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IWH develops six messages to help prevent MSDs

Most of us know that musculoskeletal disorders (MSDs) can be painful and disabling to workers. Plus these injuries to muscles, ligaments or other soft tissues negatively affect your company's bottom line. Preventing MSDs can help enhance workers' health, increase productivity and improve your company's economic growth.

Institute for Work & Health researchers have developed six messages to help prevent and control MSDs in workers. The messages (see back page) are based on extensive knowledge gained from the Institute's four-year prevention systematic reviews program.

During this pilot program, which began in 2004, IWH staff reviewed and analyzed thousands of articles on specific topics related to preventing work-related injuries and illness.

"We took the results from our 22 reviews and turned them into practical knowledge for occupational health and safety (OHS) professionals," says Institute Scientific Director Dr. Benjamin Amick. More than 100,000 articles were examined for these reviews. In addition, considerable input from dozens of practitioners, policy-makers, OHS professionals and other interested stakeholders helped the program's success. "Stakeholders' input was crucial because they provided vital feedback and suggestions throughout the pilot program," says Amick. "Stakeholders were also critical because ultimately they will be using the knowledge that stems from the reviews and, if they can't use that knowledge, then we haven't succeeded."

Program faced challenges

Although researchers developed these messages based on accumulated research results, the program had some challenges. "The overall body of research literature in occupational health continued on back page



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IN THE NEXT ISSUE

IWH staff are launching several new tools for OHS professionals. Find out about them in the winter edition of *At Work*.



Our new mission statement

As the Institute for Work & Health embarks upon a new strategic plan for 2008-2012, we have refined our mission statement to reflect the importance of creating relevant research and engaging our external audiences. The Institute's new mission is to conduct and share research that protects and improves the health of working people and is valued by policy-makers, workers and workplaces, clinicians, and health & safety professionals. Read our strategic plan at www.iwh.on.ca/strategic-plan

Dr. Jason Busse joins scientific team

Dr. Jason Busse has joined the Institute as a scientist. As a chiropractor, Busse maintains a professional practice managing long-term disability claims. He has both clinical and academic interests in the management of musculoskeletal disorders and is nearing completion of a PhD in clinical epidemiology at McMaster University. Last spring, Busse received a CIHR New Investigator Award.

Syme Fellowships awarded

Established in appreciation of Dr. Syme's contributions to the growth of the Institute, the S. Leonard Syme Training Fellowships are for young researchers at the master's or doctoral level who intend to study work and health. The 2008 recipients are:

Nancy Carnide

Carnide holds a master of science degree in epidemiology from the University of Toronto. Her research interests are in the relationships between depression, pain and work disability. She has been a research associate at the Institute since 2006.

Elyse Maltin

Maltin is pursuing a doctor of philosophy degree in industrial/organizational psychology from the University of Western Ontario. Her doctoral research continues the work of her master's thesis in looking at the effects of workplace commitment, motivation and stress on employee well-being.

WHAT RESEARCHERS MEAN BY...

Primary Data and Secondary Data

What does each and every research project need to get results? Data – or information – to help answer questions, understand a specific issue or support a hypothesis.

At the Institute for Work & Health, researchers conduct many projects each year. Some projects involve going into workplaces and asking workers questions. Researchers who do this have specific work-health questions in mind that they'd like answered.

The answers – or data – used from the responses are called **primary data**.

Other Institute projects involve using data that has already been gathered by someone else, such as survey information from the Canadian Census. Researchers then examine this information in a different way to find a response to their question. These data are called **secondary data**.

What are the advantages of using these two types of data? Which tends to take longer to process and which is more expensive? This column will help to explain the differences between primary and secondary data.

Using primary data

An advantage of using primary data is that researchers are collecting information for the specific purposes of their study. In essence, the questions the researchers ask are tailored to elicit the data that will help them with their study. Researchers collect the data themselves, using surveys, interviews and direct observations (such as observing safety practices on a shop floor).

Let's take an example. In a recent Institute study, researchers wanted to find out about workers' experiences in return to work after a work-related injury. Part of the research involved interviewing workers by telephone and asking them questions about how long they were off work and about their experiences with the return-to-work process.

The workers' answers are considered primary data. From this, the researchers got answers to specific information about the return-towork process including the rates of work accommodation offers, and why some workers refused such an offer.

Using secondary data

There are several types of secondary data. They can include information from the Census, a company's health and safety records such as its injury rates, or other government statistical information such as the number of workers in different sectors across Canada.

Secondary data tends to be readily available and inexpensive to obtain. In addition, secondary data can be examined over a longer period of time. For example, you can look at a company's lost-time rates over several years to see trends.

In the same Institute study mentioned above, the researchers also examined secondary data. They looked at workers' compensation lost-time claims and the amount of time workers were receiving wage replacement benefits.

With a combination of these two data sources, the researchers were able to determine which factors predicted a shorter work absence among injured workers. This information was shared with return-towork professionals to help improve return to work for other injured workers.

Both primary data and secondary data have their pros and cons. Primary data offers tailored information but tends to be expensive to conduct and takes a long time to process. Secondary data is usually inexpensive to obtain and can be analyzed in less time. However, because it was gathered for other purposes, you may need to tease out the information to find what you're looking for.

The type of data researchers choose can depend on many things including the research question, their budget, their skills and available resources. Based on these and other factors, they may choose to use primary data, secondary data - or both.

CANADIAN YOUTH enter the job market early, IWH study finds



Dr. Curtis Breslin

Young people in Canada aged 12 to 14 are working in greater numbers than most would suppose. Nearly 53 per cent of youth in Ontario and 42 per cent in British Columbia reported working during the school year, according to a new study conducted at the Institute for Work & Health.



The study, led by Scientist Dr. Curtis Breslin, is the first in Canada to estimate employment patterns for 12- to 14-year-olds, despite consistent evidence for the presence of young adolescents in the labour market. The study was published in the *Canadian Journal of Public Health* (volume 99, issue 3).

"After years of conducting young worker research, it became clear

to me that Canadian youth begin working at a much younger age than we actually had good data for," Breslin says.

The study results come from school-based surveys. Breslin and his team added their questions about work experiences and work-related injuries to existing surveys about smoking and substance abuse that had already been planned for Ontario and B.C. schools. In all, Breslin looked at responses from 1,318 students in 2003 and 2005.

While the overall employment rate was slightly higher in Ontario, employment in formal work settings was similar in the two provinces. The number of hours worked per week ranged from an average of 3.3 hours among 12-year-olds in Ontario, to 11.7 hours among 14-year-olds in B.C.

The rate of work-related injuries in this age group is comparable to that of 15- to 24-year-olds, the study showed. Work injuries were reported by six per cent of youth surveyed in Ontario and 3.5 per cent in B.C.

"The percentage of youth at this age having a work injury requiring medical attention is surprisingly high," said Breslin. "We should be looking at ways to track the work health and safety of Canadian youth, for instance by including respondents in this younger age bracket in the Canadian Labour Force Survey."

The nature and causes of work injuries for younger workers requires further investigation. However, a significant number of 12- to 14-yearolds in B.C. – nearly 23 per cent – reported having no supervision while working. This is despite new provincial regulations requiring the presence of an adult supervisor for workers of this age.

"The transition to the labour market is accompanied by exposure to known workplace safety risks at any age," says Breslin. "In order to protect and empower our youngest workers, we require a better understanding of where they're working, what they're doing, and the particular hazards to which they may be vulnerable. Better surveillance is a good first step."

In Brief

Six per cent of youth in Ontario aged 12 to 14 reported a work-related injury.

THE INSTITUTE HAS A NEW LOOK

The face of the Institute for Work & Health is changing, as you can see with the fresh, dramatic new look of *At Work*. With a new five-year strategic plan and a new mission statement – plus after 18 years with the same visual identity – we felt the timing was right for a change.

To create our new visual identity, we teamed up with award-winning firm HM&E Design Communications, which has extensive experience in the non-profit sector. Our goal was to create a look that conveyed excellence and innovation, two hallmarks that the Institute strives to achieve.

Our new logo is based on our well-known abbreviation, IWH. The bold square formed by the letter H conveys stability and integrity, and the plus symbol is a metaphor for the counting and measuring that is the basis of much of our research. The bright dot above the letter "i" conveys energy and discovery.

Watch for our new website to launch soon.



RESEARCH 101: How IWH conducts research

Without the invention of the safety harness to help prevent workers from falling off structures, where would Ontario's injury rates be? Higher? Likely. More frequent injuries? Yes. More fatalities? Probably.

Behind every safety product invention, occupational health and safety (OHS) regulation, or process improvement lies some type of research.

High quality, independent research can provide unbiased facts about such products, regulations or processes. Research can help provide OHS background information for decision-makers, fill in knowledge gaps, determine which programs prevent injury or identify effective treatments.

Although conducting high quality research can be a time-consuming process, its rewards make it worth it: lives may be saved, costs decreased, productivity enhanced. How is such research done?

With this new series called *Research 101*, we will take you behind the scenes of a research project at the Institute for Work & Health (IWH). We will show you how a research project begins, who is involved, how the research is paid for, and what happens when the research wraps up.

How research begins

Let's start at the beginning: a question. Research often begins with a simple question, idea or curiosity about an issue.



"As a researcher, you think of questions that you want the answer to all of the time. Sometimes you notice a trend in, say, losttime claims data and you wonder

why it is occurring. Other times, ideas and questions may come up from discussions with the people you work with and others with whom you interact with, such as with OHS professionals or other stakeholders," says IWH Scientist Dr. Peter Smith. Back in 2006, Smith and other Institute colleagues noticed that, over a 14-year period, Workplace Safety and Insurance Board (WSIB) lost-time claims had decreased by more than 40 per cent. Yet over the same time period, no-lost-time claim rates declined by only four per cent. With a no-lost-time claim, a worker is injured and requires health care, but does not take time off work besides the day of the injury.

"This is surprising because if you consider the amount of prevention efforts that are carried out by the occupational health and safety community, the drop in no-lost-time claims should have been similar to the drop in lost-time claims," Smith notes.

So now the researcher has a question to answer: How do no-lost-time claims compare with lost-time claims? To understand the differences, a research team will compare trends in no-lost-time claims among different groups based on gender, industry or age to see if there are differences.

Additionally, Smith and his colleagues want to find out why the health-care costs associated with no-lost-time claims has increased so substantially, from \$13.8 million in 1991 to more than \$20 million in 2000. Finally, the research team wants to examine the types of injuries claimed for no-lost time and whether they have changed over time. Although this type of information is collected for all claims, it is not recorded for no-lost-time claims.

Who pays?

What's next? Funding. As the principal investigator, Smith now determines whom to approach to fund the project. Several public agencies – such as the WSIB and the Canadian Institutes of Health Research – offer grants. These grants do not pay for the investigators' time, but they cover costs to



hire analysts to examine the data and coders to collect information from the claim reports.

Smith thinks that the results from this research will be of the most interest to the WSIB, and decides to submit a grant to the WSIB Research Advisory Council (RAC). Each February, the RAC receives grant applications from prospective researchers. Since 1999, the RAC has provided over \$21.5 million to fund more than 150 different OHS research projects.

Submitting the grant

Upwards of 175 hours are spent by the researchers, support staff, library services and the knowledge transfer and exchange team in preparing a grant submission. "Basically, we need to convince the members of the WSIB RAC that this is a project worth funding. This council has researchers, employers, workers and health and safety association representatives. They receive more and more submissions each year, so the question has to be relevant and the way to answer it has to be scientifically sound," says Smith.

Smith begins to conduct preliminary work on the grant in October 2006. This involves searching the research literature to see what studies have been done on no-losttime claims. He also determines the study's objectives, methods and how the data are

Research team examines the relationship between business and OHS outcomes

to be analyzed, and most importantly if the work can be done. The researchers have to make sure they can get the right information to answer the question.

The research team membership needs to be finalized and should include the appropriate mix of skills and knowledge. As this project involves WSIB data, a biostatistician is an important part of the team. Other members include database experts and other researchers with expertise in data analysis, as well as someone with experience in coding claims.

This preliminary work takes a "solid six to eight weeks to complete," notes Smith.

In December of 2006 the grant writing process begins. Very precise page limits, font type and submission length are specified. If guidelines are not followed, the grant may not even be sent out for review.

Sometimes the grant-writing process presents challenges. For this grant, Smith received a last-minute verification, on the day of the grant submission deadline, that some of the data they need is actually available. "Four weeks leading up to the grant submission, I always question whether we're going to make the deadline or not, but usually it all comes together," he notes.

The grant submission hits 49 pages and includes a detailed budget request (Smith is asking for more than \$200,000 over two years), a research work plan and team members' bios. It is submitted to the WSIB RAC on time. Now, the research team has to wait for several months to hear if the project has been funded.

Good news comes to Smith in early June of 2007. The WSIB RAC has agreed to fund Smith's proposal with a budget of \$204,650.

IN THE NEXT RESEARCH 101:

The research team faces some challenges that may delay the project. Most safety research does not examine business outcomes such as productivity and profits, while business research tends to "ignore" safety outcomes such as injury rates. Little is known about the relationship between these two areas.

A unique new research team identified this gap in their search of the studies in each field. The researchers hope to bridge this knowledge gap by exploring the relationship between business and OHS outcomes. The goal is to determine which practices – both in OHS and in management – enhance both workers' health and a company's bottom line.

The research team involves business experts from the Schulich School of Business at York University and Institute for Work & Health scientists. This pairing is a first for the Institute.

"We're very excited to partner with professionals whose expertise is in operational and management practices," says Institute Scientist Dr. Emile Tompa, a project co-investigator. "Institute researchers bring the health and safety expertise and data knowledge to the table."

The project – funded by the Workplace Safety and Insurance Board's Research Advisory Council – involves two phases. In the first phase, currently underway, researchers will conduct in-depth qualitative interviews with 10 companies about their OHS and business practices. The companies, which are from the manufacturing and transportation sectors, will provide detailed information about their production, operations, systems practices and performance.

In the next phase, the research team will share results from the qualitative interviews with stakeholders to obtain feedback on the information gained and develop key messages. Based on this phase, the research team will draft a comprehensive questionnaire that will be sent to about 200 firms across Ontario.

Stakeholder support

Support from stakeholders is a key component to the project's success. Several organizations – including representatives from management and labour – are on board, says Dr. Mark Pagell, the study's principal investigator and associate professor at the Schulich School of Business. Labour unions may focus on the well-being of employees and a company's management may focus on operational practices. So the study's objective is to determine the best ways to protect and enhance workers' health while also improving a company's bottom line, notes Pagell.

"You can't have a fully informed conversation unless you put these two pieces together. Decisions on health and safety will then be made with a deeper understanding of how these influences can benefit all involved," he says.

In Brief

A new study will look at the relationship between workers' well-being and a company's bottom line.

A bridge from the "ivory tower": involving communities in research

The Hawksmoor Towers – an imposing pair of white stone buildings at All Souls College, Oxford – are the very picture of academia's ivory tower. Noble and enduring, the Towers evoke an idealistic view of the university as sacred ground for the free exchange of ideas, a place where the commercial interests of the "real" world never disrupt the simple goals of teaching and learning. The flipside of this protected terrain – and the paradox of the ivory tower – is the problem of accessibility.

The argument for accessible scientific research moves from two principles: first, that scientists should care whether or not their research is usable; and second, that relevant audiences should be aware of new information that may help them to do their jobs. Many of today's researchers are doing what they can to involve specific, key members of their communities in shaping their work.

intocus

At the Institute for Work & Health, which specializes in applied research, scientists know that the value of their work depends on its relevance to a broader community of occupational health and safety professionals and policy-makers. This can mean anything from providing clinicians with new information about the proper treatment of back pain to discovering the best way for employers to interact with injured workers.

Institute scientists devote a considerable proportion of their time to ensuring their research is clear and meaningful for nonacademic audiences. Guiding this process is the department of Knowledge Transfer and Exchange (KTE).



At the Institute, KTE refers to the practice of communicating and interacting with external partners and translating research findings into action. These external partners or "stakeholders" are audiences with a vested interest in the topics under investigation, and can be different from project to project.

In general, though, Institute scientists can expect to work with policy-makers and practitioners from workers' compensation boards, government, clinicians, organized labour, and employer and injured worker groups.

The job of tapping into this group of stakeholders falls to KTE Associates such as Kiera Keown. Her role is to help scientists identify and respond to the questions and needs of their non-research partners. Since every research project is different, the KTE component is always custom-made.

On any given day, Keown can switch gears from writing lay summaries of research projects to asking scientists tough questions about the usability of their work. Hers is not a job that can be easily described. "I try to work as a bridge between the worlds of research and practice," she says.

Though Keown prefers a flexible approach to knowledge transfer, she says there are standard points at which stakeholders may be invited to participate in a research project. In some cases, the Institute will call on external partners at the outset of a project to help with topic selection and the setting of appropriate goals. In others, stakeholders will participate periodically as a project develops, offering feedback and keeping the interests of external partners in view. Once a project is complete, stakeholders may comment on the results or help with the development or distribution of research tools.

"Over the years we've seen greater interest from stakeholders in how the research process works," says Ke-



Kiera Keown

own. "Likewise, researchers are becoming more involved in knowledge transfer. Many will approach KTE staff at the start of their research for input on how best to involve stakeholders."

Last winter Keown led the knowledge transfer component on a systematic review of participatory ergonomic (PE) interventions. A PE program is one that invites workers to help improve work situations and processes to promote better safety, comfort and productivity. The PE review, led by Institute Associate Scientist Dwayne Van Eerd, considers the best ways to implement PE programs in workplaces. Van Eerd and his team assessed the quality of many studies on the same topic before assembling the results.

As one KTE project to cross Keown's desk, the PE review illustrates some of the ways that stakeholders can participate in the Institute's research. Stakeholders who want to keep up with the latest research in their areas of expertise tend to be interested in the snapshots of the body of research that systematic reviews provide.

The PE review is no exception. The topic was selected by stakeholders who had become interested in an earlier study by Institute Senior Scientist Dr. Donald Cole, which found PE programs to be effective at reducing workplace injuries. These stakeholders wanted to know how to implement PE programs to achieve similar benefits.

"We feel it's important to include stakeholders in all of our reviews," says Van Eerd. "In this case especially so, since our "STAKEHOLDER INVOLVEMENT IS CRUCIAL in order for the end product to be relevant to external audiences," says VanderDoelen. "Early stage participation helps to define the research question and to incorporate external information needs. It also helps to generate buy-in for the findings."

stakeholders were important in identifying the need for a review on PE process and implementation."

With the help of Keown, Van Eerd assembled a network of external partners with expertise in ergonomics and musculoskeletal disorders to participate in a preliminary input meeting. Here, stakeholders gave feedback to the review team regarding topic selection and project planning.

Among those present was John Vander-Doelen, who is the Director, Workplace Insurance, Health and Safety Policy Branch at the Ontario Ministry of Labour. "I worked in the area of ergonomics early in my career," says VanderDoelen, explaining his motive for participating. "More recently, I've had cause to look at regulatory policy issues related to ergonomics. I felt that a comprehensive review of the literature would assist workplace parties in implementing effective PE programs."

Also involved in this project was Judy Village, an ergonomist and private consultant. Her role differed from VanderDoelen's insofar as she was a member of the review team, working alongside researchers at every stage in the review process, from developing appropriate search terms to appraising scientific studies, and assembling the results.

"I operated as a full member of the review team as opposed to serving in the advisory capacity of a typical stakeholder," she says. "I brought a practical perspective to the review: that of a working ergonomist."

In the end, Village and other stakeholders influenced the research process in ways neither they nor the researchers could have anticipated.

Van Eerd expanded the review to include the grey literature, which is content that has not been reviewed by other independent scientists before publication, such as trade magazines, conference proceedings or association newsletters. Village knew from practical experience that health and safety professionals often refer to the grey literature for information and guidance. She, along with the other stakeholders felt strongly enough about expanding the literature search that she helped to secure additional funding to do so from WorkSafe-BC, the workers' compensation agency in British Columbia.

"I joined the project out of personal interest, but I couldn't have taken the time away from my consulting work if I hadn't received the funding," she says. The final review looked at 33 peer-reviewed and 19 grey literature documents, and benefited from the input of more than 70 occupational health and safety experts in Ontario, Manitoba and British Columbia.

As the review came to an end, reaction meetings were held in B.C. and Ontario to give stakeholders a say in how the results would be shared. Keown is now working with Van Eerd to incorporate the feedback from these meetings into a research tool for use in the community.

"In this case, we're designing a tool to help ergonomists and other health and safety professionals to implement PE programs in ways that our review found to be effective. Since we now know that workplace support is important for a successful PE program, for example, we can add this item to a checklist of other essential steps."

Keown and Van Eerd plan to solicit further input from stakeholders before releasing the finished tool. The purpose, said Van Eerd, is to ensure the research will be relevant outside academic circles.

"We feel that the potential recommendations that arise from the prevention reviews should be useful to our prevention partners. Stakeholder input can ensure that we are targeting the recommendations for practical outcomes."

By all accounts, the process of including stakeholders in the PE review was a



rewarding one. Attendance at the various meetings was high, and follow-up surveys showed that stakeholders held a high opinion of the researchers and the review itself. VanderDoelen is no exception. "I felt that the researchers considered and incorporated my ideas and suggestions," he says. "Our relationship was collaborative, with all of us working to determine the best way forward."

VanderDoelen is equally optimistic about how the research results will be used. He says, "The review will be of assistance to the Ministry of Labour in providing advice directly to workplace parties, as well as in supporting policy approaches in the future."

Village anticipates the results will benefit other ergonomists. "The review really clarified the content of the current literature and allowed us to discuss important barriers and facilitators surrounding PE programs," she says. "I'm already sharing the results when I teach or consult with organizations."

Village's final point confirms a fundamental theory of knowledge transfer and exchange: those who participate in the research process are more likely to use and to share the results. This is partly because participation gives stakeholders a sense of ownership over the study.

"Stakeholder involvement is crucial in order for the end product to be relevant to external audiences," says VanderDoelen. "Early stage participation helps to define

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the research question and to incorporate external information needs. It also helps to generate buy-in for the findings."

The PE review was certainly comprehensive. The researchers benefited from the input of external partners and built the foundation for further collaborations down the road. If the follow-up surveys are anything to go by, the stakeholders were satisfied too.

But is it accurate to say that the KTE component was successful? Does improved awareness of the research mark the success of a KTE initiative? Or, does a change in clinical practice have to happen as a result of something that has been learned?

Keown admits that KTE professionals don't yet have a clear answer to the question of success. "Formal evaluations of KTE are something we're starting to get involved with. But right now our strategy is to focus on a simple but important goal: providing our stakeholders with new research in formats that are relevant, understandable and usable." •

AT WORK

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and safety is less mature than others, such as clinical studies of medical care," notes Emma Irvin, Director of Research Operations. "For instance, clinical studies are easier to locate and assess as they follow a consistent format and have a consistent set of keywords applied to them. However, this is not the case for the OHS literature. These studies tend to be different from one another. There is very little consistency around how these studies are reported and there are no consistent keywords applied to them, which makes them more difficult to find."

Now that the pilot prevention reviews program is coming to an end, Amick notes there's still much more work to be done. "Although the reviews that we were slated to do are now complete, we are taking the knowledge and developing tools - some of which will be ready in 2009 - based on the research," he says. In addition, the Institute will continue to conduct prevention systematic reviews to help to build and enhance the knowledge base.

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The Institute for Work & Health conducts and shares research that protects and improves the health of working people and is valued by policy-makers, workers and workplaces, clinicians, and health & safety professionals.

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MESSAGES FOR PREVENTING MUSCULOSKELETAL DISORDERS (MSDs)

These messages were presented at the Canadian Association for Research on Work and Health conference by Emma Irvin, Director of Research Operations.

- 1. Communicate that OHS programs are cost-effective.
- 2. Encourage participatory programs that involve workers, supervisors and others.
- 3. Consider the six keys to success in implementing programs (see the IWH website at www.iwh.on.ca/systematic-reviews for a list of the six keys).
- 4. Remind everyone that there are no quick fixes.
- 5. Design and use programs that are aimed at different levels of staff and that have many components.
- 6. Consider exercise programs, which may provide a double bonus as they prevent MSDs and promote general good health.

For more information, visit: www.iwh.on.ca/systematic-reviews

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