

## OHS interventions show health and economic benefits

Is it worthwhile to invest in workplace health and safety programs?

The answer is a definite “yes” for some types of interventions, according to a new systematic review by the Institute for Work & Health (IWH). It is the first review to evaluate occupational health and safety (OHS) intervention studies on their economic benefits.

Ergonomic programs in the manufacturing and warehousing sector have both financial and health benefits, as do other programs designed to prevent musculoskeletal or soft-tissue disorders (MSDs) in this sector.

Disability management programs – which aim to prevent re-injury or reduce disability in injured workers – also show a health and an economic

benefit. These interventions were generally evaluated from the point of view of insurers, compensation boards or other system-level organizations.

The review shows there is strong evidence supporting these two types of interventions. Strong evidence means that at least three high-quality studies show a positive health effect and financial returns.

“Resources are scarce,” says Dr. Emile Tompa, IWH Scientist, who led the review. “Before investing money, time, equipment or other resources into any occupational health and safety program, most decision-makers want to know what the resource implications will be.” One key motivation for conducting this review was to provide answers for decision-makers at workplaces, compensation boards, governments and elsewhere.

The review team did a comprehensive scan of research studies. They sought studies that analyzed both the effectiveness and economic impact of OHS interventions. Their search yielded 67 relevant articles, which looked at 72 interventions. Most were in ergonomics or disability management, with several in occupational disease prevention and health promotion.

Most interventions were found to be effective in preventing or reducing injury, illness or disability in workers by the researchers of each study.

What was the impact of these interventions on resources, such as money or time? This varied, depending on the perspective of the study.

“The perspective taken is important,” says Tompa. “When considering the resource implications, you need to consider who benefits and who pays.”



An economic evaluation can take the perspective of workers, employers, the prevention system or insurer, or society.

In most cases the studies took the employer perspective. They considered costs such as equipment, services and staff time. And most looked only at the main financial benefits such as savings in workers’ compensation expenses. However, a few studies examined a broader range of financial consequences, including productivity improvements and health-care savings.

The review team was guided by practical input from representatives from the Workplace Safety and Insurance Board, Workers Health and Safety Centre, Ministry of Labour, Dofasco, University of Waterloo and the Ontario Service Safety Alliance.

“This group was very helpful in identifying the kinds of information they needed,” says Tompa. They also suggested organizing findings by sector and type of intervention, so that the findings would be presented in a more useful way to decision-makers.

In other sectors, there weren't enough high-quality studies to say the evidence was strong. However, in some

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Research Excellence  
Advancing Employee Health

The Institute for Work & Health is an independent, not-for-profit organization whose mission is to conduct and share research with workers, labour, employers, clinicians and policy-makers to promote, protect and improve the health of working people.

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## What researchers mean by...

### validity and reliability

Suppose you hear about a new study on depression in workers who have been disabled by a workplace accident. This study shows that depression levels are the same in injured and non-injured workers.\*

Perhaps these results surprise you, so you start to take a closer look at the way researchers measured – or found out about – depression levels in the workers. Were their measures **reliable**? Were they **valid**?

Reliability and validity are important concepts in research. The everyday use of these terms provides a sense of what they mean (For example, your friends are reliable. Your passport is valid). In research, their use is a little more complex.

This column explains the importance of validity and reliability in survey questionnaires or other measures used in a study. In our next column, we'll talk about validity in another way, concerning overall study findings.

So let's take a closer look at the measure – in this case, a new questionnaire – that the researchers used to ask workers about their symptoms of depression.

Validity refers to whether the researchers actually measured what they wanted to measure – depression – and not something else, such as stress or anxiety levels. Reliability means that responses to the questionnaire were consistent.

Did these researchers do everything they could to strengthen the reliability and validity of their questionnaire? Here are some things they should have considered.

#### Ensuring the validity of measurement

At the outset, the researchers needed to consider the **face validity** of the questionnaire. Face validity can be described as a sense that the questionnaire looks like it measures what it was intended to measure. Were the questions phrased appropriately? Did the options for responding seem appropriate?

**Content validity** is also usually one of the first ways to ensure the validity of a questionnaire or other measure. The researchers could have asked experts in depression to consider their questions against the known symptoms of depression. These symptoms include depressed mood, sleeping problems,

weight changes and physical pain. To have content validity, the questionnaire should include items about known symptoms.

The researchers could have also established **criterion validity**. How well do the results from their questionnaire compare with other measures of depression? One way to assess this is to give the workers two questionnaires: a “gold standard” questionnaire that's already been validated, and the new one. Then they could compare findings. Another way might be to follow the workers over time to see how the questionnaire results relate to the workers' actual treatment for depression later on.

Unlike physical traits such as weight or blood pressure, depression is not easily seen or measured. This is called a “construct.” The researchers might do some mini-experiments with their questionnaire and other measures to establish **construct validity**. For instance, if workers were given a questionnaire on a similar construct, such as psychological distress, the results should be related. A questionnaire on a different construct, such as happiness, would have opposite results.

#### Ensuring the reliability of measurement

Reliability refers to two things. First, reliability means the researchers would get similar results if they repeated their questionnaire soon afterwards with the same workers. The “repeatability” of the questionnaire would be high. This is called **test-retest reliability**.

The other aspect of reliability concerns the consistency among the questions. Because all the questions relate to depression, you would expect all the answers to be fairly consistent.

If our depression researchers were sloppy in ensuring the validity or reliability of their questionnaire, it could have affected their study's overall results. It's important to note that you can never prove reliability or validity conclusively, but results will be more accurate if the measures in a study are as reliable and valid as possible. ☺

*\*This example is fictional.*

*For further reading, see: Health measurement scales: a practical guide to their development and use (third edition) by David Streiner and Geoff Norman.*

# New tool helps bridge clinical practice and research world

The Institute for Work & Health has launched a new clinical commentary tool, *Practice Perspectives*. It emerged from a clinician-scientist collaboration in which physiotherapists provided direct input into a research project.

The first issue of *Practice Perspectives* provides the physiotherapists' commentary on a systematic review on low-back pain and exercise.

In recent years, there has been a strong push to incorporate research evidence into clinical decision-making. The Institute has been a pioneer in communicating messages from research findings, and more recently it has begun to work with clinicians (see sidebar) to integrate practical knowledge from clinicians into research.

As one result of this experience, the concept of *Practice Perspectives: commentaries on research* was initiated. The commentaries are one way of completing the cycle of research informing practice, and practice informing research.

"The idea of *Practice Perspectives* is a very logical, useful contribution to patient care," says Marianne Rivington, an Ottawa-based physiotherapist who participated in the collaboration. "It is important as a venue for communication between clinicians and researchers and as a vehicle for general dissemination of this information."

Each edition of *Practice Perspectives* will be developed by a group of clinicians with practice experience in the researchers' topic area. The commentary will address the study or review findings

in the context of the current health-care and clinical environment. It will also discuss the practical interpretations, impact, and whether findings are consistent with practice experience. The commentary gives targeted messages for specific audiences such as other clinicians, researchers or policy-makers, including potential "next step" research questions.

The collaboration began in 2005. Institute staff presented a tutorial about systematic reviews to several "educationally influential (EI)" physiotherapists, using an example of a review underway led by Dr. Jill Hayden. The researchers and knowledge transfer and exchange (KTE) staff recognized they could receive feedback from physiotherapists about this review.

"Clinicians providing input into the research process was invaluable," says Hayden. In their review, Hayden and her colleagues looked at the effectiveness of exercise therapy in patients with non-specific low-back pain. "The physiotherapist EIs helped me identify what was missing in the research and gave me a sense of how the research results would be interpreted by clinicians."

Feedback from the physiotherapist EIs led to the development of a second research question within the systematic review. The EIs then assisted the researchers in reorganizing the published studies into clinically-relevant categories. They also discussed the clinical importance of the findings.

Realizing that both the clinical and research communities might be interested in a published commentary from clinicians, the physiotherapist EIs, the Institute's KTE staff and Hayden formed a group called the Commentary Task Group. They met to establish a consultation process and develop the consensus criteria used to create a commentary. Over the next year, the task group collaborated using face-to-face meetings, teleconferences and email exchanges.

"I valued a sense of contributing to the project, being part of the whole process," says Rivington. "It gave me a better appreciation and respect for

## Our Clinical Networks

The Institute for Work & Health – in partnership with regulatory colleges, professional associations and educational institutions – has developed a number of clinical networks. Each clinical network is composed of informal peer-identified educationally influential (EI) members of a clinical profession (see *Infocus Issue 35a about our EI networks*).

The Institute has five EI networks with more than 300 clinicians. The networks represent physiotherapists, family physicians, occupational health nurses, kinesiologists and occupational therapists. Two additional networks with chiropractors and ergonomists are in development.

*Practice Perspectives* provides these clinical networks with a new way of contributing to and sharing their perspective on research.

research and how it can help me help patients. The documented support of exercise therapy is a valuable communication tool with colleagues, other professionals and clients."

To produce the commentary, the physiotherapists discussed the final results from Hayden's systematic review. The subsequent notes were simplified into primary statements and discussion points. The group voted on them and when a statement received a 70 per cent agreement, it was considered final.

*Practice Perspectives* was distributed to the entire physiotherapist EI network – more than 100 members – for dissemination into their community. It is posted on the Institute's website. ☺

To find *Practice Perspectives*, visit: [www.iwh.on.ca/sr/practice.php](http://www.iwh.on.ca/sr/practice.php)

## In the next issue...

Professor David Stuewe of Dalhousie University is delivering the Institute's 2007 Nachemson Memorial Lecture. Stuewe is exploring the role of executive and frontline leadership in creating and maintaining workplace cultures that promote safety. Find out more about the lecture in the Winter 2008 *At Work*.

## In Brief ...

*Practice Perspectives* is a new tool developed by IWH researchers and clinicians.

## More research news from Ontario

Along with this issue of *At Work*, we're pleased to bring you a new bulletin called, *News from the CREs*. This regular insert will provide updates from two of the Institute for Work & Health's research partners in Ontario: the Centres of Research Expertise (CREs) in Occupational Disease and for the Prevention of Musculoskeletal Disorders.

## Preliminary survey results are in

The Institute's communications department launched a reader survey to find out if *At Work* is meeting your needs and what you think should be changed.

According to preliminary results, about two-thirds of survey respondents have discussed articles that appeared in *At Work* with peers and about 40 per cent have taken action in

their workplace as a result of information found in the newsletter.

About 40 per cent are from a health-care setting while 20 per cent are from an academic setting.

The results, coupled with feedback from focus groups and other discussions, will be the basis of a communications plan for the Institute for the next three years.

Congratulations to Judy Metcalfe from the Saskatoon Health Region who won an IWH prize pack. She was randomly selected from all completed survey respondents.

## What's on the web

Each year from September to June, the Institute hosts a series of plenary discussions devoted to research related to workers and

workplace health. The format is a presentation by an expert followed by discussion.

The fall plenary schedule is now on the IWH website at [www.iwh.on.ca/about/plen.php](http://www.iwh.on.ca/about/plen.php). To confirm your attendance to any plenary, please contact Lyudmila Mansurova by email at [lmansurova@iwh.on.ca](mailto:lmansurova@iwh.on.ca).

The Institute's 2006 Annual Report is now available on the Institute's website. The report highlights some key findings from the Five-year Review Panel, an independent team of experts who reviewed the Institute's progress in research and knowledge transfer and exchange from 2002 to 2006.

Visit [www.iwh.on.ca](http://www.iwh.on.ca) and click on the "2006 Annual Report" link under Recent Updates.

## The 50th Edition of *At Work*

For more than 12 years, the Institute has produced *At Work*, a newsletter that has provided important information to many readers about research advances in the health of workers and in workplace health and safety. Here we highlight some issues that have been addressed in past issues of *At Work*. To see back issues, go to [www.iwh.on.ca/products/atwork.php](http://www.iwh.on.ca/products/atwork.php)



**Spring 1995.** The first edition of *At Work* is published. The lead article outlined the Institute's mandate of "tackling back problems."



**Spring 1996.** Institute researchers collaborated with The Toronto Star and SONG – its union – on a repetitive strain injury (RSI) study. This was one of the longest-running collaborative workplace/IWH projects, resulting in several key findings related to RSIs.



**Fall 1997.** The Institute released preliminary findings from a study that examined risk factors for low-back pain among auto assembly workers. The results suggest that workplace physical demands and psychosocial stressors can increase the risk of reporting low-back pain.



**November 2000.** The DASH Outcome Measure was published online. One of IWH's more popular products, developed in part by Institute researchers, the Disabilities of the Arm, Shoulder and Hand (DASH) Outcome Measure was the first major tool available for download from the IWH website.



**June 2001.** Institute researchers examined the health of workers in the health-care sector. Increases in the intensity and volume of physical work, together with increases in social and psychological demands, had a detrimental effect on their health.

# Team evaluates participatory ergonomic programs

A unique partnership involving workplaces, researchers and health and safety experts is tackling a problem in electrical and utilities companies that concerns many workplaces: musculoskeletal disorders (MSDs).

The majority of lost-time claims in Ontario's electrical and utilities sector are for injuries to muscles, tendons and other soft tissues, also known as MSDs.

To help find effective ways to prevent this problem, six Ontario electrical and utilities companies are involved in a study of participatory ergonomic (PE) programs in their workplaces. In PE programs, workers are educated and actively involved in choosing solutions to reduce their risk of developing MSDs.

"For these programs to work, two key factors are critical for success: buy-in from management and employees, and active participation, both of which we have," says IWH Scientist Dr. Phil Bigelow, who is leading the program's evaluation.

The program – initiated by one of the partnering organizations, the

Electrical & Utilities Safety Association (E&USA) – is unique as it leverages expertise and resources of the utilities, and of the IWH and the Centre for Research Expertise in the Prevention of Musculoskeletal Disorders (CRE-MSD).

To employers, the benefits of programs are not always obvious, particularly as they must invest time and money. This is one important rationale for evaluating the program. Additionally, the research partners have an interest in finding out how best to use their scarce resources in reducing the burden of work-related MSDs in Ontario.

"Evaluation provides a way to see the actual impact of a program," says Bigelow. "We can look at outcomes that are of interest to workers, such as improved health and well-being, as well as to employers, such as improved productivity, less absenteeism and lower workers' compensation costs." The unique partnership is also an important focus of the evaluation, because if it is shown to be successful it would be a model for engaging small- and medium-

sized firms in MSD prevention programs.

An IWH systematic review, which examined all of the published studies on participatory ergonomics, found some evidence that PE programs can reduce symptoms, injuries, compensation claims and lost work days.

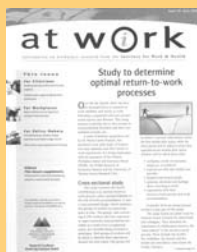
The current project has a specific focus on problems in the electrical and utilities sector, with the participation of utilities in Ottawa, Thunder Bay, Kingston, Kitchener-Waterloo, and the Hamilton/St. Catharines region.

Before the PE program began, employees were asked about physical demands in their job, pain and discomfort and any work limits due to MSDs.

To implement the program, ergonomists with the E&USA provided training and consultation to ergonomic change teams at the companies. These teams consist of eight to 12 employees who work together to implement solutions in their companies.

Each team followed steps in the *Participative Ergonomic Blueprint* (available at [www.iwh.on.ca](http://www.iwh.on.ca), under Products & Publications). It is an approach to establishing a PE program as part of a firm's health and safety program. The blueprint was developed by researchers at the University of Waterloo and IWH. As part of the partnership, ergonomic change teams communicate with one another and share best practices to address common ergonomic risks.

Workers are being interviewed again at nine and 18 months after the program began to see if there are changes and improvements. The researchers will also look at records of first-aid reports, injuries, compensation claims and modified work three years before the program and two years after. ☺



**June 2002.** A study examined optimal return-to-work processes. Over the last decade, there had been an increased focus in research on work disability and return to work following occupational and non-occupational injuries and illnesses. A team of researchers launched a new pilot study of injured Ontario workers with lost-time claims, and their return-to-work experiences.



**Summer 2005.** Exercise helps relieve chronic low-back pain, according to two new systematic reviews. The reviews showed that certain kinds of exercise do have positive benefits for certain patients with back pain.



**Summer 2006.** A unique research alliance of injured workers and scientists has received a prestigious \$1 million funding award from a federal research program. The alliance will look at the long-term impact of work injury.

## In Brief ...

The Institute is evaluating the effectiveness of participatory ergonomic (PE) programs, which aim to prevent MSDs.

## Institute provides training ground for young work-health researchers

Research in Canada clearly plays a vital role in our country's knowledge growth. If Canada is to compete globally, it must have highly skilled researchers to lead in the advancement of knowledge and to mentor the next generation of researchers.

How do research organizations sustain and enhance the development of researchers, and how do they attract and engage new researchers? There are rewards and challenges for such organizations that undertake training of new researchers.

When work-related health research is considered, the challenge grows. In 2005, \$6.8 billion was spent on compensation benefits to injured workers in Canada. Yet, a small portion of available research dollars is invested into looking at occupational health and safety issues that might prevent injury or illness. Only a handful of organizations across the country dedicate resources to examining issues related to the health of workers and workplace health and safety – and the Institute for Work & Health is one.

### Mentoring up-and-coming researchers

Every five years, the Institute's Board of Directors commissions an independent review by an external panel to assess the Institute's research and knowledge transfer and exchange (KTE) programs and to provide recommendations for the next five years. The panel wrote a report that emphasized, among a number of recommendations, the importance of the Institute's role in mentoring young researchers in occupational health and safety. They recommended that the Institute should continue to maintain and protect its role in training and educating students.

"The panel made it clear to us that graduate student and post-doctoral training must continue to be a priority. In the past, we have made considerable commitments to this, but now we are working on a plan to move our training program

to a new and sustainable level," says Dr. Benjamin C. Amick III, the Institute's Scientific Director. "We hope to launch a new, consolidated program that builds on past success and that captures all of our training initiatives in a more formal structure that will benefit students."

Currently, the Institute – through support from the Foundation for Research and Education in Work and Health Studies – has managed several training and graduate student fellowships (*see sidebar*) that help build research capacity and further develop interest in this important area.

"We offer a unique multidisciplinary environment that brings people together from many different disciplines and formal backgrounds, which is quite different from a typical university setting," says the Institute's Director of Operations Sandra Sinclair, who also notes that in the past five years more than 50 graduate and post-doctoral fellows have trained at the Institute.

In addition to its access to workplaces and rich datasets, the Institute offers support to researchers to "transfer" their findings to those who can use them.

"Our students don't just come here to study occupational health and safety issues, they are interested in the end result: 'How will the research that I do affect the labour market?' We focus on solutions and I think students appreciate that," says Sinclair.

Under the guidance from senior scientific staff, students participate in projects to broaden their skills and gain practical work experience. From the Institute's early days, it has focused on the prevention, treatment and management of work-related musculoskeletal disorders and now its researchers and trainees are broadening their scope to include additional issues in work and health today, often with support of national and international research grants.

### Our Fellowship Programs

Through the Foundation for Research and Education in Work and Health Studies, the Institute for Work & Health supports two major fellowship programs. The *S. Leonard Syme Training Fellowships in Work & Health* is a one-year award for master's and PhD students and the *Mustard Fellowship in Work Environment and Health* is a two-year post-doctoral award. The fellowships are awarded to graduate student and post-doctoral fellows who have an interest in work and health research.

The most recent Syme Fellowships – named in honour of S. Leonard Syme, a past chair of the Institute's Scientific Advisory Committee – were awarded to:

Lubna Daraz (McMaster University), who is interested in developing an online information resource for injured workers living with disabilities;

Dwayne Van Eerd (University of Toronto), whose research interests involve three areas: clinical aspects of musculoskeletal disorders, population health and workplace intervention studies; and

Mary Stergiou-Kita (University of Toronto), who is interested in researching how various stakeholders including occupational therapists, employers and insurers can work together to develop a shared understanding of work readiness.

The *Mustard Fellowship in Work Environment and Health* is named in honour of Dr. J. Fraser Mustard, who was the founding Board Chair of the Institute. Its aim is to build capacity for innovative multidisciplinary research in the area of work environments and employee health.

Visit the Institute's website at [www.iwh.on.ca](http://www.iwh.on.ca) under "About Us" to find out more about our training and graduate student programs.

## Etches values moving research findings into practice

The association between income level and health status is well established. Good health leads to higher income, and higher income leads to good health. At all income levels, the richer tend to be healthier. But the underlying mechanisms or reasons, their relative importance, and what can be done about them remain areas of active research.

PhD candidate and Institute Research Associate Jacob Etches is examining how the relationship between sudden decreases in a person's income impacts a person's health, and whether any effect of income drops on health depends on prior income level. Etches is using the Longitudinal Administrative Databank (LAD), which captures 20 per cent of Canadian income tax filers and their families from 1982 to the present. That's about 100 million person-years of detailed income history.

"The labour market is increasingly dynamic, and we rely, in part, on income security programs to protect the health of workers and their families from the associated risks. At the moment, policy-makers do not know the impact of these programs on population health," says Etches.

In addition to his PhD studies, Etches is working with Institute President Dr. Cameron Mustard on a project examining work-related motor vehicle collisions. Estimates suggest that between 2000 and 2004, these collisions were responsible for 208 work-related deaths in Ontario, accounting for 43 per cent of all workplace traumatic deaths.

"This study is unique because we're linking two large databases: one from the Ontario Workplace Safety and Insurance Board and the other from the Ontario Ministry of Transportation. We are analyzing how injuries are distributed by factors such as vehicle type, road conditions, industry, occupation, time of day, and driver behaviour," says Etches. Both Mustard and Etches are presenting preliminary results at an epidemiology conference this fall.

Etches values his training at the Institute. "Being based at a thematic applied research organization has taught me to ask whether my research is relevant to a defined set of stakeholders. This is a useful discipline that I doubt I would have acquired on a university campus."

## Workers' mental health issues interests Rivilis

Mental health issues in workers are receiving a great deal of needed attention from workplaces.



From left. Rear: Jacob Etches, Garry Gray. Front: Agnieszka Kosny, Irina Rivilis.

Many organizations are trying to find new and better ways to address their employees' physical and mental health and to find solutions to help employees cope. Addressing these issues can benefit companies as it could ultimately increase productivity and save money.

Irina Rivilis is working toward a PhD in epidemiology from the University of Toronto and hopes to complete it within the next two years. Her thesis is based on looking at how organizations are measuring disability management (DM) and finding solutions about what can be done to help improve these programs.

She's involved in a research project that brings organizations, researchers and disability management professionals together to develop standard benchmarks

– or points of reference – on how well organizations are doing in disability management practices, relative to their peers.

"In the first stage of the project, we are finding out which benchmarks are useful to companies," says Rivilis. To date, 11 organizations are participating in this project. "We hope that we are able to develop benchmarks across the organizations. With this information, companies can fine-tune their disability management practices to help workers," she says. "There's a real need for this type of research given the rising costs of disability."

More recently, Rivilis presented some preliminary findings on workers' mental health issues at a conference on mental health in the workplace. "Based on our analysis, we observed that short-term disability due to a mental disorder was highly prevalent in our sample of workers," she said.

"I hope that eventually, we can find ways to help organizations improve and manage mental health issues in workers." Rivilis says she also benefits from working with many stakeholders.

"The Institute has given me the opportunity to collaborate with many stakeholders and develop links to workplaces. This, coupled with the mentorship and guidance I receive from Institute Senior Scientist Dr. Donald Cole, is a huge positive."

## Kosny examines immigrants' experiences post-injury

Canada is one of the most multicultural countries in the world. In fact, just over half of the people living in Toronto are immigrants.

So what experiences do immigrants have after a work-related injury or illness? This is an important question that Institute Post-doctoral Fellow Dr. Agnieszka Kosny hopes to answer with a research project she's spearheading.

The research team, working with community and injured worker groups, is interviewing immigrant service providers (such as health-care professionals who have contact with injured immigrant workers), injured worker advocates, and

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those who focus on immigrant populations.

“We’re also talking with two groups of injured immigrant workers – those who filed a compensation claim and those who didn’t,” says Kosny. “We’d like to know if workers understand what their rights are and whether they feel that they can invoke them. For those who accessed the compensation system, we would like to learn about their experiences. For example, did they receive culturally-sensitive and language-appropriate services?” The Workplace Safety and Insurance Board’s Research Advisory Council is funding the study.

In addition to this project, Kosny is further developing her PhD work, which examined non-profit organizations as workplaces. “I volunteered and worked at several non-profits and I felt that they weren’t really considered to be workplaces. They were viewed more as charities – the focus, perhaps understandably, was clearly on the client rather than on the worker.” She studied how the organizations’ missions and the process of providing help shaped how risks were understood and managed by workers.

Kosny is now examining how OHS regulation, workers’ compensation and

workplace policies affect workers in non-profits. “Many non-profits in Ontario do not have mandatory workers’ compensation coverage and volunteers are not covered by workers’ compensation or the OHS Act. This may leave many workers vulnerable.”

### **Gray researches “near miss events”**

On an assembly line, a worker steps away for a moment to put a quality tag on a bundle of steel pipe. Suddenly, the machine jams and spits out a flying pipe in the same spot where the worker had just been standing. The worker realizes that if she had not (luckily) moved, she may have been seriously injured. This is a “near miss event” and it could have had serious consequences.

Garry C. Gray joined the Institute in 2005 as a Syme Fellow and, in 2006, was awarded an Institute post-doctoral fellowship to examine “near miss events” and their impact on everyday workplace practices.

“There is a great deal of attention on outcomes, but my focus is on the ‘near miss’ process,” says Gray, who’s defending his PhD this fall. “For every workplace accident, there are hundreds of near misses. By studying near misses,

you gain insight into safety cultures as well as the potential for decreasing accidents,” says Gray.

He conducted a five-month observational study of a large factory in Ontario and, one year later, followed up with a survey to workers that included questions about safety practices and management commitments to safety. Gray is also researching safety rights, in particular, the legal right to refuse unsafe work.

Recently, Gray was also the first recipient of the Carol McGregor Post-doctoral Fellowship. He will work on several projects including one that is looking at the effectiveness of health and safety management system audit tools. These tools address safety issues from the organizational, management and worker levels.

The aspect of working with people at IWH from different disciplines appeals to Gray. “I’m involved in projects where team members come from a wide variety of disciplinary backgrounds. This allows me to listen to different perspectives on an issue, which I find quite valuable and rewarding,” he says. ☘

cases there was enough information to say the evidence was moderate.

The reviewers found moderate evidence supporting ergonomic and other MSD prevention interventions in three sectors: administrative and support services, health care and transportation.

Studies were also identified in other sectors, including education, utilities, public administration, retail trade, accommodation and food, information and culture, and mining, oil and gas extraction. In these sectors, there weren’t enough studies and/or the study quality was too low to make a firm summary statement about the evidence.

“Although our summary statements provide confidence in the financial benefits of several types of interventions, one should look at the detailed information

tables from our review and the individual studies before making any decisions, to better understand the nature and context of interventions,” Tompa says.

“This is the first systematic review of intervention studies with economic analyses that uses a structured approach to identifying studies and synthesizing the overall results,” he says. The review team included research associates Roman Dolinschi and Claire de Oliveira, as well as Emma Irvin, manager of IWH’s systematic review program.

Given the amount of research into OHS interventions, and that resource use is an important part of decision-making, Tompa says that researchers should be thinking about including economic analyses up front in future studies.

As part of an effort to promote this

field, Tompa is editing a “how-to” book on conducting an economic evaluation of OHS programs, written by experts from around the world. The book will be published in 2008 by Oxford University Press. ☘

*The full report is called A systematic review of OHS interventions with economic evaluations. It is available from the IWH website at: [www.iwh.on.ca/sr/systematic\\_reviews.php](http://www.iwh.on.ca/sr/systematic_reviews.php)*

### **In Brief ...**

**Ergonomic and disability management programs show health and economic benefits.**