workplace practices may spread more rapidly if ‘win-win’ scenarios can be documented, which show the connection between productivity-enhancing conditions and the quality of work life. Future studies could also examine the impact of healthy – and unhealthy – workplaces on families, on communities in terms of citizenship, and on individuals’ capacity to actively engage in activities, such as life-long learning, deemed to be essential for a knowledge-based society.

Recommendation 15: *Researchers, through partnerships with employers and other workplace stakeholders (e.g., unions, professional associations and employee representatives) can assist in knowledge transfer that will enable a more thorough understanding of the healthy workplace/productivity relationship.*

It has been suggested that more incentives are required to motivate employers to address workplace health issues. Making the connection between healthy workplace factors and productivity requires many employers to make a big leap in thinking. Unions, in particular, are inherently suspicious of workplace wellness and health promotion initiatives, due to past strategies of targeting employees' lifestyles, rather than working conditions. The healthy organization model outlined above has the potential to gain greater union cooperation.

To conclude, there are also crucial implications of research on workplace health and productivity for workers. Where we work can either nurture or compromise our health and overall well-being. When it comes to creating healthy work settings, employers hold virtually all the power. As individuals, we have relatively little influence, other than to quit. A healthy workplace should not be a work reward or a negotiated condition, but a right of all workers. For many, this is a distant ideal. What may swing the pendulum in that direction is our growing understanding of the positive relationship between healthy work environments and organizational productivity. In the emerging knowledge economy, this link may become a key ingredient for social and economic progress.

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