Work-Related Asthma Claims in Health Care in Ontario

APHA 2010 Session 5070.1
Nov 2010

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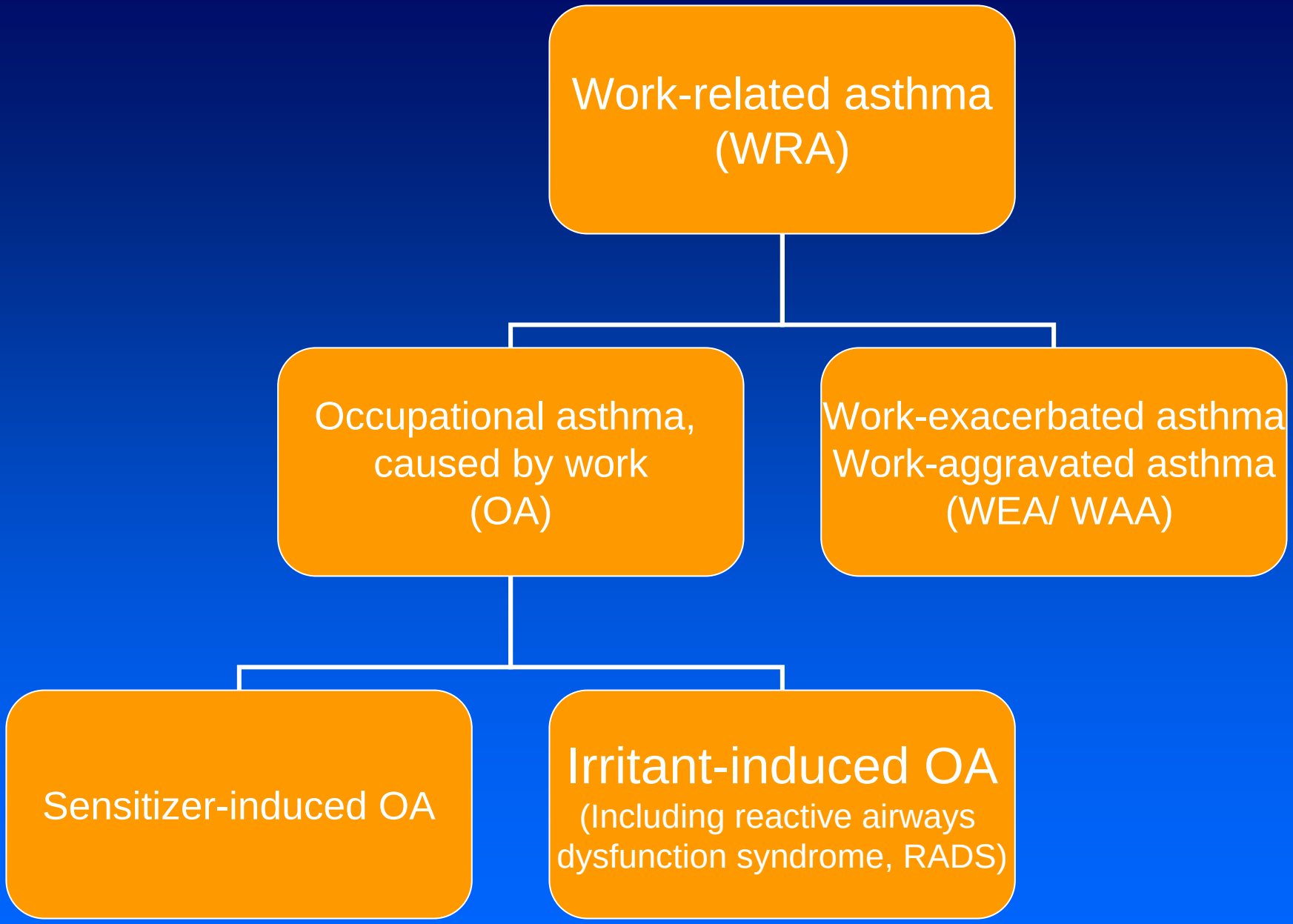
ACKNOWLEDGEMENT

- Supported by a grant from the Ontario Workplace Safety & Insurance Board Research Advisory Council

Introduction

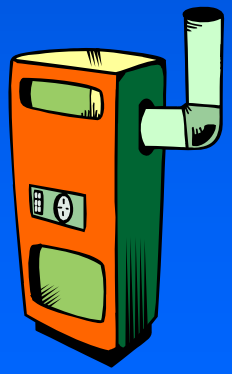
- Health of workers in health care (HC) facilities has been neglected in past
  - Focus on IDs, violence, MSK problems
  - Occupational asthma (OA) recognized:
    - Examples of sensitizers present in hospitals: natural rubber latex (NRL), glutaraldehyde, medications
  - Work-related asthma symptoms associated with reported exposures to chemical spills of processing/ developing chemicals among MRTs (radiographers) (Lissl, 2003)
  - OA is most common chronic occupational lung disorder
  - Ontario one of few jurisdictions in which Work-Aggravated or Work-Exacerbated Asthma (WAA/ WEA) is compensated



These groupings are not mutually exclusive; e.g. OA can be followed by WAA/ WEA

Common Workplace Irritants and Allergens related to WAA/ WEA

- Cleaning products
- Fumes, vapours, dusts and sprays
- Perfumes and fragranced products
- Dust, dust mites and mould
- Poor indoor air quality (inadequate ventilation)
- Outdoor pollution/smog (outdoor workers)



Other factors

- Temperature and humidity extremes
- Physical exertion

Examples of our Previous Investigations of Work-related Respiratory Problems in Health Care

- Natural rubber latex (NRL) allergy and preventive measures among health care workers (Liss and Tarlo, 2001)
- Prevalence and causes of work-related asthma among medical radiation technologists (Liss et al, 2003)
- Asthma among non-domestic professional cleaners (public buildings) (Obadia, Liss et al, 2009)

Cleaners

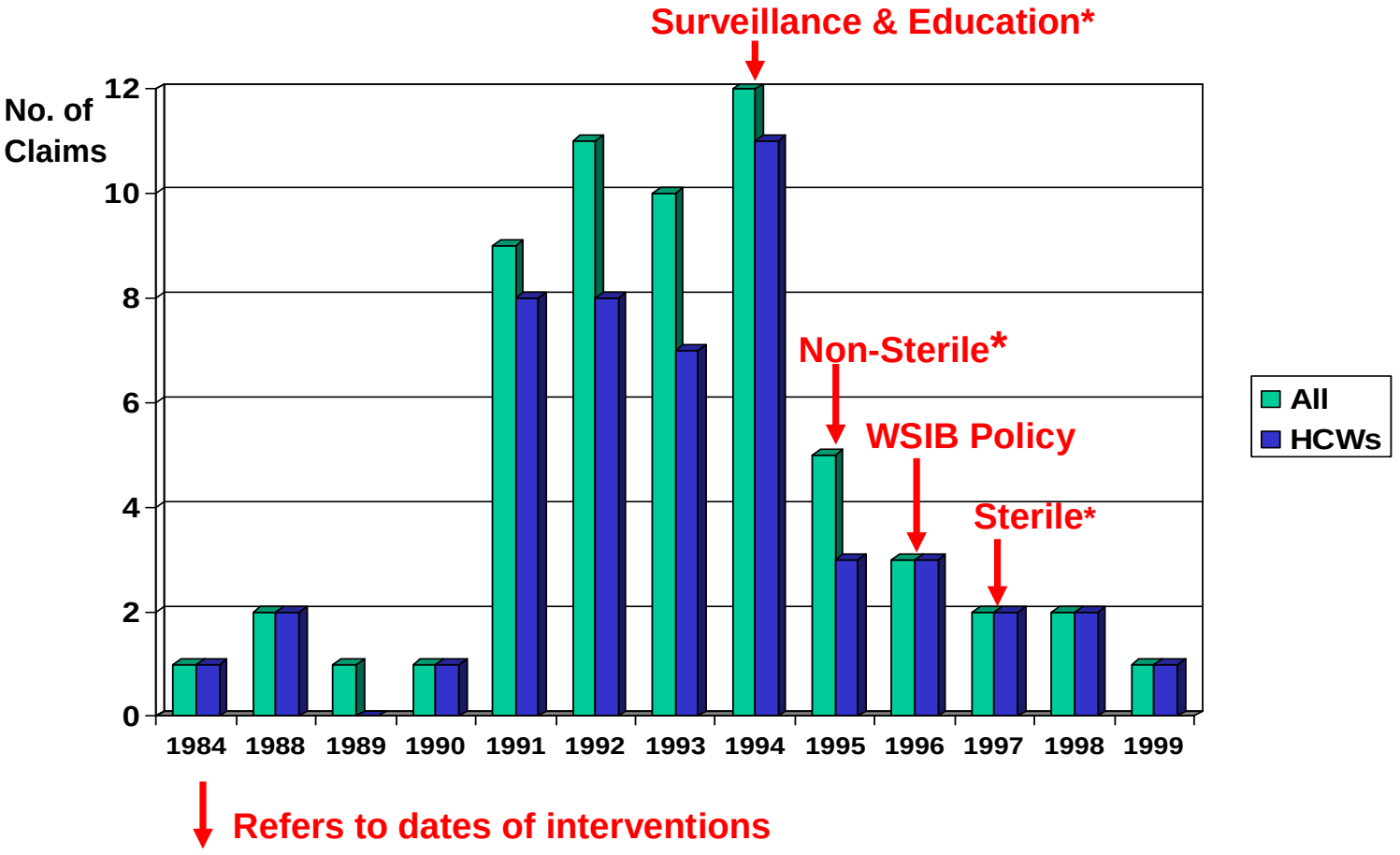
Key Sensitizers

- Cleaning products and disinfectants used in many industries
  - Schools
  - Healthcare
  - Hotel/hospitality
  - Restaurants
  - Home cleaners
- Quaternary ammonium compounds (disinfectants - benzalkonium chloride), tall oil (floor cleaner), MEA, TEA (all-purpose cleaners)

Cleaning staff also exposed to irritants from cleaning products

Our Previous Study - NRL

Allowed Claims for Asthma due to NRL according to year of "accident" and health care worker status



Refers to dates of interventions

* Based on largest hospital

Liss and Tarlo. AJIM 2001

Work-related Asthma in Health Care

- Few population-based reports among HCWs:
  - Work-aggravated (-exacerbated) asthma (WAA or WEA) rarely considered; few details on exposures
  - Past focus on HCWs only; but many other occupations in health care settings
- Karjalainen (AJRCCM, 2001): Finnish incidence
  - Slight increase in medical and nursing work (1.1-1.2)
- NIOSH study based on NHIS (Moon Bang, AJIM 2005)
  - Increased OR (1.3) for Physician-diagnosed Asthma in Health Care industry (white females only)

Occupational Risk Factors and Asthma Among Health Care Professionals

(Delclos et al. AJRCCM, 2007)

TABLE 3. ASSOCIATIONS BETWEEN OCCUPATIONAL EXPOSURES AND ASTHMA AMONG TEXAS HEALTH CARE WORKERS: FINAL MULTIVARIABLE LOGISTIC REGRESSION MODELS*

	Odds Ratio (95% CI)	
Occupational Exposure	**Reported Asthma**	**BHR-related Symptoms**
Cleaning agents		
Used in patient care	1.60 (0.18-14.16)	0.79 (0.34-1.78)
Instrument cleaning	2.22 (1.34-3.67)	1.26 (0.95-1.67)
Surface cleaners	2.02 (1.20-3.40)	1.63 (1.21-2.19
Latex		
Pre-1992	2.04 (0.87-4.75)	1.04 (0.72-1.51)
1992-2000	2.17 (1.27-3.73)	1.26 (0.93-1.72)
After 2000	0.42 (0.13-1.29	0.61 (0.34-1.11)
Aerosolized medications	1.72 (1.05-2.83)	1.40 (1.06-1.84)
Adhesives/solvents/gases		
Used in patient care	1.68 (0.99-2.86)	1.65 (1.22-2.24)
On surfaces	0.59 (0.26-1.33)	0.98 (0.64-1.51)
Miscellaneous	0.53 (0.32-0.88)	0.78 (0.60-1.01
Spill at work	1.23 (0.53-2.87)	2.02 (1.28-3.21)

Work-related Asthma in Health Care

- Rask-Andersen and Tarlo (AJRCCM, 2007)
  - Cleaning products previously associated with prof cleaners, but less recognized among health care professionals – emphasizing importance of bystander exposures
  - Illustration of mixed exposures that may occur in many work settings (exacerbating factors as well as sensitizers)
- Exposure to substances and new-onset asthma

  (Kogevinas et al. Lancet, 2007) – ECRHS –
  - Prospective population-based study
  - Nursing associated with excess risk of asthma: adjusted RR 2.2 (1.3-4.0; p=0.007)

Objectives of Current Study

- As part of a larger review of OA and WAA claims underway in Ontario:
  - To examine the frequency of claims for OA and WAA allowed by Workplace Safety & Insurance Board (WSIB; Ontario compensation board) in Health Care industry during 5-year period (1998-2002)
  - To determine:
    - Relative frequency of causative agents for OA/ WAA
    - Relative frequency of occupations for OA and WAA
  - To follow-up trend over time for OA claims due to NRL since previous report

Methods

- All WSIB compensation claims allowed in 1998-2002 for industry = HC were reviewed
- Data in WSIB database obtained using standardized abstraction form for each subject.
- Data obtained as in previous studies:
  - Demographics, exposure agent, history of previous asthma sx before starting job, occupation, clinical diagnosis made by assessing physician, WSIB decision, objective tests.
- Definitions:
  - OA: Absence of pre-existing asthma
    - Persistence of work-related symptoms
    - Presence of sensitizer and/ or objective tests to support OA
  - WAA: Presence of pre-existing asthma (present before starting a job for which WSIB claim initiated)
    - Exacerbation of symptoms at work

Results – Allowed Claims for WAA and OA, 1998-2002

- Greater proportion in HC with WAA (18%) vs OA (5%)
  - (OR 4.1, 95% CI 1.6-11.6; p=0.002)
- HC was most frequent industry for WAA in province; rate of WAA was 2.1 times greater than in rest of provincial workforce (p<0.0001)
- Predominantly female for both WAA (106/ 9) and OA (5/ 0)
- WAA claimants younger than OA (42 ± 10 vs 53 ± 4; p=0.13)
- Time off work longer for OA (mean 310, median 108 d) than WAA (8.3, 1 d) (p=0.01)

	Ontario	Health Care
WAA	645	115
OA	99	5
Total	744	120

Results: OA Claims, 1998-2002

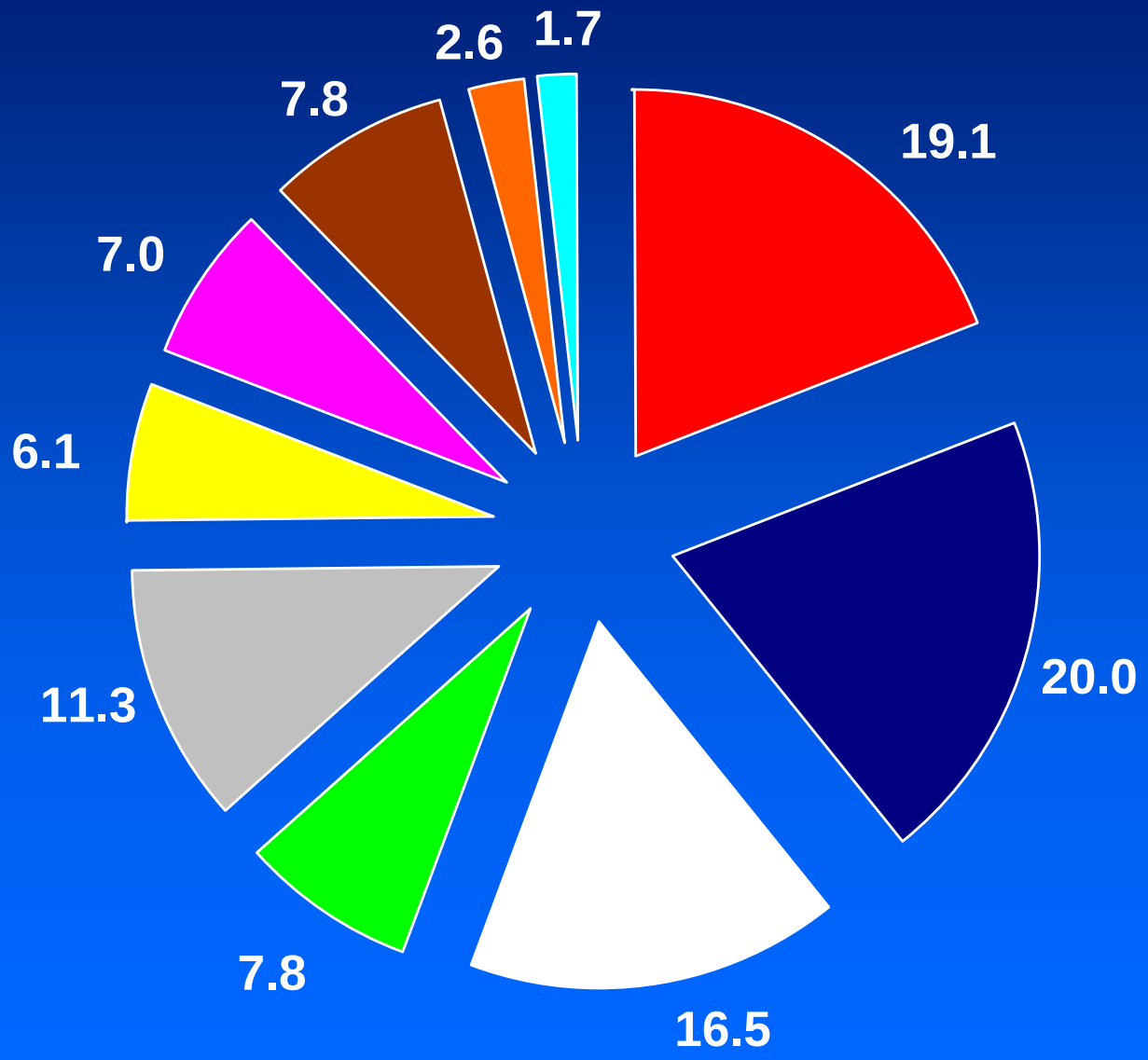
Case (Yr)	Occupation/ Setting	Agent	Evidence Category
1 (2000) *	RN/ Hospital	Nat rubber latex	Definite
2 (2000)	Radiological technician/ Medical lab	Glutaraldehyde	Possible
3 (2001	Radiological technician/ Hospital	Glutaraldehyde (photographic chemicals)	Definite
4 (1998) *	RN/ Hospital	Nat rubber latex	Definite
5 (1998)	Radiation therapy/ Hospitals	Glutaraldehyde	Definite

- * Unclear date of onset of sensitization/ symptoms: Previously worked > 10 years prior to date of "accident".

Results: WAA - Occupations

JOBS	N (%) [Total = 115]
Registered nurses	34 (29.6)
Reception/ clerk/ telephone operator)	13 (11.3)
Social workers	10 (8.7)
Nursing attendants/ aides/ assistants	10 (8.7)
Dietary/ kitchen	9 (7.8)
Cleaner/ housekeeping	7 (6.1)
Medical (lab) technician/ technologist	4 (3.5)
Youth workers	4 (3.5)
Nursing supervisor/ case manager/ team leader	4 (3.5)
Homemaker/ health care aide	4 (3.5)
Radiological technologist	3 (2.6)
Respiratory technician	2 (1.7)
General labourer	2 (1.7)
Personal service workers	2 (1.7)
Miscellaneous	7 (6.1)

Frequencies of Exposure Agents in WAA Group (%) in Health Care Industry



Conclusions

- During 1998-2002, Health Care industry represented important proportion of total provincial claims for Work-aggravated asthma (WAA)
  - Rate of allowed WAA claims > 2x rest of province.
- Other occupations in HC facilities besides (classical) RNs/ HCWs were affected
- Conversely, HCWs frequently associated their condition (for WAA), with cleaning agents and other (irritant) exposures not typically associated with HC-related tasks (bystander?)
- Observed OA incidence due to NRL is consistent with decline observed by us previously and with time windows reported by Delclos (2007)

Occupational exposures and asthma among health care professionals

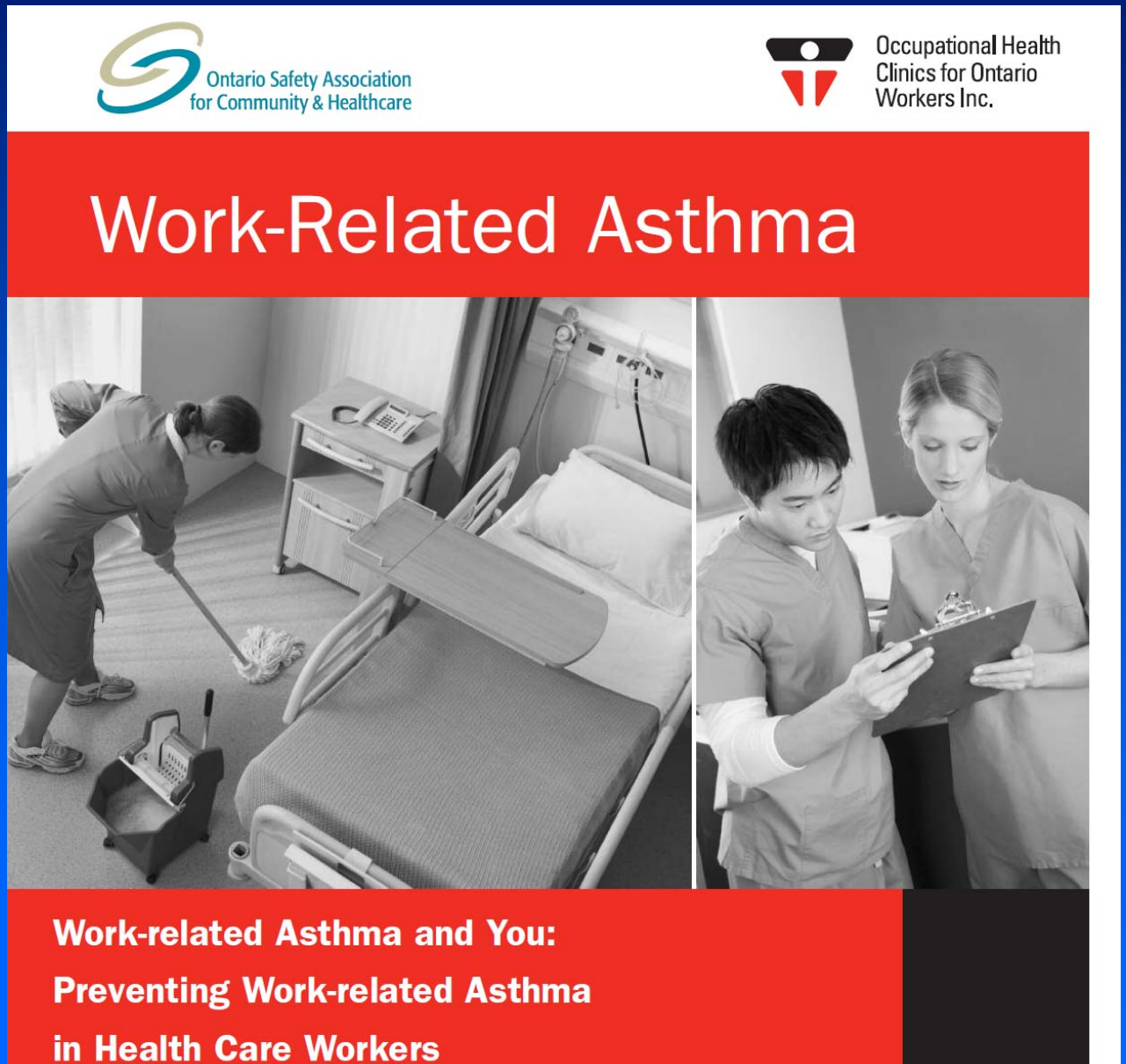
- Occupational exposures to cleaning substances, medical instrument cleaning, pre-2000 use of powdered gloves and use of adhesives/ solvents are related to reported asthma or asthma-related symptoms among nursing/ HC professionals
- Results support adopting an integrated approach towards reducing workplace exposures among nursing/ HCWs (Arif 2009)
  - [substitution of latex gloves has already reduced risk of asthma]
  - Reducing exposure to cleaning products and disinfectants by substituting with “green chemicals” or using better personal protective measures is warranted.
  - New association found between use of adhesives/ solvents and new-onset asthma or BHR symptoms deserves further research.

Key Messages

Work-related asthma is largely preventable

- Early recognition and proper management are critical
- Workplaces should implement comprehensive prevention strategy
  - Exposure control, training & education, medical surveillance as required, management

Ontario Resources: Booklet and Fact Sheets



ASTHMA PLAN OF ACTION

Ontario Resources: Booklet and Fact Sheets

Ontario Safety Association for Community & Healthcare

Occupational Health Clinics for Ontario Workers Inc.

Work-related Asthma in Health Care: Recognition and Prevention

Asthma is a common lung disease that makes breathing difficult. It can affect your ability to work and your overall quality of life. When asthma is not well controlled, it can even threaten your life. If you work in health care, you are potentially at risk for developing work-related asthma.

What is work-related Asthma?

When asthma is caused or triggered by breathing in one or more substances in the workplace, it is called "work-related" asthma. There are two types of work-related asthma: *occupational asthma* (OA) and *work-aggravated asthma* (WAA).

Occupational asthma occurs when a substance at work *causes* the worker's asthma. Table 1 lists some of the substances in health care that can cause OA.

Work-aggravated asthma takes place when a worker already has asthma and it worsens because of irritants or other exposures/factors in the workplace. Irritants include dust, smoke, fumes, sprays, and perfumes and scented products. Cold temperatures, dry air or exertion at work can also aggravate asthma.

Table 1: Some Agents that Cause Occupational Asthma In Heath Care

Agent	Workers at Highest Risk
Natural rubber latex	All workers, particularly those who wear powdered natural rubber latex gloves
Glutaraldehyde	Radiographers, nursing staff [1] (in particular, endoscopy nurses)
Quaternary ammonium disinfectants and other disinfectants (e.g., chloramine T and ethylene oxide)	Nursing staff, housekeeping staff and any other staff involved in cleaning or exposed to freshly cleaned areas
Proteolytic enzymes	Pharmacists and pharmaceutical technicians, laboratory technicians, respiratory therapists, nursing staff
Formaldehyde	Radiographers, laboratory technicians, morgue attendants and technicians, researchers, doctors

In addition to agents that can cause occupational asthma (Table 1), some *irritants are common triggers* of work-aggravated asthma in health care workers. The most common are:

- perfumes and strongly scented personal care products
- cleaning products, and
- other chemicals (e.g., glues and solvents).