

# at work

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## Inspections with penalties linked to lower injuries: IWH review

Institute for Work & Health systematic review on regulatory enforcement finds strong evidence for effectiveness of inspections with fines and citations

There's strong evidence that regulatory health and safety inspections that result in a citation or penalty are effective in reducing work-related injuries. This is according to a recent systematic review conducted by the Institute for Work & Health (IWH), which also found that general deterrence—the mere chance that employers may get inspected one day—is not as effective.

"What this shows is employers do take steps to prevent work-related injuries for employees when there are direct consequences to them," says Dr. Emile Tompa, an IWH senior scientist and the lead author on the systematic review. "But, clearly, no system can have the resources needed to inspect every workplace or issue fines or citations for every violation."

The key to making general deterrence more effective may lie in increasing employer awareness about the financial implications of

non-compliance or making information public about employers that don't comply, Tompa suggests. He presented the findings from the systematic review at an IWH plenary earlier this year (see slidecast at [www.iwh.on.ca/plenaries/2015-may-05](http://www.iwh.on.ca/plenaries/2015-may-05)).

There are many different ways to regulate occupational health and safety, and with the changing labour market context—growing global competition, a rise in contingent work, tightening public resources—it can be a challenge to determine the right mix of regulatory and enforcement mechanisms, says Tompa.

"The cost of regulatory enforcement can be substantial, so gathering evidence on effective regulatory approaches is really critical," adds Tompa, who recently submitted his study to the *Journal of Occupational and Environmental Medicine*. "Regulation and enforcement may be ineffective for many reasons, and we hope that

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# IWH updates

## IWH's Dr. Peter Smith promoted

The Institute for Work & Health (IWH) is pleased to announce that **Dr. Peter Smith** has been promoted to senior scientist, effective May 2015. Smith also holds one of the nine research chairs in gender, work and health awarded by the Canadian Institutes of Health Research (CIHR). For more information about Smith's research interests, go to: [www.iwh.on.ca/researchers/peter-smith](http://www.iwh.on.ca/researchers/peter-smith). To learn more about his research chair, go to: [www.iwh.on.ca/gender-work-and-health](http://www.iwh.on.ca/gender-work-and-health).

## Institute welcomes new adjunct scientist

**Dr. Andrea Chambers** is now an adjunct scientist at IWH. Dr. Chambers is an evaluation specialist in infection prevention control with Public Health Ontario. Chambers' professional interests include developing methods and approaches to support evidence-informed decision-making in public health, implementation science, and the evaluation of complex interventions. Her more recent work has focused on infection prevention and control aspects of occupational health, including needlestick injury prevention and healthcare worker influenza immunization. To see a full list of IWH adjunct scientists, go to: [www.iwh.on.ca/adjunct-scientists](http://www.iwh.on.ca/adjunct-scientists).

## Announcing four recipients of the 2015-2016 S. Leonard Syme Fellowships

Congratulations to four public health researchers who have been named recipients of IWH's 2015/2016 S. Leonard Syme Training Fellowships in Work and Health. The fellowships were established in honour of Dr. Syme, a pioneer in the field of social epidemiology, and his contribution as chair of IWH's Scientific Advisory Committee from 1995 to 2002. Chosen from a large field of high-calibre candidates, the four trainees are: **Chamila Adhiketty, Faraz Vahid Shahidi, Jonathan Fan and Rebecca Penn**. All are PhD candidates at the University of Toronto's Dalla Lana School of Public Health. To learn more about the fellowships and the recipients, go to: [www.iwh.on.ca/syme](http://www.iwh.on.ca/syme).

## Communications survey results now posted

Our warmest thanks go out to the more than 1,000 people who answered our communications survey this spring. Thanks, too, to our partners in Ontario's prevention system for getting the word out about this survey. This input from our stakeholders will help shape how IWH brings you information about work injury, illness and disability prevention. A summary of survey results is available in a slidedeck posted on our website. To see it, go to: [www.iwh.on.ca/kte/communications-survey](http://www.iwh.on.ca/kte/communications-survey).

## WHAT RESEARCHERS MEAN BY...

# Cross-sectional and longitudinal studies\*

## Cross-sectional and longitudinal are two types of studies that let scientists study links without changing subject behaviour

Study design depends greatly on the nature of the research question. Knowing what kind of information the study should collect is a first step in determining how the study will be carried out (also known as the methodology).

Let's say we want to investigate the relationship between daily walking and cholesterol levels in the body. One of the first things we'd have to determine is the type of study that will tell us the most about that relationship. Do we want to compare cholesterol levels among different populations of walkers and non-walkers at the same point in time? Or, do we want to measure cholesterol levels in a single population of daily walkers over an extended period of time?

The first approach is typical of a cross-sectional study. The second requires a longitudinal study. To make our choice, we need to know more about the benefits and purpose of each study type.

Both the **cross-sectional** and the **longitudinal** studies are observational studies. This means that researchers record information about their subjects without manipulating the study environment. In a cross-sectional study, we would simply round up a sampling of daily walkers and non-walkers and take their cholesterol levels, along with any other characteristics of interest. We would not influence non-walkers to take up that activity, or advise daily walkers to modify their behaviour. In short, we'd try not to interfere.

The defining feature of a cross-sectional study is that it can compare different population groups at a single point in time. It allows us to identify differences in cholesterol levels between walkers and non-walkers—or even analyze those differences in light of the other characteristics we collected, such as gender, age or income level. However, cross-sectional studies cannot provide definite information about cause-and-effect relationships. We can't know for sure if our daily walkers had low cholesterol levels before taking up their exercise regimes, or if the behaviour of daily

walking helped to reduce cholesterol levels that previously were high.

That's one advantage of a longitudinal study, in which researchers conduct several observations of the same subjects over a period of time. In a longitudinal study, researchers are able to detect developments or changes in the characteristics of the target population at both the group and the individual level. The key here is that longitudinal studies extend beyond a single moment in time. As a result, they can establish sequences of events. Knowing which came first—the exercise regime or the low cholesterol levels—gives the researchers greater confidence in the cause-and-effect relationship in the data they collect.

In general, the research should drive the design. But sometimes, the progression of the research helps determine which design is most appropriate. Cross-sectional studies can be done more quickly than longitudinal studies. That's why researchers might start with a cross-sectional study to first establish whether there are links or associations between certain variables. Then they would set up a longitudinal study to study cause and effect.

One example of this progression can be found in an Institute for Work & Health (IWH) project on the links between computer work and musculoskeletal disorders (MSDs) at a large newspaper. This project began with a cross-sectional study, aimed at exploring the links between injuries and different characteristics of the job (e.g. work stress) or of the worker (e.g. the social support he or she had at work). Knowing which links were strongest helped the researchers develop theories to test. In the next study, a longitudinal one, they studied changes in workers' MSD symptoms over time. That study gave the researchers a better understanding of the cause-and-effect relationship between MSD symptoms and work/worker characteristics, which in turn lay the groundwork for intervention studies down the line.

\*This is an update of a 2009 article.

# IWH leading indicator tool wins over advocates across Canada

## The eight-item IWH-OPM is adopted in several provinces as a measure of health and safety performance in workplaces

How often do people who act safely at your organization receive positive recognition for it? Less than 20 per cent of the time, more than 80 per cent of the time, or somewhere in between? What about involving employees in decisions that affect their health and safety? How often does that take place?

Those are two of just eight questions that make up a leading indicator tool that has been shown in a sample of Ontario employers to predict injury rates over the next three years. That is, high IWH-OPM scores are linked to a lower risk of claims in the future, whereas low scores are associated with a higher risk of claims in the future.

Called the Institute for Work & Health Organizational Performance Metric (IWH-OPM), this eight-item questionnaire is a product of collaboration between Ontario health and safety associations and IWH on leading indicators of occupational health and safety (OHS). OHS leading indicators are measures that paint a picture of health and safety performance before injuries and illnesses occur. When used by employers, workers and other parties in the prevention system, they can help identify aspects of workplace health and safety that need to improve in order to prevent accidents and disease.

### A measure of OHS change

At the systems level, the IWH-OPM is being used in several different jurisdictions as part of an effort to strengthen safety performance in workplaces. One of these jurisdictions is New Brunswick, where WorkSafeNB teamed up with IWH in 2010 to validate the tool in a sample of more than 300 employers. The project confirmed to WorkSafeNB that the IWH-OPM predicts workplace injury rates better than an 18-item tool the agency was considering.

With that validation, the agency adopted the IWH-OPM as part of a suite of tools to



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observe changes in workplaces that are part of its Focus Firms program. The program targets firms with 40 or more employees that have a high accident count or a higher accident frequency than industry counterparts. As the agency works with these firms to help them develop an integrated health and safety system and reduce injuries, it is asking firms to complete the questionnaire at fixed points over the course of the three-year program to measure its impact.

IWH-OPM is also being used in Prince Edward Island, where building a safety culture has been identified by the Workers' Compensation Board (WCB) as one of five strategic themes for 2013-2015. To encourage principles and practices that instill safety as an integral part of workplace life, the P.E.I. WCB has launched an employer survey to measure the shift in safety culture over time. To do so, it is using the IWH-OPM both to establish a baseline measure and to track change down the line.

In British Columbia, WorkSafeBC continues to evaluate and develop performance measures to provide ongoing monitoring of the effectiveness of its strategies. In an interim report dated February 2015, the IWH-OPM was identified as one survey tool that has been garnering interest. WorkSafeBC has provided the survey and information on its use to all the health and safety

associations in B.C., the report states. The agency has also used the survey with key employers to provide them with insight into the occupational health and safety performance in their organizations.

"This innovative tool is helping WorkSafeBC engage with employers in new and meaningful ways," the report adds. "Future uses for this tool are currently being explored and are expected to help identify opportunities to raise health and safety awareness levels for employers and employees across industries in B.C."

### Featured in guide for employers

In Alberta, in recognition of the value of leading indicators to help organizations take proactive action to improve the performance of their health and safety management systems, the province's Jobs, Skills, Training and Labour department has produced a comprehensive guide on the topic. The guide provides in-depth discussions on an array of issues, such as which leading indicator measures would be most aligned with an organization's goals, and how to implement the measures to best ensure effectiveness.

The guide recommends the IWH-OPM to help organizations establish where they are at in terms of occupational health and safety performance and, based on the score, the type of leading indicator measures that would work best for them. It also refers employers that are interested in benchmarking their scores against those of their peers to another set of leading indicators developed by IWH, called the Ontario Leading Indicators Project (OLIP).

For more information on the research behind the development of the tool, go to: [www.iwh.on.ca/opm](http://www.iwh.on.ca/opm). ■

# Workers' comp benefits keep poverty low among permanently impaired workers and their families, study by IWH finds

## Ambitious study of earnings of injured and non-injured workers over ten years finds benefits play important role in reducing poverty among permanently impaired

A new study looking at the earnings of injured workers and their families found little difference between the poverty levels of permanently impaired workers and those of their uninjured peers. It also found workers' compensation benefits play an important role in keeping poverty levels low for those injured at work.

The study by the Institute for Work & Health (IWH) looked at the individual and family incomes of workers' compensation recipients with permanent impairments under four different programs: three in Ontario and one in British Columbia. Taking into account both job earnings and workers' compensation benefits, the study found individual injured workers fared only slightly worse than their uninjured counterparts in terms of their poverty levels. When family incomes (relative to family size) were taken into account, the poverty levels of injured workers' families and the families of their uninjured peers were essentially the same.

"This is the first study to examine poverty in terms of the financial trajectory of workers who are permanently impaired from a work injury," says Dr. Emile Tompa, economist and senior scientist at IWH and lead author of the study. "It serves as a reminder of the importance of workers' compensation benefits in cushioning the impact for injured workers."

### Complex methods allow for meaningful comparisons

The methods used to carry out this study were quite complex. The study looked at long-term disability claimants under four workers' compensation programs (see box on next page for a description of these programs). By linking these claimants with Statistics Canada's Longitudinal Administrative Database (made up of 20 per cent of all Canadians who file taxes), the researchers

were able to gather information on the individual and family incomes of about 20 per cent of injured workers under each of

the four programs, for a total of about 27,000 injured workers.

To examine how these injured workers compared to their uninjured peers, the research team matched each injured worker with up to 10 uninjured workers

(controls) also in the Statistics Canada tax-filing database. The uninjured controls were similar to the injured worker in terms of age, sex, province of residence, marital status, presence of children, individual income and family income in each of the four years before the injury.

The uninjured controls were also contemporaries of the injured group. In other words, if someone in the injured sample experienced the effects of an economic downturn, the 10 individuals with whom he or she was matched also experienced the same economic conditions.

The study team followed the incomes of the injured workers and their families for nine years after the year of the work injury. This allowed the team to determine how injured workers and their families were doing in absolute terms from one year to the next. The team also compared these incomes to the incomes of the non-injured counterparts and their families during the same period to understand how injured workers and their families were doing in relative terms.

The poverty levels were determined using Statistics Canada's low-income measure, which is set at 50 per cent of the median

(i.e. mid-point or middle) income in any given year. In 2007, for example, the after-tax low-income measure for a single adult with no children was \$16,025. For a family of two adults and two children, it was \$32,050 after tax.

The study team classified annual earnings as follows (with corresponding amounts in 2007 after-tax dollars for an individual and a family of two adults and two children):

- not poor—earning more than 1.5 times as much as the low-income measure (e.g. a single individual earning more than \$24,038, or a family of four earning more than \$48,075);
- nearly poor—earning more than the low-income measure up to 1.5 times as much (e.g. a single individual earning >\$16,025 up to \$24,038, or a family of four earning >\$32,050 up to \$48,075);
- poor—earning more than half of the low-income measure up to the low-income measure (e.g. a single individual earning >\$8,013 up to \$16,025, or a family of four earning >\$16,025 up to \$32,050); and
- deeply poor—earning less than half of the low-income measure (e.g. a single individual earning less than \$8,013, or a family of four earning less than \$16,025).

### Study results in three main findings

Using these methods, Tompa and his research team came up with three main findings.

**(1) Overall, there was little or no difference in the proportion of injured workers living in poverty and the proportion of non-injured counterparts living in poverty when family income was taken into account.**

Looking at after-tax family income (adjusted for family size) and at absolute levels



Dr. Emile Tompa

(not in comparison to controls) the proportion of injured workers in deep poverty was between zero and two per cent of the total sample of injured workers. For poverty, the range was two to six per cent. For near poverty, the range was between six and 12 per cent. The ranges reflected a slight increase in poverty levels over time post-injury under all four programs.

When compared to their non-injured counterparts (and still looking at family income), the difference between the proportion of injured workers in poverty and that of non-injured peers ranged from about one per cent lower to three per cent higher. In other words, depending on the program and the number of years post-injury, the proportion of injured workers in poverty was sometimes one per cent lower than that of their non-injured peers; sometimes it was three per cent higher than that of non-injured peers.

The difference for the nearly poor category ranged from two per cent lower to four per cent higher. Notably, for deep poverty, the proportion of injured workers was consistently 0.5 per cent lower than that of non-injured peers.

"Family income is an important part of the picture," says Tompa. "The convention in poverty analysis is to take into account all income sources after tax at the family level, because that's closer to how things are in the real world. Families pool resources together."

## **(2) Workers' compensation benefits play an important role in keeping poverty levels of injured workers on par with their non-injured counterparts.**

Take, for example, Ontario's Loss of Earnings program. Among its permanently impaired beneficiaries, approximately 36 per cent were estimated to have labour market earnings at or below the threshold of Statistics Canada's low-income measure six years following injury—compared to approximately 17 per cent of their non-injured counterparts. When compensation benefits were included with individual labour market earnings, the proportion of permanent impairment beneficiaries at or below the low-income measure threshold declined substantially, to 16 per cent.

"This finding demonstrates the importance of workers' compensation benefits in cushioning the financial impact of injury for the people in poverty," says Tompa.

## **(3) Poverty levels among injured workers did not change in any substantial way, from one program to the next.**

"One of the reasons we undertook this study was the concern voiced by many injured workers that poverty was growing more prevalent under the most recent workers' compensation program in Ontario," says Tompa, who is also the co-director of the Centre for Research on Work Disability Policy. "It turns out that does not seem to be the case."

### **FOUR WCB PROGRAMS EXAMINED**

Dr. Emile Tompa's study on poverty among permanently impaired workers looked at four workers' compensation programs. These were:

**Permanent Disability (PD) program (Ontario, up to 1990)**—The benefit amount was based on a formula of 90 per cent of after-tax pre-injury earnings times the percentage of total bodily impairment. Benefits were awarded for life.

**Future Economic Loss (FEL) program (Ontario, 1990 to 1997)**—Injured workers received FEL benefit after 12 months on short-term benefits if they sustained a permanent impairment and were deemed unable to earn as much income as before the injury. FEL benefits, which were 90 per cent of the difference between pre-injury earnings and post-injury earning capacity, were potentially awarded until the age of 65. A Non-Economic Loss (NEL) benefit was also awarded to compensate for pain and suffering and loss of quality of life; it took into consideration the percentage of impairment and the age of the recipient.

**Loss of Earnings (LOE) program (Ontario, 1998 onward)**—Injured workers receive an LOE benefit for short-term and long-term disability if deemed unable to earn as much as before the injury. Benefits are 85 per cent of deemed earnings loss and continue until the age of 65. Injured workers with a permanent impairment also receive NEL.

**Bifurcated program (British Columbia, 1990s to 2002)**—Benefits were calculated two ways, and injured workers received whichever amount was highest. The first, based on loss of function, provided recipients with 75 per cent of the pre-injury earnings multiplied by the percentage of permanent loss of function. The second method, based on loss-of-earnings capacity, provided 75 per cent of the difference between pre-injury earnings and post-injury earning capacity.

There was no evidence of rising poverty across the different programs. When taking into account after-tax family income that included workers' compensation benefits on a yearly basis, the levels of poverty and deep poverty were similar across the different workers' compensation programs from the different time periods.

One potential area of concern, says Tompa, was the increasing proportion of injured workers and their families living in near poverty under Ontario's current Loss of Earnings program. "When looking at family income over a 10-year period, the LOE program had the largest difference between the proportion of injured worker families and their matched control families living in near poverty," says Tompa. "This might suggest that injured worker families receiving benefits from this program did not fare as well over longer periods of time as individuals receiving benefits from the other programs." The difference was 2.5 per cent for near poverty for the LOE program, 0.5 per cent for the FEL/NEL program, no difference for the PD program, and 0.6 per cent for the program in B.C.

### **Tax-filing data brings confidence in findings**

"Because we used tax-filing data, we have confidence in the findings we presented in this study of poverty levels among people who experienced a work injury and became permanently impaired," says Tompa.

"We were also able to paint detailed pictures of financial outcomes for injured workers with compensation claims in different programs. What still needs to be explored is the poverty levels of people who become injured or ill as adults but do not qualify for workers' compensation. Our research helps us understand where to focus our next research efforts in terms of the adequacy of support."

It also points to the importance of workers' compensation benefits in cushioning the financial impact for injured workers. "If only workers' after-tax earnings from employment were taken into consideration, many would be in poverty," says Tompa.

His report on the study, which was presented to an injured worker group at Injured Workers' Consultants in the summer of 2014 and to the Workplace Safety and Insurance Board (WSIB) in the spring of 2015, is available at: [www.iwh.on.ca/working-paper/wp-352](http://www.iwh.on.ca/working-paper/wp-352). ■

# Grant round-up: Measuring OHS investment, impact of mandatory training and more

## Diversity in research topics and methods seen in upcoming projects at Institute for Work & Health

One of the strengths of the Institute for Work & Health (IWH) is the diversity of disciplines represented in the research staff. The resulting diversity of research strategies and research questions can be seen in this slate of upcoming (IWH) projects. They run from natural experiments and intervention research to economic evaluations and systematic reviews.

**Assessing the impact of mandatory training**  
On July 1, 2014, Ontario introduced a mandatory awareness training program aimed at increasing worker and supervisor knowledge of basic workplace health and safety rights and responsibilities under the province's *Occupational Health and Safety Act*. How effective will this program be at increasing worker awareness and, in turn, decreasing the number of workers in vulnerable work situations?

That's what IWH Senior Scientist Dr. Peter Smith and his team are setting out to explore, thanks to funding from the Ministry of Labour Research Opportunities Program and the Canadian Institutes of Health Research (CIHR) Operation Grant Intervention Research program.

Smith's team enjoys the rare advantage of having undertaken a survey measuring occupational health and safety (OHS) vulnerability among employees in Ontario and another province prior to the effective date of this mandatory training regulation. In May and June 2014, Smith tested a 29-item measure of OHS vulnerability, which his team had previously developed, in a sample of 1,800 workers in Ontario and British Columbia. The research team is now conducting follow-up surveys through mid-2016. Any change found in the Ontario samples can be compared against changes in the B.C. samples, which will act as a control.

"Undertaking intervention studies in the area of OHS are always challenging

for a number of reasons," says Smith. "We have been lucky in that we developed our measure of OHS vulnerability, which includes a specific section on awareness, and were able to use this measure on a group targeted by this training requirement. It's quite a rare opportunity."

### Delivering essential skills along with health and safety training

Can OHS training lead to better outcomes if it also addresses gaps in essential skills? That's the question at the heart of one project led by Director of Knowledge Transfer and Exchange Dr. Ron Saunders.

According to the 2012 Survey of Adult Skills under the Program for the International Assessment of Adult Competencies, nearly half of working-age Canadians score below the level required to function effectively in today's knowledge-based economy—in both literacy and numeracy. However, most adults with low literacy are in the labour force, and most experience skills gaps in very specific areas.

In this project, Saunders' team will examine whether embedding job-related numeracy and literacy skills in an OHS training program, targeting a few specific skill gaps, can improve OHS knowledge and safety performance.

In collaboration with the training centre of Local 506 of the Labourers' International Union of North America (LiUNA), the team will offer a modified training program on hoisting and rigging, based on curriculum initially developed by another project partner, the Infrastructure Health and Safety Association (IHSA). The essential skills curriculum will touch on job-related numeracy skills and OHS-related document interpretation. The team will use knowledge tests as well as observations, both during the training and after, to assess the impact

of this training on OHS knowledge and safety practices.

### Measuring the level of employer investment in health and safety

No research evidence is currently available on the amount Ontario employers invest in protecting the health and safety of workers. In an innovative study conducted across 19 countries by the International Social Security Association and the German Social Accident Insurance Fund, researchers estimated that firm-level investments on OHS at 330 companies was more than 1,200 euros per employee.

Thanks to funding by the Ministry of Labour Research Opportunities Program, a team led by IWH President Dr. Cameron Mustard and Senior Scientist Dr. Emile Tompa will use that study design to arrive at an estimate in a sample of 350 Ontario employers. The researchers will interview key people at organizations that have agreed to share information about spending in several areas. Because the employers in this study also took part in IWH's leading indicators research, the team will also study the relationship between the amount organizations spend on OHS and leading indicator scores.

### Reviewing the evidence on osteoarthritis and work

Previous research estimates that, by 2020, one in four Canadian adults will live with a form of arthritis, such as rheumatoid arthritis or osteoarthritis. Although arthritis is often thought of as a disease of aging, about six in 10 people with arthritis are under the age of 65 and still in the workforce. Osteoarthritis is the most common type of arthritis, inflicting significant pain, stiffness, swelling and fatigue on those with the condition.

In a new project funded by WorkSafeBC, a systematic review team led by Associate Director of Research Dr. Monique Gignac and Director of Research Operations Emma Irvin will look for work-related factors that may contribute to the development or aggravation of osteoarthritis over time. ■

# Evidence-based questionnaire helps JHSCs pinpoint strengths, weaknesses

## Assessment tool by CREOD helps point the way forward for joint health and safety committees

A new tool is available to help people who sit on joint health and safety committees (JHSCs) assess the strengths and weaknesses of their committee—and generate discussions on what areas of their committee need improvement.

This free tool, a 21-item questionnaire, is one of the outcomes of a research project on the form and function of JHSCs in Ontario's health-care sector, led by Dr. Kathryn Nichol of the Centre for Research Expertise on Occupational Disease (CREOD). Available on the CREOD website, the tool assesses a broad range of committee activities: Are members approachable? How well does the JHSC communicate health and safety information to the staff? Does the committee participate in critical accident and injury investigations? Do committee members receive adequate training?

The questionnaire takes members between 30 to 45 minutes to go through, making a JHSC meeting an ideal occasion to complete it, said CREOD Director Dr. Linn Holness, a member of the research team. Also on the research team was Institute for Work & Health (IWH) Scientist Dr. Lynda Robson. "Although this tool was developed for the health-care sector, we feel that it could have broad application across all Canadian workplaces," says Robson.

Holness recently shared the research leading up to this tool at an IWH plenary. That plenary is now available as a slidecast at [www.iwh.on.ca/plenaries/2015-apr-21](http://www.iwh.on.ca/plenaries/2015-apr-21).

### Limited research on health-care JHSCs

Even though JHSCs have been required by law for 30 years in Ontario for workplaces with 20 or more employees, little research has been done on whether and how they help improve occupational health and safety (OHS) in the health-care sector.

"What prompted this work on the effectiveness of joint health and safety

committees in health care was the finding by Justice Archie Campbell that hospital JHSCs were sidelined during SARS," says Nichol, referring to a review commissioned to look into the handling of the 2003 outbreak.

"As well, there was a lack of studies on this topic in the health-care sector. And given that health-care workers experience significant work-related illness and injury rates, our team at CREOD saw a need for a better understanding of JHSCs in health-care organizations."

In the first phase of the project involving a survey of committee co-chairs, the research



team found some confirmation that JHSCs were not used to their full potential. While a high number of JHSCs complied with legislative requirements (such as holding regular meetings, posting meeting minutes, and so on), respondents reported a lack of training for committee members beyond certification training, and a lack of status and visibility across the organization.

In the second phase of the project, interviews and focus groups with individuals inside hospitals and with external stakeholders (e.g. Ministry of Labour and union representatives) helped identify factors that hinder or facilitate committee effectiveness. Based on these findings, the team

developed a 21-item questionnaire on JHSC effectiveness. After making sure it was easy to understand, the team tested the questionnaire on five hospital JHSCs. The 42 participants were asked to do the questionnaire individually first, then work with their respective groups to arrive at consensus scores, then complete it individually once more. The research team watched the discussion, taking note on feasibility issues such as the length of time to complete it and to come to consensus on the questions.

### Questionnaire helps start conversation

"The purpose of the tool is to provide feedback on JHSC processes and outcomes, to lead to the development of an action plan, to enhance communication and consensus within the committee and promote discussion and reflection on objectives and activities of a 'gold standard' JHSC," says Nichol.

Some questions were easily answered by participants; others took some mulling over before the committees could score themselves. Sometimes members gave different scores before and after talking over the questions as a group, and when that happened, the scores typically went down. "People had made assumptions that things were working, and then when they talked about them, they discovered that things were not working as well," said Holness.

Using the tool helped members develop a shared understanding of the effectiveness of the committee, Holness said. It also helped them set priorities for improving committee function. The team is now testing the tool in sectors outside health care. It's also developing an electronic version with added functionality (e.g. links to more information and automatically generated action plans). To access the JHSC self-assessment questionnaire, go to: <http://creod.on.ca/2015/an-evidence-based-evaluation-discussion-tool-for-ontario-hospital-jhscts>. ■

## AT WORK

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# Review finds smoke-free workplace laws are effective in reducing exposure

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the findings of this systematic review will help inform the decisions made by policy-makers on the right mix of enforcement levers."

The current systematic review confirms the key finding of a 2007 systematic review on the same subject, which Tompa also led. The earlier review, which covered the research from 1970 to 2003, found strong evidence that citations and penalties reduce the frequency or severity of injuries (for more on that review, see the Research Highlight at: [www.iwh.on.ca/highlights/citations-penalties-from-inspectors-reduce-workplace-injuries](http://www.iwh.on.ca/highlights/citations-penalties-from-inspectors-reduce-workplace-injuries)).

This new review covers the evidence from 1990 to 2013. Unlike the earlier review, which considered only final outcomes such as injuries, illnesses and fatalities, this update also looks at intermediate outcomes such as compliance. It touches on six themes: introduction of occupational health and safety (OHS) laws; introduction of smoke-free workplace laws; inspection sequence; general versus specific deterrence of inspection and penalties; nature of enforcement; and awareness campaigns.

Tompa and his team found strong evidence for the effectiveness of inspections with citations and penalties in reducing injuries and moderate evidence that inspections without penalties have no effect in reducing injuries. They found moderate evidence that the first inspection has the largest impact on compliance rates, with the impact of second, third or subsequent inspections being substantially lower.

The team did not find evidence of an impact of OHS consultative activity. More research is needed to determine whether consultations are effective when offered more comprehensively and extensively than was the case in the studies included in this review, says Tompa.

There is moderate evidence indicating that new OHS laws or regulations have no effect on reducing injuries. But the studies on new regulatory standards were quite diverse. Some of the new standards were

narrowly focused, such as the introduction of a lockout/tagout regulation, and others were very broad, such as the introduction of legislation on the internal responsibility system. Tompa cautions against drawing the conclusion that new laws are not needed.

"What we're talking about here are systems that already have robust legislative frameworks, and the regulations examined in some of the studies were incremental in terms of the protection they provided on a specific hazard," says Tompa. He adds that some of the studies might have been conducted too soon after a regulatory change came into effect, whereas outcomes such as raised awareness and reduced injuries may take more time to materialize.

In addition to the above, one remarkable finding relates to a subset of OHS legislation, the smoke-free workplace laws that many jurisdictions introduced in the 2000s. The team found strong evidence that these new laws were effective in cutting down exposure to second-hand smoke and moderate evidence they reduced respiratory symptoms.

It may be that new regulatory standards are effective when they're clear and directly linked to the desired outcomes, says Tompa. "Another thing about smoking bans is that it's easy to tell whether workplaces are complying or not, whereas it might be more difficult to tell whether workplaces are compliant with other types of regulations, such as an ergonomic standard," he adds.

Tompa's systematic review is one of two systematic reviews at IWH on regulatory enforcement. A second was led by Dr. Ellen MacEachen, a former senior scientist and now adjunct scientist at IWH. Her review looked at the conditions and processes of enforcing OHS regulation, focusing on the challenges that inspectors face when enforcing health and safety laws in the context of workplace psychosocial health issues, non-standard work or work performed through complex supply chains. Watch for the results of this review in a future issue of *At Work*. ■