



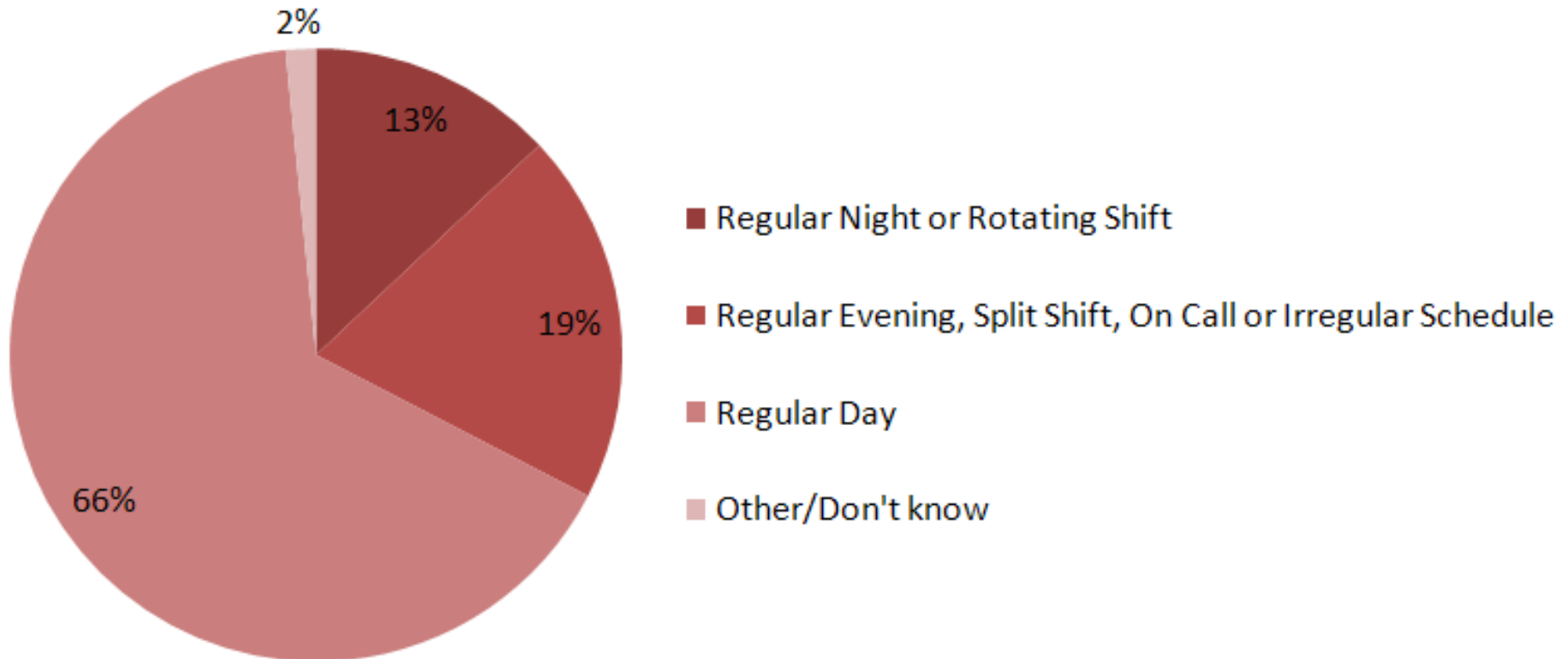
Occupational
Cancer
Research
Centre

Shift Work: An overview of health effects and potential interventions

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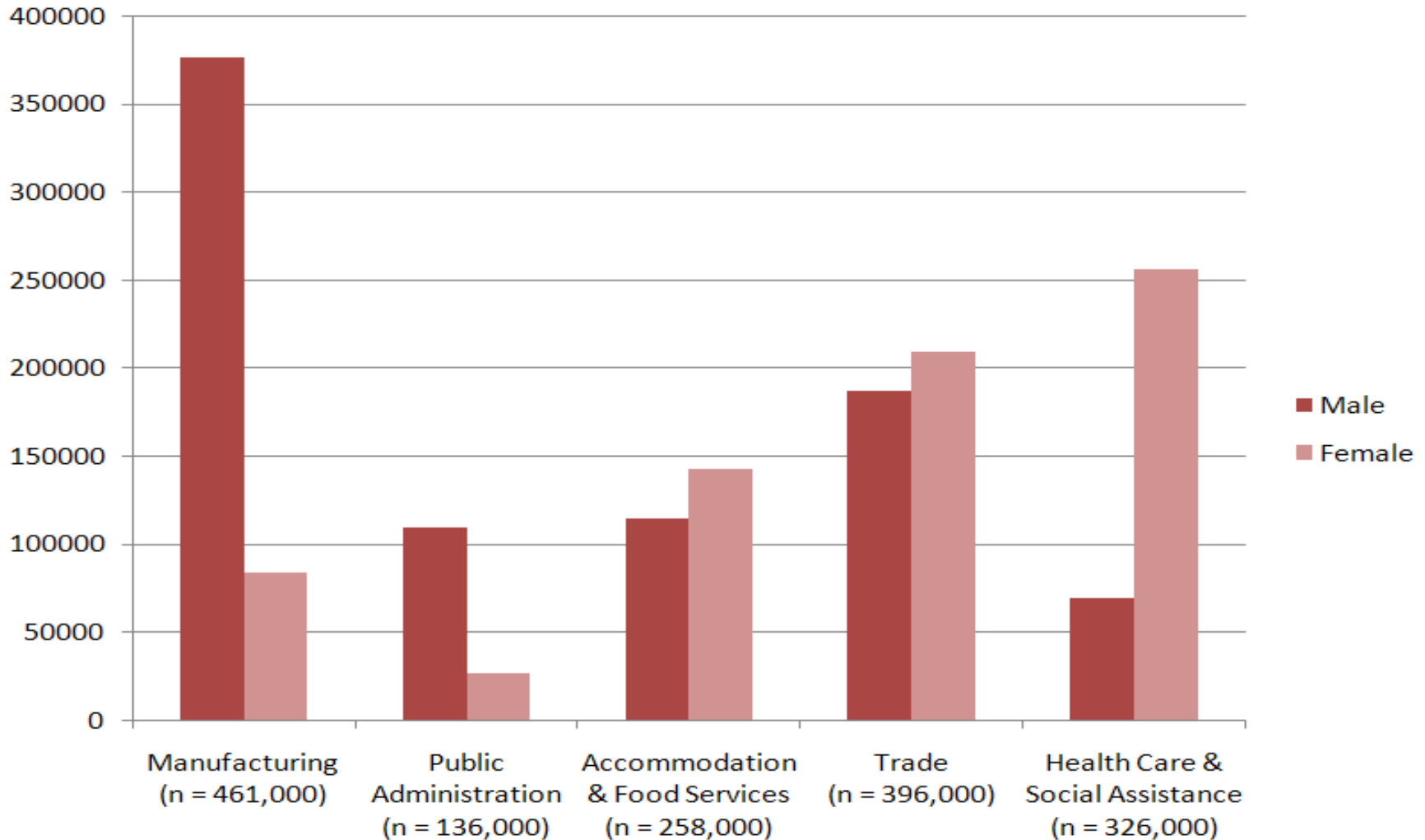


Shift Work in Canada



CAREX Canada 2012. http://www.carexcanada.ca/en/shiftwork/occupational_estimate/

Number of Male and Female Workers in Top “Shift Work” Industries



Shift Work & Circadian Disruption:

2007 IARC Working Group Conclusions

Cancer in humans

- There is *limited evidence* in humans for the carcinogenicity of shift work that involves night work.

Cancer in experimental animals

- There is *sufficient evidence* in experimental animals for the carcinogenicity of light during the daily dark period (biological night).

Overall evaluation

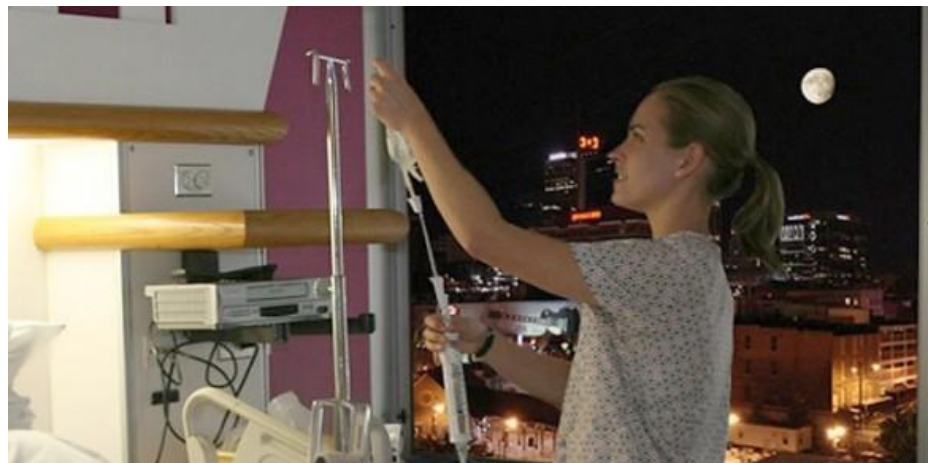
- Shift work that involves circadian disruption is *probably carcinogenic to humans (Group 2A)*.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans. *Volume 98: Painting, Firefighting, and Shiftwork*. Lyon: IARC Press, 2010.

Night Shift Nursing and Breast Cancer



- 5 studies of nurses (3 were used by IARC)
 - 2 American and 3 Nordic studies
 - All five found excesses among long-term nurses, generally after 20-30 years

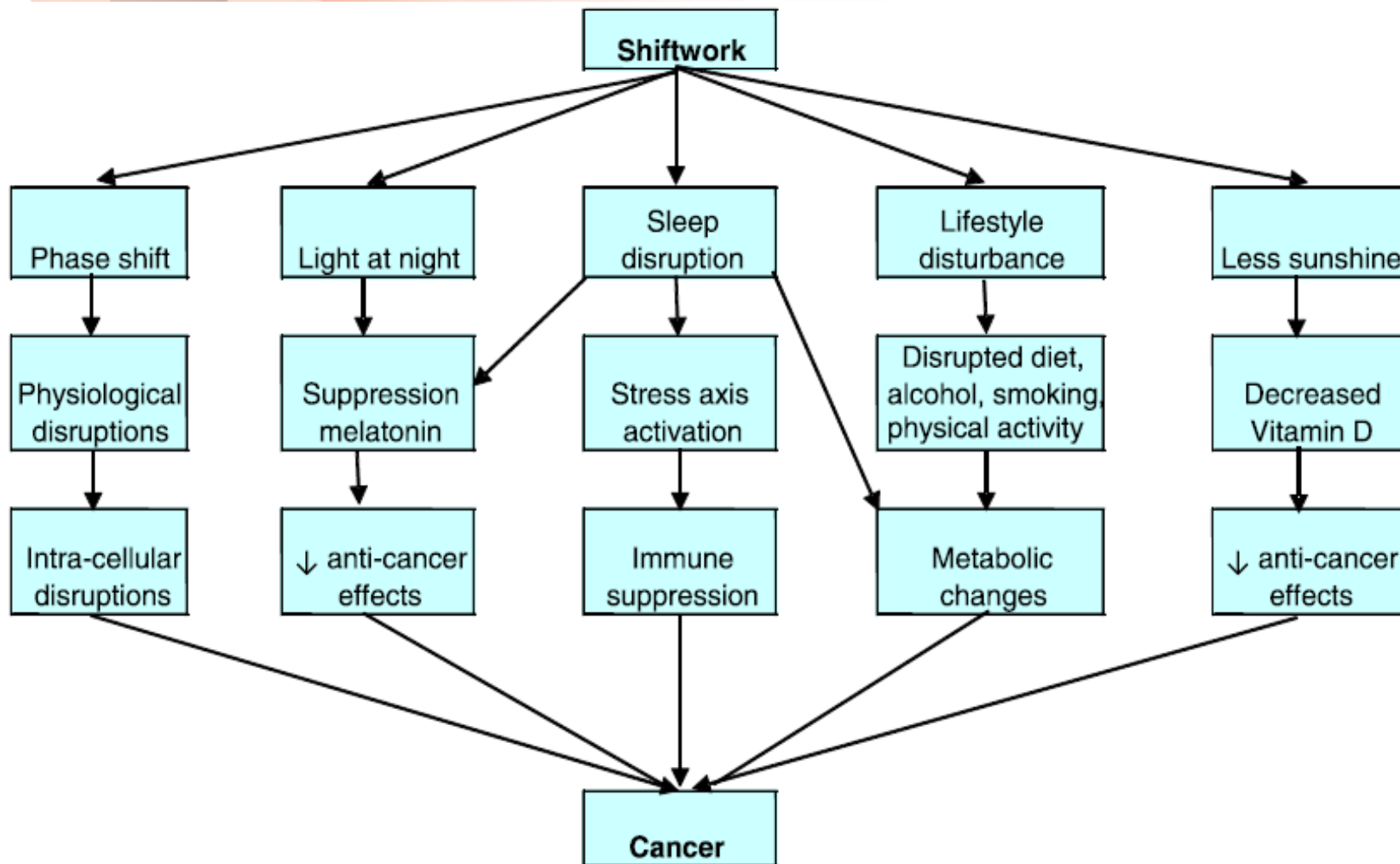


Other shift workers and cancer sites

- Studies of other night shift workers and breast cancer had mixed results
- Some positive studies for other cancer sites, including prostate, but too few studies to draw conclusions
- 9 cohort studies of flight crew initiated because of concern over cosmic radiation



How does Shiftwork Cause Cancer?



Fritschi et al. Hypotheses for mechanisms linking shiftwork and cancer. *Medical Hypotheses* 2011;77(3):430-436.

Bernardino Ramazzini (1633-1714)

DE
PRINCIPUM
VALETUDINE
TUENDA
COMMENTATIO
BERNARDINI RAMAZZINI
In Patavino Gymnasio Practicæ Medicinæ
Professoris Primarii
Serenissimo Mutinæ Principi
FRANCISCO ESTENSI
DICATA.



PATAVII, MDCCXVII.
Ex Typographia Jo. Baptistæ Conzatti,
Superiorum Permissu.

Author of the first comprehensive occupational medicine text in 1700.

In 1717 published *The Health of Princes*

“The inversion of sleep with wakefulness, much in vogue in the courts of princes, is little conducive to maintaining health”

Established Effects of Work at Night

- Fatigue
- Sickness absences
- Increased risk of injury
 - A recent Canadian study found 14% of injuries in women & 8% in men attributable to shiftwork*



* Wong et al. Shiftwork trends and risk of injury among Canadian Workers. Scand J Work Environ Health 2011;36:54-61.

Suspected Effects of Work at Night

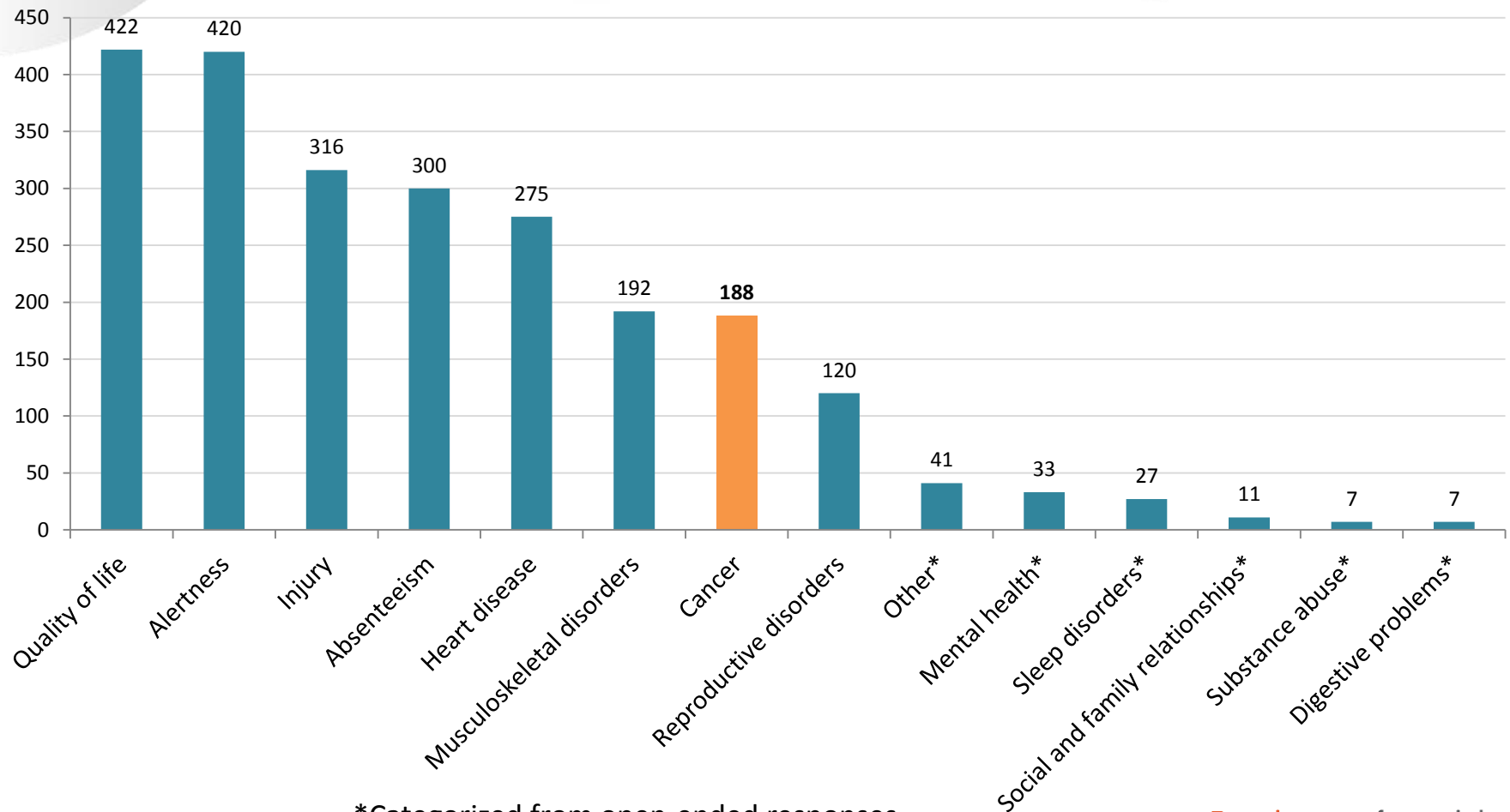
- Cardiovascular disease
 - Heart attacks, stroke, coronary events
- Gastrointestinal disorders
- Diabetes?
- Reproductive problems?
 - Pre-term delivery, miscarriage, reduced birth weight, irregular menstruation



OCRC/IWH Shift Work Stakeholder Survey

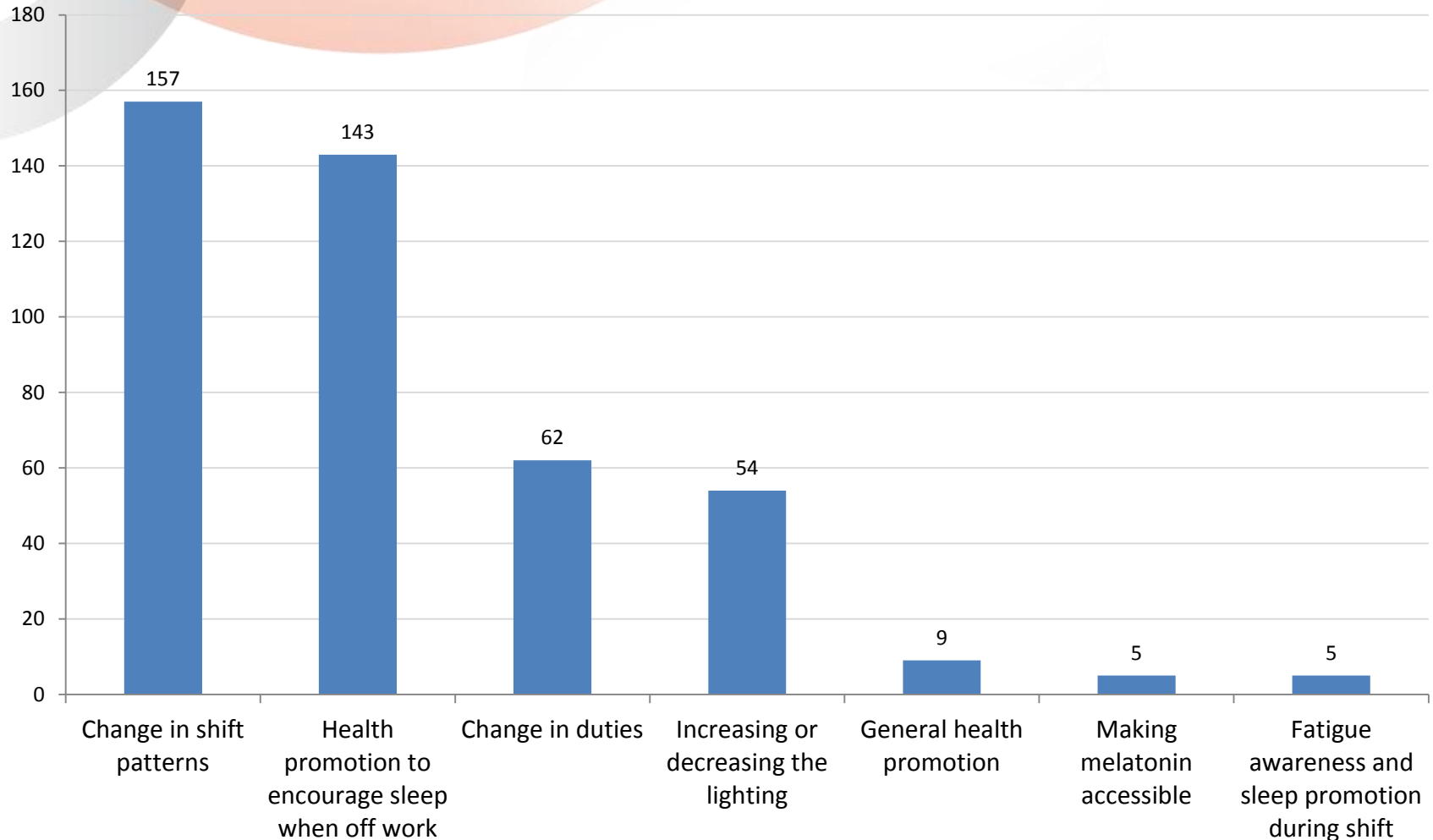
- Web-based survey conducted in fall 2011
- 517 respondents
 - 67% workers; 15% managers
 - 36% nurses (many were occupational health nurses)
 - 15% correctional officers, firefighters, paramedics, or police
 - 9% other health care workers (i.e. non-nurses)
 - 6% health and safety specialists
- 66% women

If you think shiftwork is a health and safety issue among people in your industry/union/group, what are your concerns?



*Categorized from open-ended responses

Have any attempts been made to change shift patterns or in other ways to reduce the health impacts of shiftwork in your workplace?



* 296 provided at least one response

Potential interventions



- Schedule changes
 - Direction and speed of rotating shifts
 - Lengths of shifts
 - Control over scheduling
- Controlled exposure to light and dark
 - Changes in lighting during nights and days off work
 - Use of goggles or glasses

Health Promotion Interventions



- Stimulating, varied night shift environment in terms of work tasks, social interaction, and physical activity
- Sleep hygiene advice, family counseling
- Educating management about basic circadian principles
- Naps

Drugs to promote sleep, wakefulness, or adaptation of the circadian rhythm to shift work



- Exogenous melatonin
 - Improved sleep length in some studies
 - May facilitate adaptation to long-term night work
 - More research needed
- Stimulants (e.g. caffeine, amphetamines) and hypnotics (e.g. zopiclone, nitrazepam)
 - May have short term effects
 - May pose health risks to workers and public safety



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Towards a cancer free workplace

<http://occupationalcancer.ca>