

Summary of the Symposium, “Interventions mitigating health risks among shift workers: Current knowledge and workplace practices”

About the symposium

On November 6, 2012, the Occupational Cancer Research Centre (OCRC) and the Institute for Work & Health (IWH) held a symposium in Toronto about promising strategies to reduce the health effects of shift work. The objectives of this symposium were to provide new information and an understanding of workplace practices, generate ideas on how to move forward in workplaces, and identify future research needs. Approximately 100 participants attended, representing workers, employers, researchers, policy-makers, and others from a wide range of sectors, mostly from Ontario and a few from other provinces.

This document summarizes the key themes that were raised by participants at the symposium. More details about the symposium can be found on the OCRC website:

<http://occupationalcancer.ca/2012/shiftwork-interventions-symposium/>

1. Presentations

The morning session began with a presentation by Dr. Paul Demers. Dr. Demers provided an overview of health effects, which updated the information presented at the “Health Effects of Shift Work” Symposium held by the IWH and OCRC in 2010. Dr. Demers also gave a summary of the different types of approaches that can be used to prevent the health effects of shift work. Afterwards, there were presentations by experts who shared the latest state of the evidence about three promising interventions:

1. Shift work schedules: Robert Whiting, Senior Scientific Advisor, Canadian Centre for Occupational Health and Safety, Hamilton, Canada
2. Workplace policies and practices to promote work schedule flexibility: Karen Albertsen, Researcher and Psychologist, TeamArbejdsliv (Team Working Life), Copenhagen, Denmark
3. Controlled exposure to light and darkness: Diane Boivin, Founder and Director, Centre for Study and Treatment of Circadian Rhythms, Douglas Institute, McGill University, Montreal, Canada

These experts drew upon specific examples from their own research studies and identified the challenges and opportunities for further investigation. The slides from each of these presentations, as well as video clips of the speakers, are available on the OCRC website.

Each presentation was followed by a question and answer period. Participants asked about the definitions of circadian rhythms and shift work, as the latter is often poorly defined or has many different meanings in scientific literature. Circadian rhythms were explained in detail in Dr. Boivin’s presentation. A broad definition of shift work includes anyone who works at night, including those on rotating shifts and people who work on permanent night shifts.

The health effects of shift work were another main topic of inquiry. Participants asked if there is evidence of breast cancer among short-term shift workers, and if breast cancer observed in long-term shift workers is due to the duration (e.g. number of years) of shift work, or to the latency period of breast cancer itself. Researchers stated that there are no clear answers as more high-quality studies are needed to address these complex issues. Several participants also raised a question about possible interactive effects between the psychological and physiological effects of shift work. This was identified as an area for further investigation since little research has been conducted on this topic.

With regards to interventions, there was a need to know about the factors that influence adaptation to shift work. Researchers acknowledged that there are interacting individual elements (e.g. chronotype, age, shift schedule preference) and environmental influences (e.g. seasonal variance, latitude). Shift scheduling is also a key area for adaptation. Participants asked pointed questions about the best and worst shift schedules for health, the use of training and education to promote adaptation, and the long-term viability of self-rostering. Provincial regulation of shift work was raised by participants as a potential way to mitigate its known and potential health effects.

2. Breakout sessions

In the afternoon, participants chose to attend one of three breakout sessions for the broad sectors where shift workers are commonly employed: health care, manufacturing, and public safety. The primary objective of the breakout sessions was to have interactive and constructive dialogue on the challenges and opportunities for improving the health of shift workers in each sector. A secondary aim was for participants to identify areas for further research. Each session was guided by a facilitator with extensive experience in the field. The facilitators kept everyone actively engaged in a roundtable format and encouraged different viewpoints that enriched the conversations. Sector advisors were assigned to each session in advance to provide content knowledge and perspectives on the realities of shift work. Other participants included employers, workers, researchers, occupational health and safety specialists, policy-makers, and students.

A few seed questions were developed before the symposium to help ensure that the dialogue was constructive and relevant to the symposium objectives:

- What is possible in your workplace or sector to reduce the health effects of shift work? Have these strategies been attempted? Consider the examples of interventions presented by this morning's speakers (schedule changes, self-rostering, or controlled light exposure).
- How can the challenges of implementing changes in your workplace be addressed?
- Do you see the need for any further research? If so, what interventions that you are interested in learning more about (e.g. nap rooms, melatonin)?

Facilitators were free to adapt these questions as needed and to integrate other questions that may have arisen in their session. Flipcharts and markers were provided to stimulate and record discussions.

a) Health care

The health care workshop was facilitated by Patti Boucher, the Vice-President of Preventive Services at the Public Service Health and Safety Association. Numerous representatives from the Ontario Nurses Association were present in the session.

What is possible in your workplace or sector to reduce the health effects of shift work?

- Adjusting light levels to optimize workers' health and productivity
- Providing break rooms and appropriately scheduled break times for naps and eating
- Employers and employees working together to increase awareness, education, and to compromise on the personal choice of shifts
- The "Cosmopolitan rotation" (2 days, 2 nights, 5 days off), which is well-liked by nurses who find that it allows for a personal life

How can the challenges of implementing changes in your workplace be addressed?

- Better communication between union and management about shift scheduling
- Providing 24-hour day care in some workplaces to reduce the number of young nurses who work permanent nights because of difficulties finding a shift-working babysitter
- Applying the precautionary principle for cancer while also considering more immediate health and non-health effects (e.g. quality of life, productivity)
- Introducing education about the health effects of shift work in nursing school curricula
- Creating a centralized source of research information that helps workers and employers achieve a consensus about research findings and communicate what is already known

What are your needs for further research?

- Future research should use a detailed and consistent definition of “shift work”
- With respect to shift work and health, there is the need to know more about:
 - Individual factors that may influence health effects (e.g. age, gender)
 - Associations between melatonin and cancer
 - Number of years of shift work and risk of breast cancer
 - Mental health outcomes
- Intervention research is needed to learn about:
 - Effective break designs and light exposure
 - Eliminating or reducing exposure to shift work for jobs where shift work may not be necessary
 - The short- and long-term health impact of interventions
- In addition, participants recommended:
 - More funding for large, well-designed studies with specific groups of shift workers
 - A way for organizations to share the results of their small pilot studies with the health care community
 - Studies of the effect of shift work on non-health outcomes, such as patient safety and wait times

b) Manufacturing

The manufacturing workshop was facilitated by Dr. Desre Kramer, Associate Director of the OCRC. The participants in this breakout session included one current shift worker, several former shift workers, shift work managers, and health and safety managers from unions and workplaces.

What is possible in your workplace or sector to reduce the health effects of shift work?

- Changing the timing and distribution of work over the shift, so that critical work is planned at the beginning of the shift and less intensive work is done at the end of the shift, which also facilitates a smooth shift change-over
- Checking certain health indicators, such as injury rates, to see when they occurred on a shift and changing shift schedules to minimize these health indicators
- Encouraging workers to sleep in a darkened room at home after the night shift
- Eliminating or minimizing exposure to blue wavelengths
- Providing guidelines and recommendations about the safe and effective use of melatonin to facilitate sleep

How can the challenges of implementing changes in your workplace be addressed?

- Understanding that shift work is a health and safety issue, not a labour relations issue

- Implementing provincial regulation or legislation governing shift work
- Accommodating shift schedule preferences of older and younger workers and allowing input from workers about their shift schedules
- Easy-to-read, practical knowledge about reducing the health effects of shift work
- Providing workers and their families with information, rather than only educating the employer
- Creating a workplace culture of awareness and change

What are your needs for further research?

- Examining health risks and prevention among part-time workers who work 2-3 jobs each day
- Making the business case for shift work and productivity
- Engaging workers in local research projects that are industry-specific

c) Public safety

The facilitator of this workshop was Kim McClelland, who is the Wellness Coordinator for the Toronto Police. The participants in this workshop included representatives from the Toronto Police, Toronto Fire, Toronto Emergency Medical Services, General Electric, Occupational Health Clinics for Ontario Workers, Workplace Safety and Insurance Board of Ontario, City of Toronto, and Canadian military.

What is possible in your workplace or sector to reduce the health effects of shift work?

- The Toronto Police has a comprehensive program that involves mandatory health and wellness education for all new workers; a hypertension, cholesterol, and diabetes screening program; a staff nutritionist and fitness specialists; and the possibility for a day off after the night shift
- Shift schedule changes are being implemented at the Toronto Emergency Medical Services, where shift work is recognized as a wellness issue
- Conducting research about shift lag, melatonin, and circadian rhythms at the Canadian military
- Fatigue management program for Transport Canada drivers
- Toronto Fire employees have a fatigue management program, a compressed work schedule, and gym equipment in fire halls
- Involving worker's families in awareness and prevention strategies

How can the challenges of implementing changes in your workplace be addressed?

- Conducting a cost-benefit analysis of wellness programs to obtain management buy-in
- Accounting for workers' existing knowledge base and expectations (as one participant stated, "I am the worker. I am educated. I don't need more education, I need help sleeping.")
- Educating supervisors and managers about the health effects of shift work and prevention
- Making policy changes, e.g. to regulate shift work schedules
- Developing preventive strategies that involve worker's families

What are your needs for further research?

- Shift work and health:
 - Long-term follow-up of the health effects of shift work
 - Routine screening of shift workers to track injury and disease incidence
 - Identification of the characteristics of workers who do not adapt to shift work compared to those who do adapt
- Interventions:
 - Measurement of the changes in health from an old to a new shift schedule
 - Evaluation of the effects of naps and bright light treatment

Table 1: Summary of the key themes from the breakout sessions

	Health care	Manufacturing	Public safety
<i>What is possible in your workplace or sector to reduce the health effects of shift work?</i>	Altering light levels Break rooms “Cosmopolitan” rotation Awareness & education	Adjusting workload Changing shift schedules Health promotion	Fatigue management Changing shift schedules Health promotion
<i>How can the challenges of implementing changes in your workplace be addressed?</i>	Better communication 24-hour day care Applying precaution Centralized research data	Framing shift work as a health & safety issue Worker input on schedule Synthesized knowledge	Cost-benefit of wellness Regulating shift schedules Involving families, supervisors & managers
<i>What are your needs for further research?</i>	Shiftwork & breast cancer Ideal break designs & light exposure Long-term impact of interventions	Part-time workers Business case for shift work & productivity Workplace-based research	Long-term health effects Effective naps & bright light treatments Shift schedule changes

Report-back from facilitators

At the end of the breakout sessions all participants re-convened in the main meeting room where each facilitator summarized the key points that emerged from their respective workshop. These comments generated a set of topics that were addressed in the subsequent panel discussion.

3. Panel discussion

The day ended with a panel discussion that gave all participants an opportunity to reflect and ask questions about to the research and practice of shift work interventions. The panel was chaired by Dr. Kristan Aronson from Queen’s University. The panelists included Dr. Paul Demers (OCRC), Dr. Karen Albertsen (TeamArbejdsliv/Team Working Life), Dr. Diane Boivin (McGill University), Dr. Ron Saunders (IWH), and Dr. Michel Paul (Defense Research and Development Canada). Some of the key questions from participants and answers from panelists are highlighted below.

Q: Is there evidence that demonstrates the negative health effects of light exposure in the “digital age”?

A: There have been some studies since 2010 that have examined the effects of light from tablets. It was found that using tablets in the evening reduced melatonin secretion and was associated with difficulty waking up in the morning. In the Arctic, people who used computers at night had completely suppressed levels of melatonin. With increasing use of portable technologies that cause us to be reachable at all times, there is a trend to work without boundaries and have workers who are always “on duty.”

Q: Is it possible that short-term interventions may cause long-term effects?

A: In thinking about long-term health effects, we still need more studies to ensure that interventions work effectively and are broadly applicable. This includes a better understanding about the ways through which shift work-related diseases occur. It is difficult to conclude if short-term interventions are actually beneficial, but we do know that people should try to get less “social jetlag” by avoiding large changes in their shift schedules.

Q: What needs to be done in Canada to increase the momentum for shift work research?

A: There is limited funding for prevention research, especially at the federal level. Investing in large prevention studies is essential for increasing our knowledge and understanding of how interventions affect shift workers’ health.