Occupational and Environmental Medicine

Recognizing Occupational and Environmental Hazards

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Faculty/Presenter Disclosure

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  - None

Mitigating Potential Bias

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- The information presented in this program is based on recent information that is explicitly “evidence-based”.

- This Program and its material is peer reviewed and all the recommendations involving clinical medicine are based on evidence that is accepted within the profession; and all scientific research referred to, reported, or used in this CME/CPD activity in support or justification of patient care recommendations conforms to the generally accepted standards

Learning Objectives

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By the end of this session, participants will be able to:

1. Describe the common types of occupational hazards
2. Identify rules and regulations that may apply to the occupational exposure of an individual worker
3. Develop questions that will help to better understand a worker's occupational exposures
4. Understand where a worker or health care provider can look for support on questions of workplace exposure

Occupational Disease is Common

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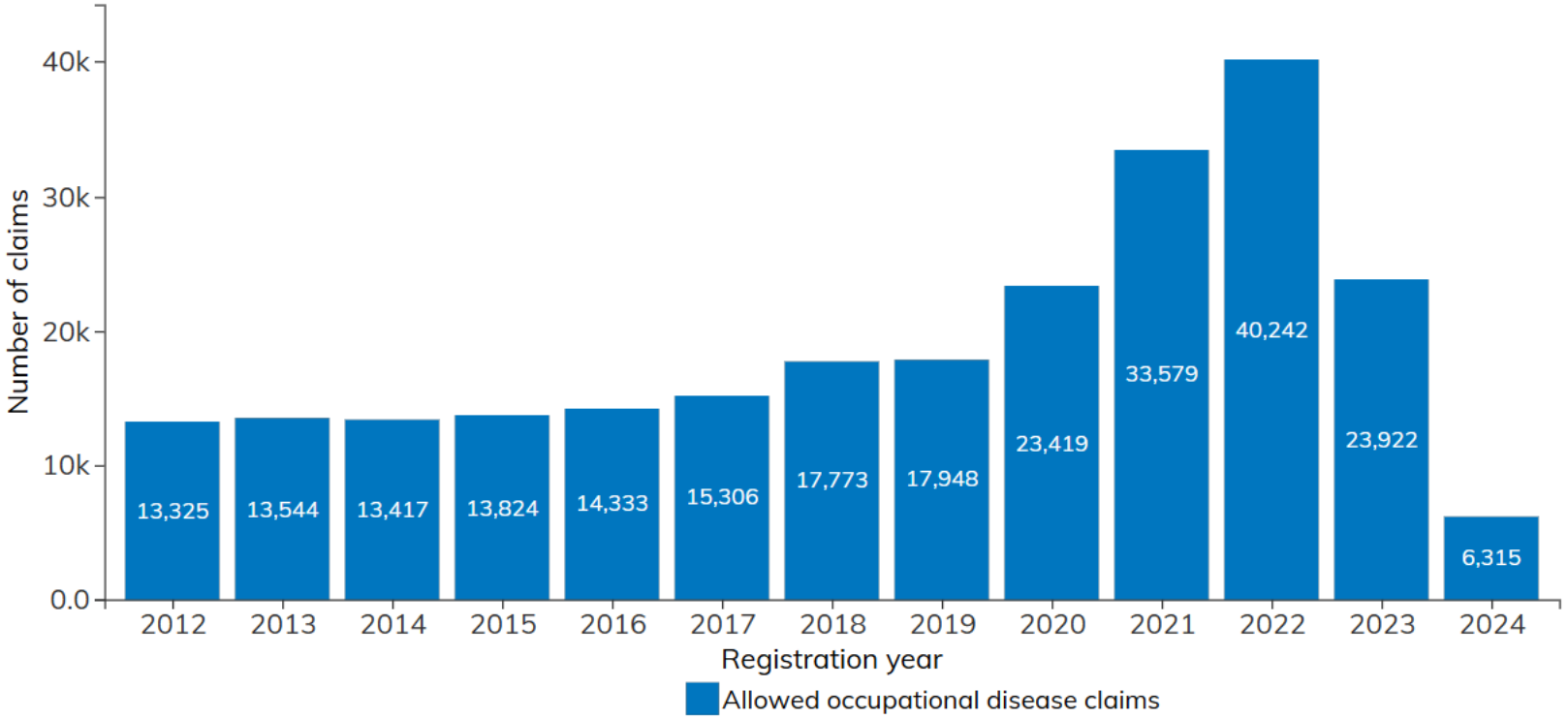

WHSC WORKERS HEALTH & SAFETY CENTRE

Training for What Matters Most

https://safetycheck.onlineservices.wsib.on.ca/safetycheck/explore/provincial/SH_12/od?lang=en

Challenge of Occupational Illnesses

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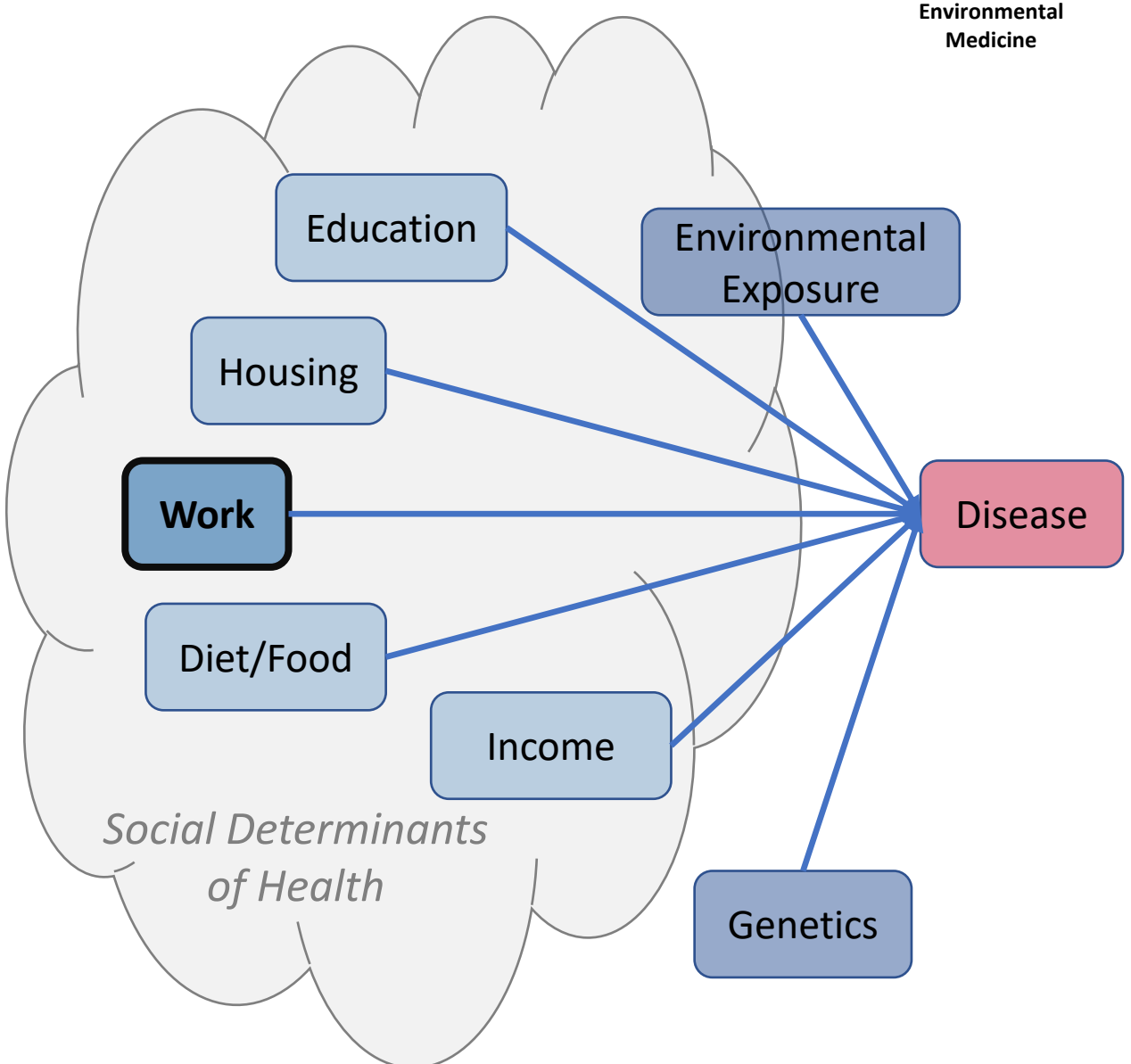
Most occupational illnesses are multifactorial

- *Some notable exceptions include: mesothelioma, pneumoconioses named for causal exposure*

Identifying causal exposure can be difficult

Many clinicians did not receive training in occupational hygiene or exposure science

→ Occupational Hygienists have this expertise



What is Occupational Hygiene?

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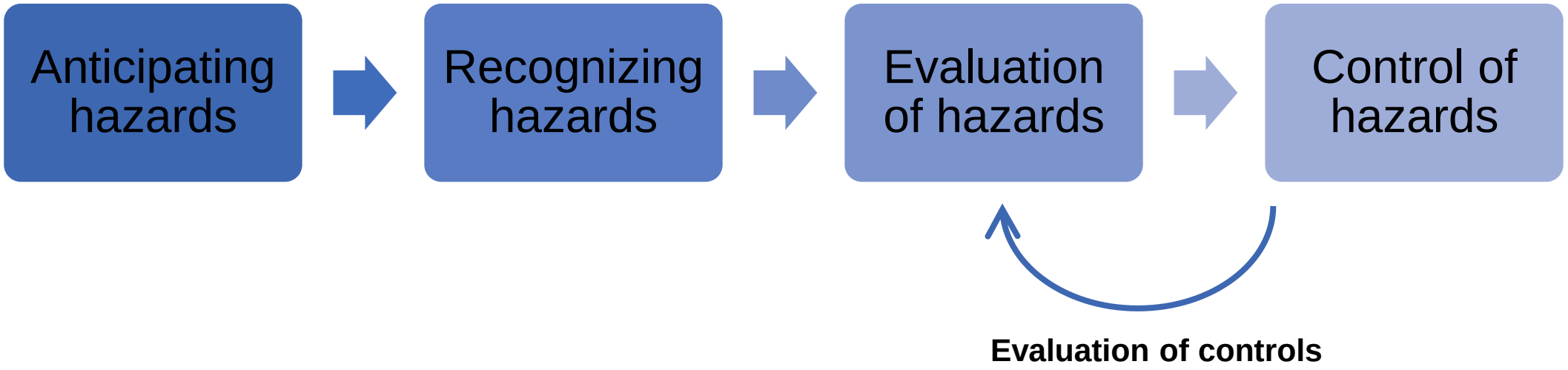
"*the discipline of **anticipating, recognizing, evaluating and controlling** health hazards in the working environment with the objective of protecting worker health and well-being and safeguarding the community at large*"

~ Canadian Registration Board of Occupational Hygiene



Occupational Hygienists

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- Two common North American professional designations
  - ROH, CIH
- Employed in a variety of settings
  - Industry, compensation, government, consulting, research etc.
- **Most workplaces do not have a dedicated hygienist**
- Avenues for accessing occupational hygiene expertise?
  - Joint health and safety committee (or health and safety rep)
  - Company hygienist, private consultants
  - Workers: Occupational Health Clinics for Ontario Workers
  - Employers: Health and Safety Associations as part of the Ontario Health and Safety System

Important member of an occupational health team

What are some exposures or hazards that people may encounter at work?

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Answers in chat

Hazard Categories, with examples

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Chemical	*Vapours, dusts, gases, fumes*
Biological	*Influenza, COVID-19, mold and fungi, bacterial infections*
Physical	*Noise, vibration, radiation*
Ergonomic	*Awkward postures, repetitive motions, heavy lifting*
Psychological	*Job demands, job control, interpersonal relations*

Routes of Chemical & Biological Exposure

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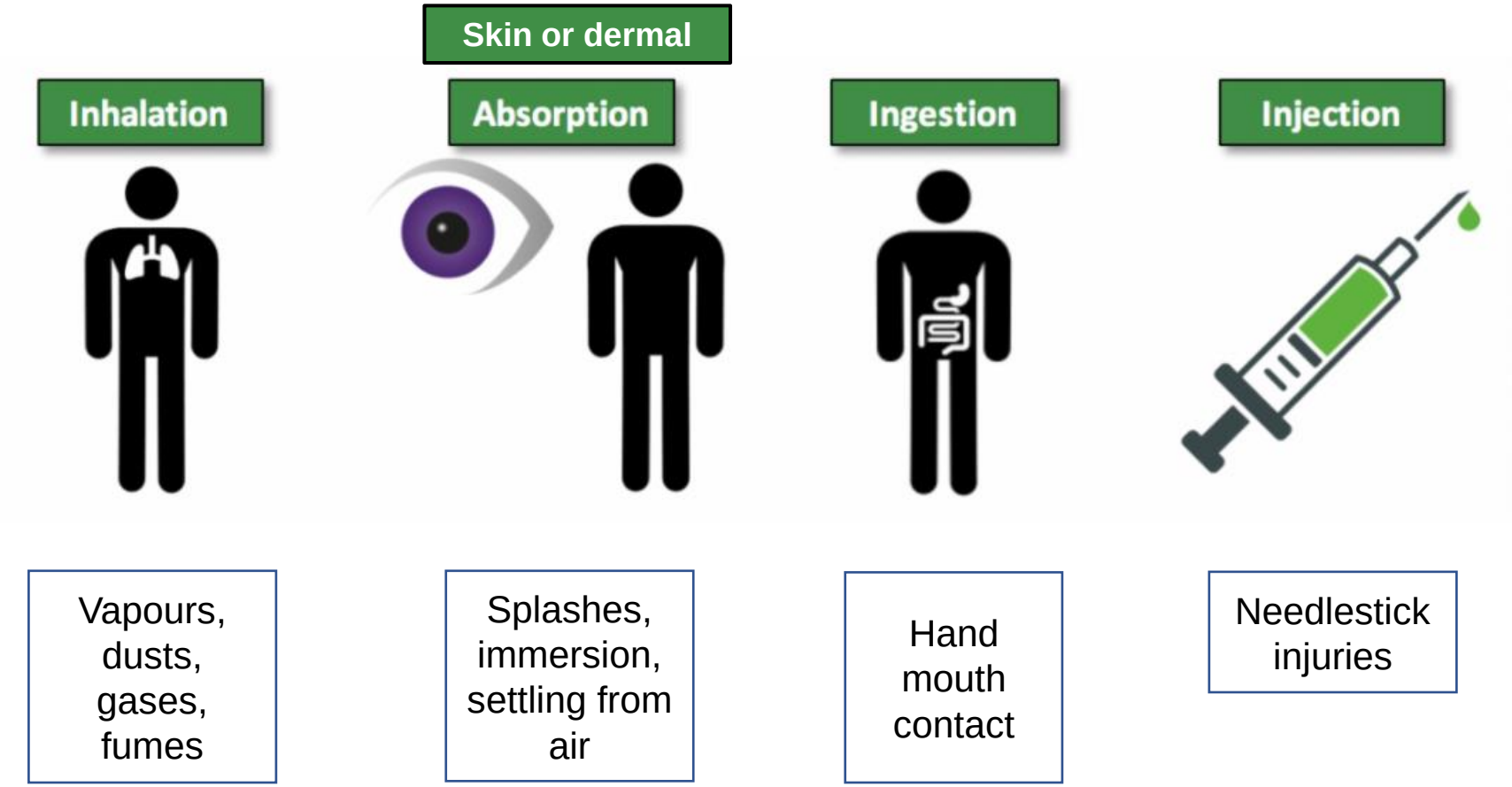

Image modified from: U of North Texas Risk Management

Common Occupational Diseases

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Disease	*Exposures*
Noise induced hearing loss	• Noise (need to raise voice to be heard)
Contact dermatitis (irritant, allergic)	• Wet work (including excessive handwashing, occlusive gloves), chemicals
Mental health disorders	• Job stress, interpersonal stress, demand-control imbalance
Asthma (new onset and exacerbations)	• Isocyanates, flour, animals and other allergens or irritants
COPD	• Vapours, dusts, gases, fumes
Musculoskeletal disorders	• Repetitive movements, awkward postures, inadequate rest periods
Cancer (e.g., skin, lung)	• Outdoor work (solar UV), asbestos, diesel engine exhaust, respirable silica

Modified from: J Bepko and K Mansalis Am Fam Physician. 2016 Jun 15;93(12):1000-1006 and M Foulis (Oct 2020) Canadian Occupational Safety Magazine [online].

Common Occupational Diseases

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Disease	*Attributed to Work (Attributable Fractions)*
Hearing loss in adults	• 7-21% (Nelson et al. 2005)
Asthma	• ~15% (ATS Statement 2019)
COPD	• ~14% (ATS Statement 2019)
Lung cancer	• ~8% from asbestos; ~2% from diesel; ~2% from silica (Occupational Burden of Cancer in Canada 2019)
Skin, non-melanoma	• ~6% from solar UV (Occupational Burden of Cancer in Canada 2019)

Modified from: J Bepko and K Mansalis Am Fam Physician. 2016 Jun 15;93(12):1000-1006 and M Foulis (Oct 2020) Canadian Occupational Safety Magazine [online].

Why Does Identifying Exposure Matter?

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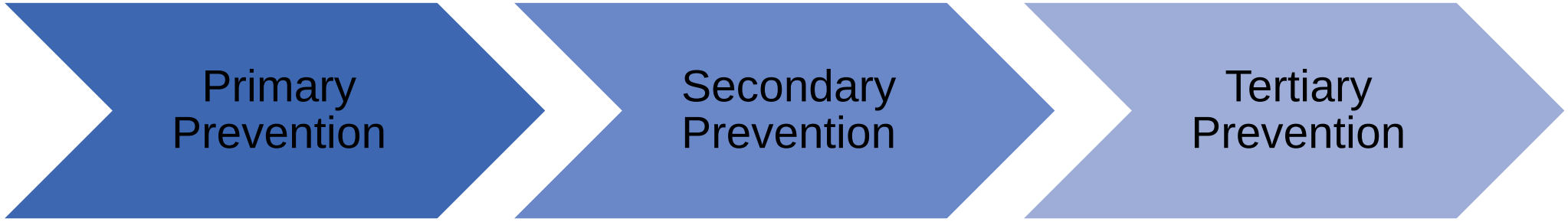
Support disease recognition (workers and clinicians)

Support prevention activities

- May impact compensation
- May impact return to work
- May help other exposed workers in similar jobs



- Eliminating or reducing exposure before disease occurs
- Identifying early stages of disease among workers with exposure
- Ensuring appropriate treatment and compensation for workers with disease

Collaboration between Occupational Hygiene and Medicine

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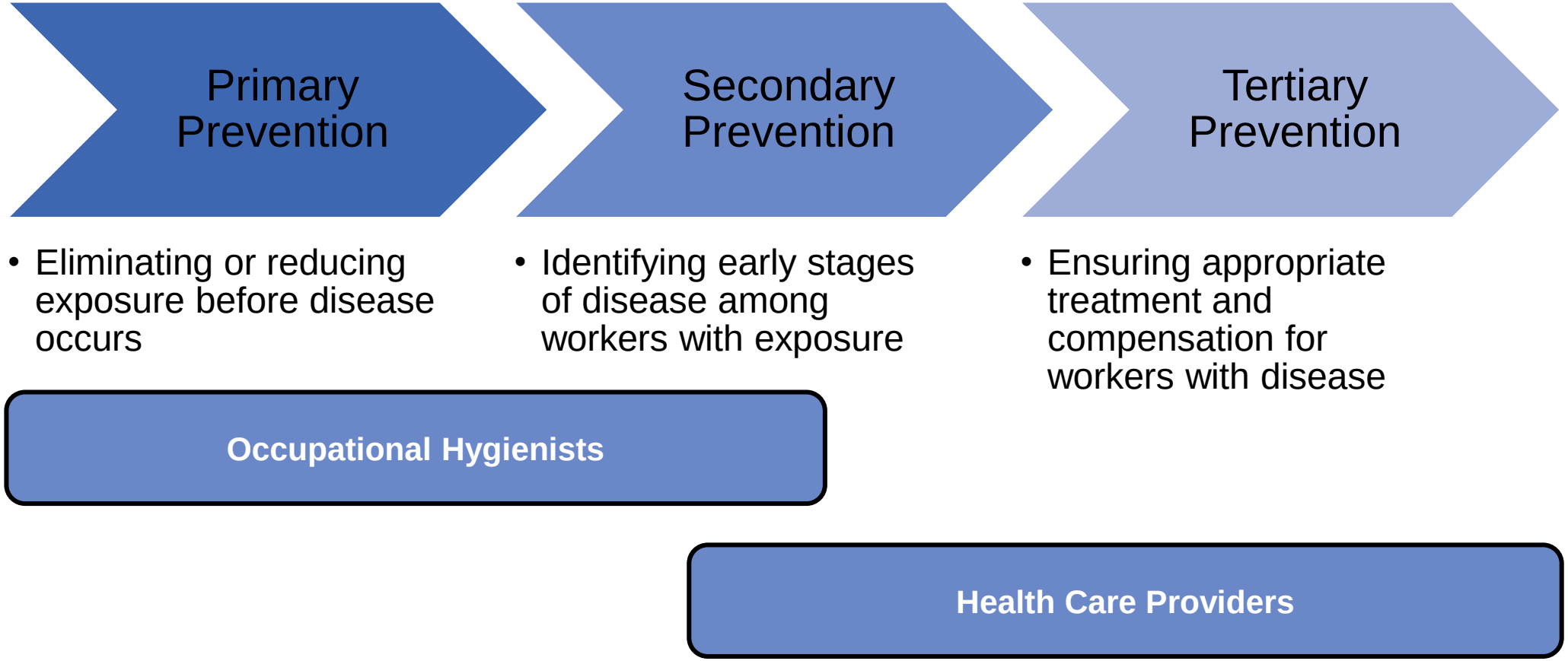

Hierarchy of Controls = Primary Prevention

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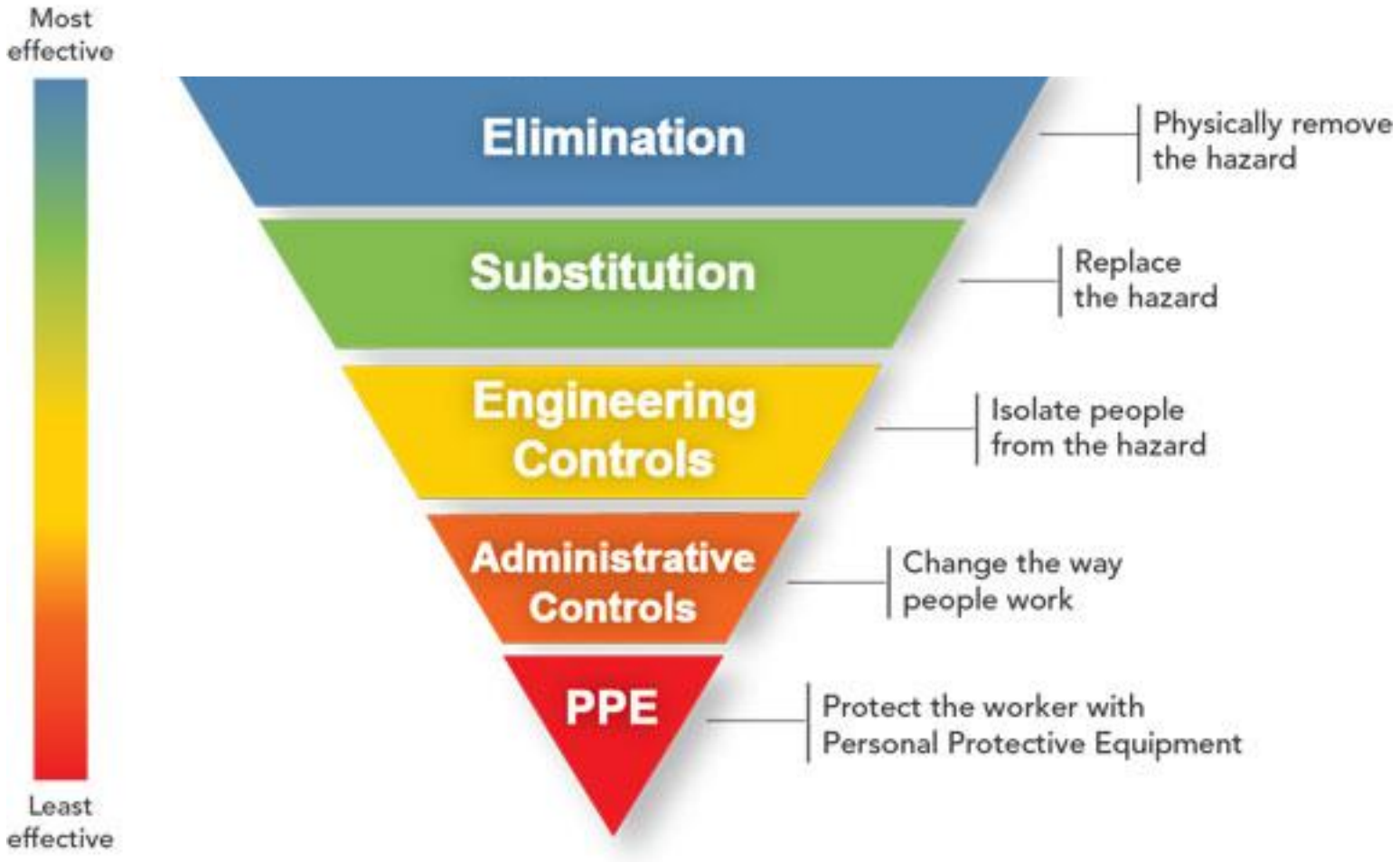

Occupational Exposure Limits (OELs)

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One policy tool for preventing exposure

Theoretically a level at which most workers can be exposed for a normal work week over an average working life without developing illness

But,

- Generally set with a particular outcome in mind, may not be protective for all health outcomes
- Can only be set when there is sufficient evidence
- Not regularly updated, may be outdated
- Not available for many (most?) exposures
- Not harmonized across Canada

How are Exposures Regulated in Ontario?

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- Federally regulated workers
  - Canada Labour Code
  - Adopts recommendations from the American Conference of Governmental Industrial Hygienists (ACGIH)
- Provincially regulated workers
  - Ontario Occupational Health and Safety Act
  - Use the American Conference of Governmental Industrial Hygiene (ACGIH) as a starting point
  - Periodic public consultation
  - Adoption of ACGIH limits is not automatic

Examples of federally regulated sectors:

- Air transportation
- Road, marine and rail transportation that crosses provincial or international borders
- Banks
- Grain elevators
- First Nations band councils
- Most federal Crown corporations
- Radio and television broadcasting
- Telecommunications
- Uranium mining/processing
- Atomic energy

Identifying Exposures in the Workplace

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- Identify processes, tasks, materials
- Identify potential health hazards associated with processes, tasks, materials
- Compile available information (e.g., measurement data, claims, complaints, regulatory requirements)
- Prioritize hazards for further or ongoing assessment
- Implement prevention measures where needed, and reassess periodically

Identifying Exposures in Clinical Setting

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- Work with the worker
- Use common/generic terms initially
    - Vapours, dusts, gases, fumes, chemicals, radiation, loud noise
- Use product names, not chemical names
- Consider whether they can perceive the exposure
    - Noise – needing to raise your voice
    - Dust – visible
    - Chemicals – odour thresholds vary

Collecting an Occupational History

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- Critical step in recognizing occupational illnesses
- What's in an occupational history?
  - Job title
  - Job tasks
  - Industry of employment
    - Welder in small auto shop versus welder in pulp and paper mill
    - Nurse in operating room versus nurse in public health unit
  - History and progression of employment (long latency diseases)
  - Hobbies, second jobs, volunteer work

Tools available:

- *Occupational History Recording Tool (ECHO OEM)*
- *Tiered approach (Newman 1995)*
- *WHACS mnemonic (Blue et al. 2000)*

Collecting Additional Exposure Information

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- Information on workplace process
  - What is done/made/produced? (and from what?)
- Review Safety Data Sheets (SDS)
  - Available from workplace, manufacturer and/or supplier (sometimes online)
  - Exemptions? Personal use, proprietary information
- Consider if controls are in place (including personal protective equipment (PPE))
  - But in place does not necessarily = effective
- Any Joint Health and Safety Committee involvement on the issue?
- Any co-workers with similar exposures or concerns?

Where to Get Support?

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- Workplace
  - Joint health and safety committee (or health and safety rep)
  - Company hygienist, consultants
- Workers: Occupational Health Clinics for Ontario Workers
- Employers: Health and Safety Associations as part of the Ontario Health and Safety System
- Consultant listing from professional organizations
  - Ontario
  - Canada

Take Home Messages

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- Workplace exposures:
  - Can contribute to the development of many common diseases
  - Vary by industry and job
  - Regulations may not cover all exposures, or may not be up to date
- Taking an occupational history can help identify workplace exposures of concern
- Occupational hygienists can help you navigate questions of exposure

Thank you

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Additional Resources

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More on taking an occupational history:

- Occupational History Recording Tool
- Occupational Medicine Clinical Snippet August 2016: Taking an Occupational History

Information and worker supports in Ontario:

- Occupational Health Clinics for Ontario Workers

General OHS information:

- International Labour Organization Encyclopedia of Occupational Health and Safety
- Canadian Centre for Occupational Safety and Health (CCOHS)
- US National Institute for Occupational Safety and Health (NIOSH)
- UK Health and Safety Executive (HSE)

WHACS Mnemonic

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What do you do?

How do you do it?

Are you concerned about any exposures on or off the job?

Co-workers or others with similar symptoms?

Satisfied with your job?

Blue et al. J Occup Environ Med. 2000 Nov

Tiered Approach

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1. The Quick Survey

Chief Symptom and History of Present Illness

- "What kind of work do you do?"
- "Do you think your health problems are related to your work?"
- "Are your symptoms better or worse when you're at home or at work?"

Review of Systems

- "Are you now or have you previously been exposed to dusts, fumes, chemicals, radiation, or loud noise?"

2. Detailed Questioning Based on Initial Suspicion

Self-Administered Questionnaire for All Patients (Table 1)

- Chronology of jobs
- Exposure survey

Review of Exposure, with the Questionnaire as a Guide

- More about the current job: description of a typical day
- Review of job chronology and associated exposures

Examination of the Link between Work and the Chief Symptom

- Clinical clues (Table 2)
- Exploration of the temporal link in detail
- "Do others at work have similar problems?"

Figure 1. The Initial Clinical Approach to the Recognition of Illness Caused by Occupational Exposure.

Newman LS. Occupational illness. N Engl J Med 1995;333:1128-1134