Understanding and preventing occupational diseases

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28 November 2014

Centre for
Research Expertise
in Occupational Disease

Research that makes a Difference

UNIVERSITY OF
TORONTO

St. Michael's
Inspired Care.
Inspiring Science.

Disclosures

Funding:

- Ontario Ministry of Labour funds Centre for Research Expertise in Occupational Disease
- Ontario Workplace Safety and Insurance Board funds the Occupational Disease Specialty Program

Outline

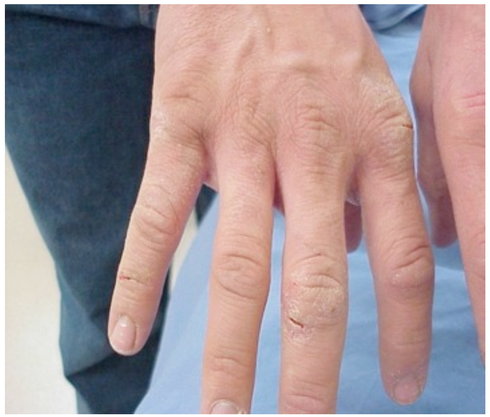
- What is occupational disease?
- How common are occupational diseases?
- Under-recognition and under-reporting
  - Health care
- Prevention
  - Awareness
- Use occupational skin disease as example

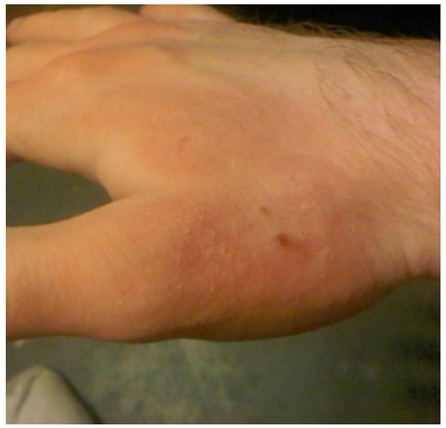
My Setting

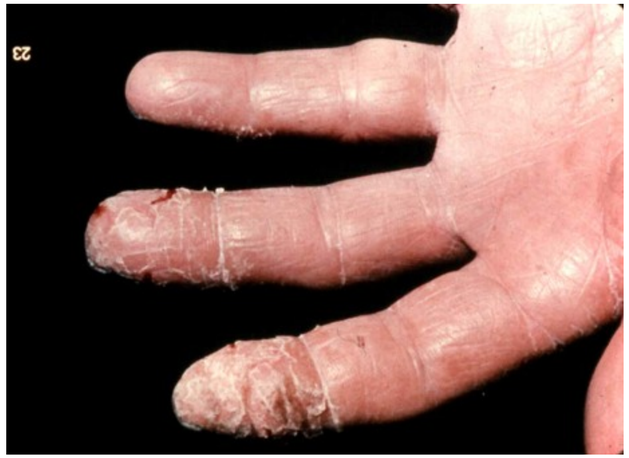
- Multidisciplinary clinical environment where patient care (Occupational Disease Specialty Program), education and research (Centre for Research Expertise in Occupational Diseases) are integrated
- Focus on occupational skin disease
- The importance of the “case”

Occupational Contact Dermatitis

- Irritant CD
  - –75% of contact dermatitis
  - –Common causes
    - Wet work
    - Cleansers, detergents
    - Oils, greases, cutting fluids
    - Solvents
    - Alkalis, acids

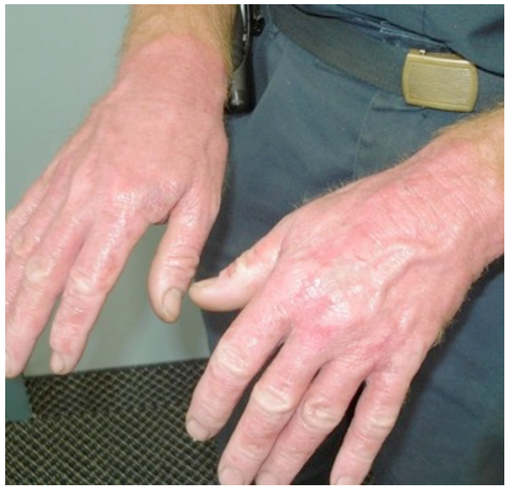


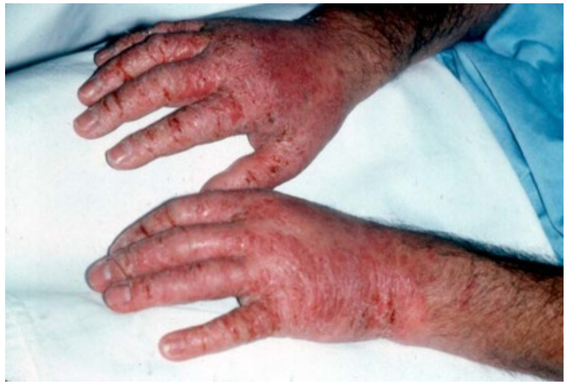




Occupational Contact Dermatitis

- Allergic CD
  - –25% of contact dermatitis
  - –Common causes
    - Metals
    - Rubber accelerators, antioxidants
    - Resins – epoxy, acrylic, phenyl formaldehyde
    - Biocides, germicides
    - Plants





Nurse

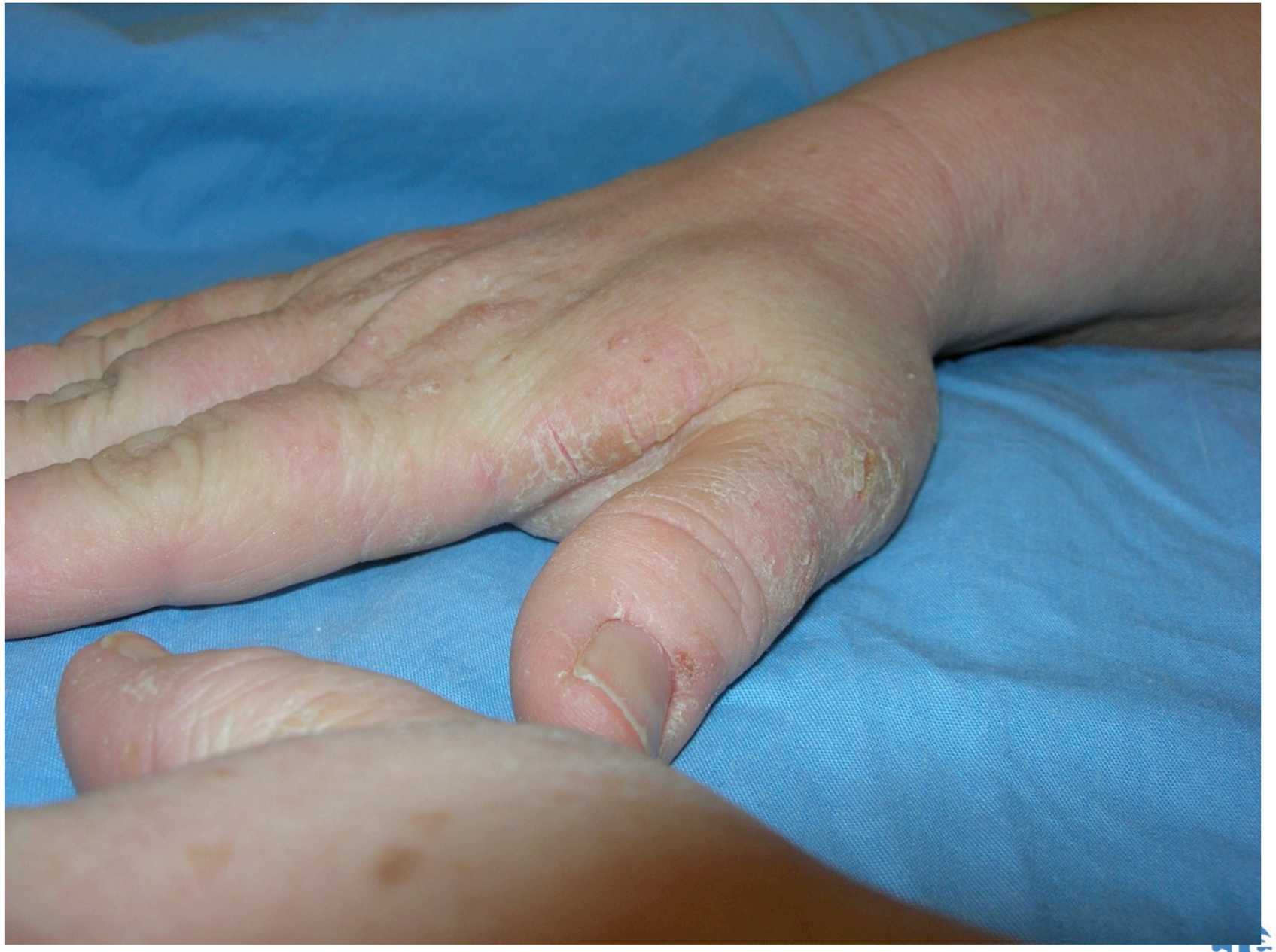
- Worked three years as an OR nurse – no problems
- 2 years off, then returned to work
- First year back – did not have problems with her skin “that were severe enough to do anything about”
- Skin rash - initially sought treatment advice from anesthetist

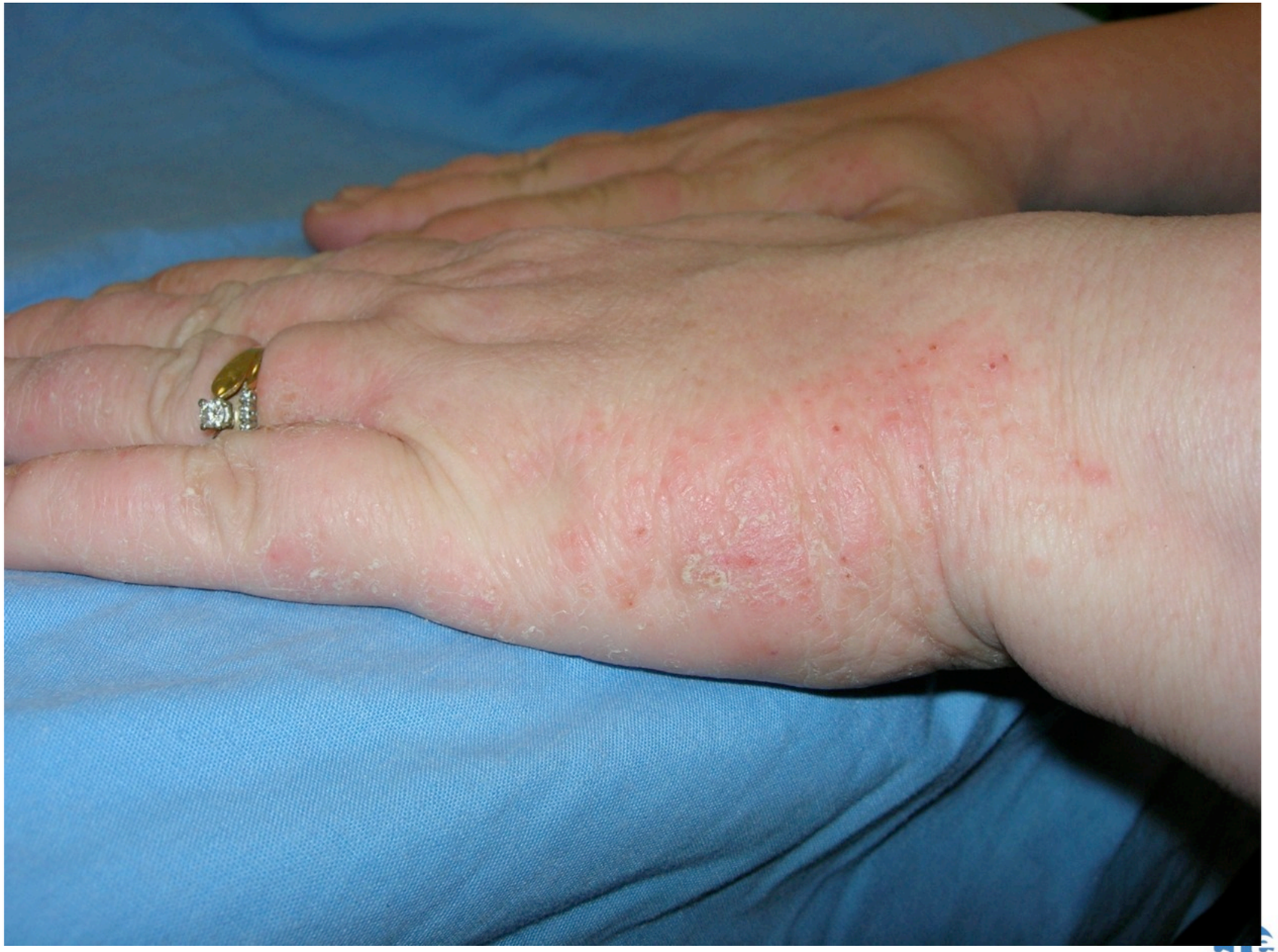
Nurse

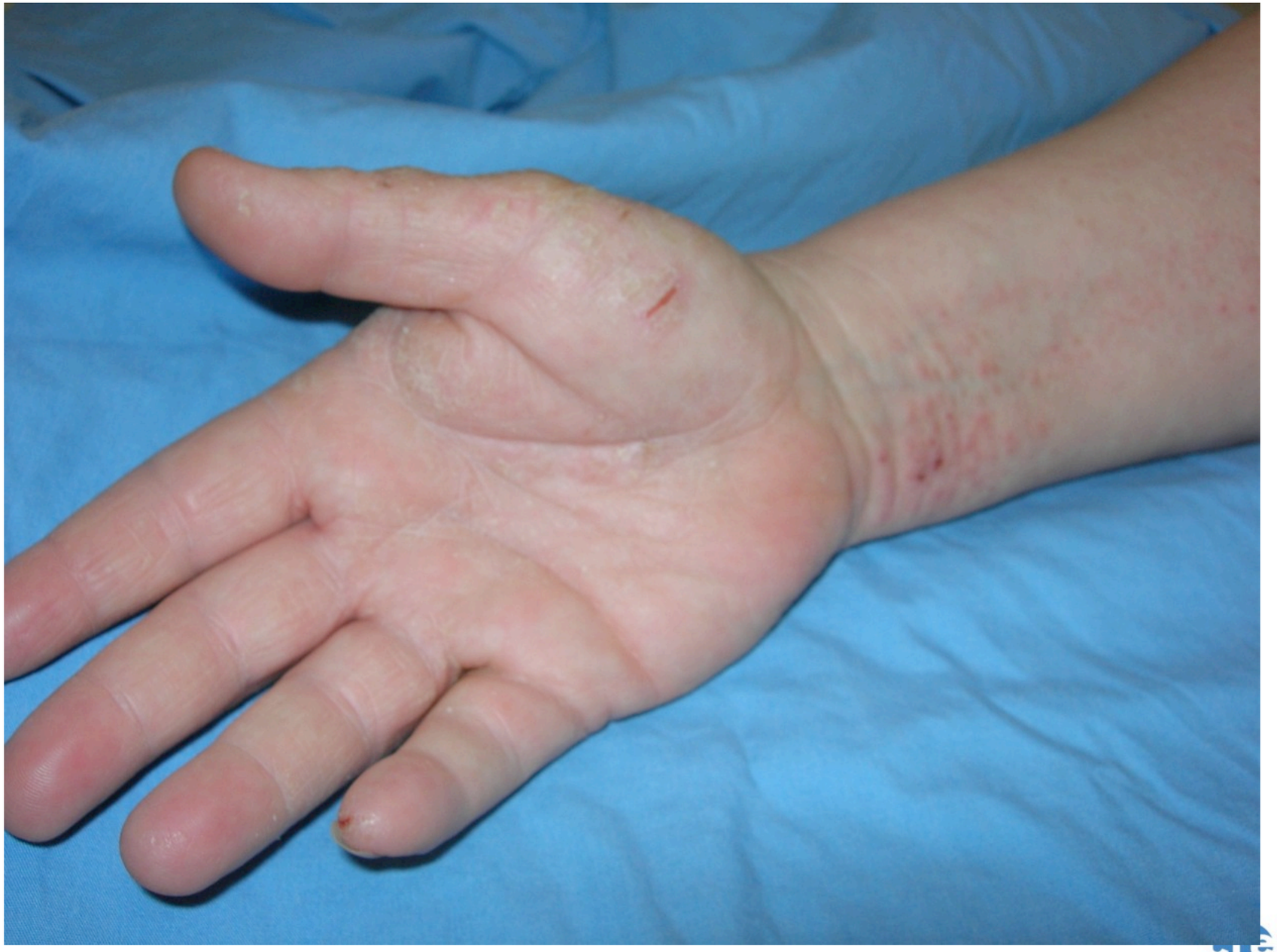
- Exposures
  - –Chlorhexidine – irritating – changed to Betadine
  - –Gloves - latex powdered, latex non-powdered, non-latex powdered + cotton liners or cotton liners plus polyethylene liners
- No specific training regarding skin hazards

Nurse

- Rash clearly associated with work
  - –the more hours she worked the worse it was
  - –by third year – severe enough – took 2 weeks off – significant improvement
  - –within 2 weeks of RTW recurred and severe
- Treatment with topical medications







Nurse

- Patch tested by community dermatologist
  - –Positive to rubbers
- No apparent intervention related to workplace exposures
- Physician told WSIB not work related – claim denied
- Continued to work for a further year with ongoing problems and worsening of condition
- Off work

Nurse

- Seen in our clinic
- Further patch testing
  - Positive to rubbers
  - Hands flared over week
- Diagnosis
  - Occupational allergic contact dermatitis
  - Occupational irritant contact dermatitis

Nurse

- In spite of RTW intervention, 6 months later
  - –Not working
  - –Skin condition unchanged
  - –Using topical medications, emollients
  - –Uses vinyl gloves plus cotton liners or cotton gloves for house work
  - –Self conscious
  - –Loss of income

What is Occupational Disease?

- **Definition**
- Depends on the setting
  - –General – ILO
  - –Administrative/legal
  - –Epidemiological
  - –Clinical

Definition – ILO/WHO

- Occupational disease - *“ any disease contracted as a result of an exposure to risk factors arising from work activity”*

Definition

- Administrative/legal
- In Ontario
  - Occupational Health and Safety Act
    - *"Occupational illness means a condition that results from exposure in a workplace to a physical, chemical or biological agent to the extent that the normal physiological mechanisms are affected and the health of the worker is impaired thereby and includes an occupational disease for which the worker is entitled to benefits under the WSIA"*

Definition

- Workplace Safety and Insurance Act
  - *"Occupational disease includes,*
    - *(a) a disease resulting from exposure to a substance relating to a particular process, trade or occupation in an industry*
    - *(b) a disease peculiar to or characteristic of a particular industrial process, trade or occupation*
    - *(c) a medical condition that in the opinion of the Board requires a worker to be removed either temporarily or permanently from exposure to a substance because the condition may be a precursor to an occupational disease*
    - *(d) a disease mentioned in Schedule 3 or 4, or*
    - *(e) a disease prescribed under clause 15.1 (8) (d)"*

Definition

- Epidemiological
  - –Studies using administrative data or collecting or using collected data
  - –Case definitions
    - Symptoms, clinical findings
    - Exposures
    - e.g. Hegmann et al, Impacts of differences in epidemiological case definitions on prevalence for upper-extremity musculoskeletal disorders. *Hum Factors* 2014;56(1):191-202.

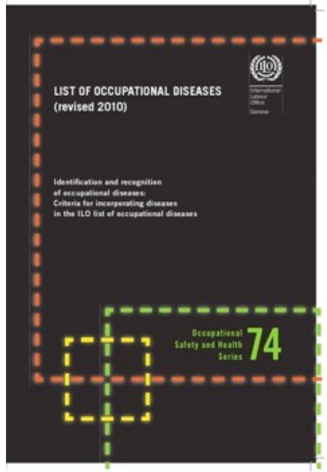
Definition

- Clinical definition
  - Diagnosis of disease
  - Documentation of causative workplace agent
    - Exposure history
    - Testing
  - Linking the disease and agent

Definition

- Summary
- Definition varies depending on the setting
- Confusing for the various practitioners who actually have to use the definitions

Recognition as an OD



- ILO publishes a list of ODs
  - Definition
  - Criteria for identification and recognition of ODs
  - Criteria for identification and recognition of an individual OD
  - Criteria for incorporating a disease into ILO list of ODs
- Jurisdictions may have their own lists

Occupational skin disease

- ILO list
- 2.2 Skin diseases
  - 2.2.1 Allergic contact dermatoses and urticaria
  - 2.2.2 Irritant contact dermatoses
  - 2.2.3 Vitiligo
  - 2.2.4 Other skin diseases

Contact Dermatitis

- To use the list, shall have to have a definition of the specific diseases listed
- Contact dermatitis
  - "*reactive eczematous inflammation of the skin provoked by direct contact with an environmental chemical or substance*"

Contact Dermatitis

- Mathias criteria
  - Is the clinical appearance consistent with contact dermatitis?
  - Are there workplace exposures to potential cutaneous irritants or allergens?
  - Is the anatomic distribution of the dermatitis consistent with the form of cutaneous exposure in relation to the job task?
  - Is the temporal relationship between exposure and onset consistent with contact dermatitis?

Contact Dermatitis

- Mathias criteria cont'd
  - –Are non-occupational exposure excluded as likely causes?
  - –Does removal from exposure lead to improvement in the dermatitis?
  - –Do patch tests or provocation tests implicate a specific workplace exposures?
- Do clinicians actually use this?

  - –Mathias CG. *JAAD* 1989;20:842-848

How common are ODs?

- ILO global burden of OD
- 2.02 million deaths/yr linked to OD
- 160 million cases of non-fatal work-related diseases/yr
- Ryder – Director General of ILO
- *“statistics can blind us to the humans behind the statistics”*

Where does the information come from?

- Administrative data
  - Government reporting
  - Workers' compensation
- Clinical populations
- Workplace populations
- Population based

Where does the information come from?

- Each source provides different information
- Collected for different purposes with different definitions
- *Am J Ind Med* October 2014 issue – “counting occupational injuries and diseases”
  - –focus on injuries
  - –“OD is essentially absent”

The numbers for OSD

- Administrative data
  - Europe
  - US – BLS
  - Ontario - WSIB

OSD - Europe - Germany

- Europe
  - Newly reported cases - 5 to10 per 10,000 workers per year
- Germany
  - Newly reported cases - 6.7 to 6.8 per 10,000 workers per year
- T Diepgen *"… although number of unreported cases is presumably much higher (50-100 times greater)"*

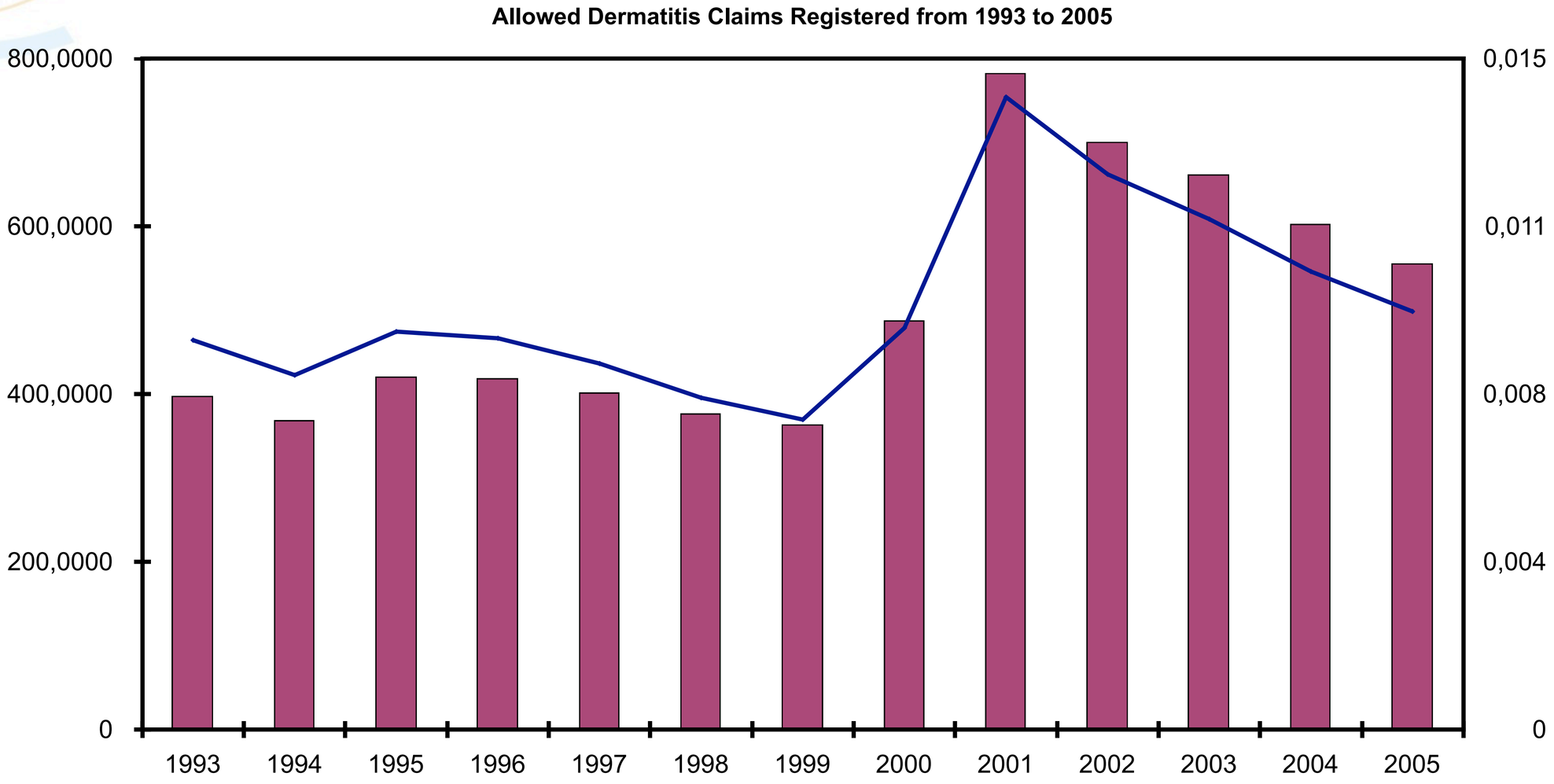
OSD - Europe - Germany

- Trends – Germany - OSD
- 1960 – 6,000 cases
- 1990 – 20,000 cases
- Strict reporting system and financial incentives

OSD - USA

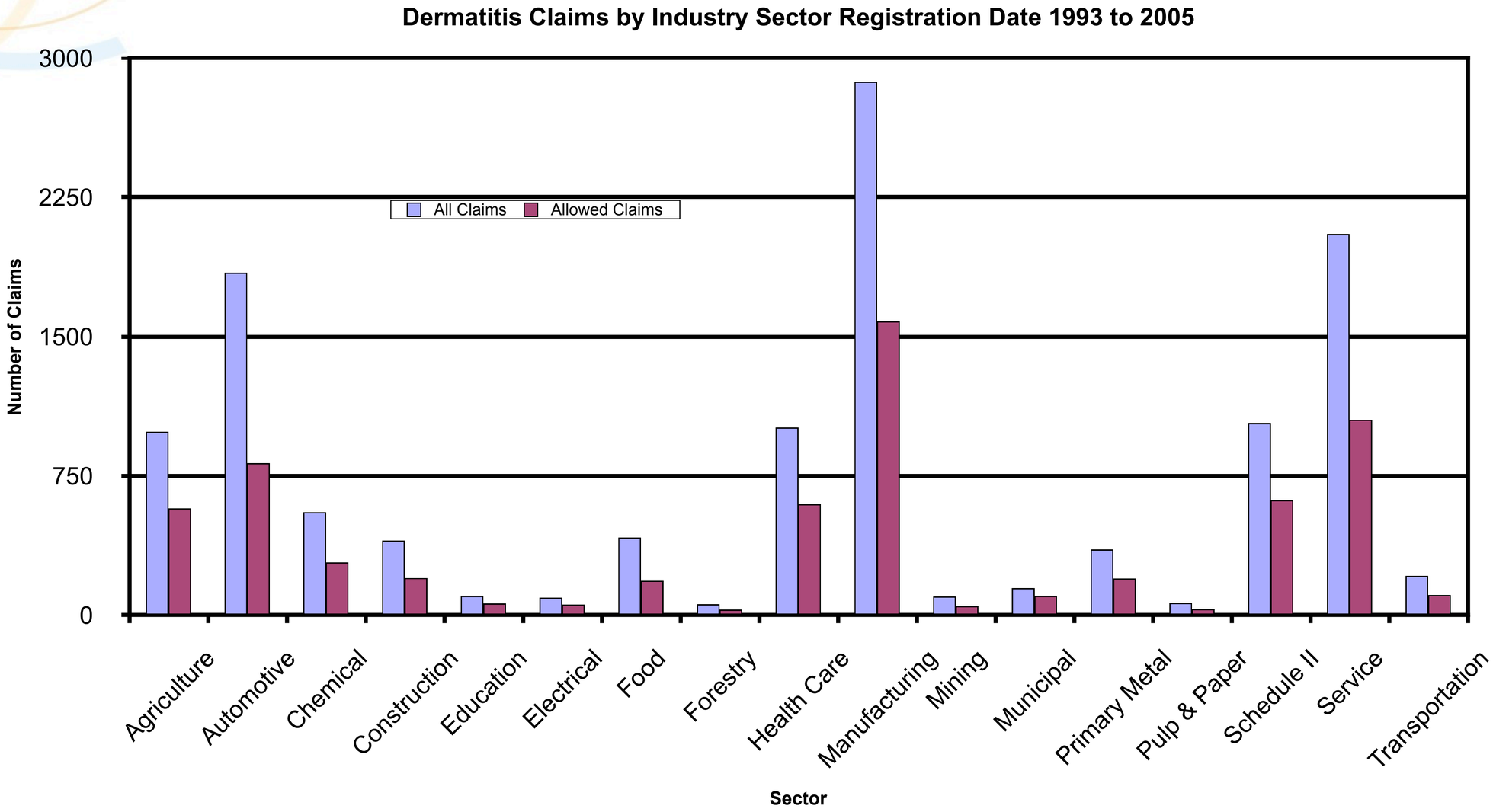
- Bureau of Labour Statistics
- 2010
  - 34,400 recordable skin diseases rate 3.4 per 10,000
  - Note respiratory illness – 19,300, 1.9/10,000
- 2012
  - 33,300 cases, rate 3.2 per 10,000

WSIB - Occupational Dermatitis Claims



Rate – 1/10,000 /yr

WSIB - Occupational Dermatitis Claims



OSD - WSIB

- WSIB disease claims 2008-2012 - health care, education, municipal and schedule 2
  - Dermatitis – 27% of all dermatitis claims (1,036/3,881)
  - Approximately 200 claims per year across 4 sectors

Occupational skin disease

- Clinical data
  - Patch test clinics
    - Selected population
    - Prevalence of positives to various workplace chemicals
    - Trends in allergens
      - Epoxy
      - Methylisothiazoline

Occupational skin disease

- Workplace studies – health care
- Different definitions
- recent studies of HCW
  - –Danish study – one year prevalence - 21%
  - –Hong Kong – 22%
- Large health care institution in Ontario
  - –28% normal hands
  - –59% mild changes
  - –13% moderate/severe changes

Statistics - population

- Population based studies hand dermatitis
- Review by Thyssen
  - Point prevalence 4%
  - One year prevalence 10%
  - Lifetime prevalence 15%

Why is it important?

- Worker
  - Misdiagnosed
    - until workplace issues addressed disease continues
  - Loss of function
  - Loss of quality of life
  - Economic losses

Why is it important?

- Employer
  - –Worker productivity affected
  - –Staff turnover costs
  - –Don’t implement prevention

Why is it important?

- Health care/health care provider
  - Health care system
    - Misallocated costs
    - Additional costs
  - Health care provider
    - Frustration

Why is it important?

- System
  - Costs misallocated
  - If numbers are small, not seen as a problem, so not a system priority
  - ILO - annual 4% loss in GDP (US $2.8 trillion)

Why the gap?

- Under-recognition
- Under-reporting

Under-recognition

- Lack of awareness of everyone's part
  - Worker and Employer
    - Doesn't realize a potential problem
    - Lack of prevention of exposure
    - Doesn't think of possibility of workplace cause when seeing health care provider

Under-recognition

- Lack of awareness of everyone's part
  - Health care provider
    - Doesn't realize a potential work-related problem
    - Doesn't take an occupational history
    - Doesn't make the link
  - System
    - As activity driven by WSIB statistics, appears that there is little problem with ODs
    - Regulatory activity lacking – laws, enforcement

Under-reporting

- Even if the problem is recognized, it may not be reported
  - Worker – bother, reprisals
  - Employer – suppress claims
  - Health care provider – doesn't want to deal with WC system
  - Workers' compensation board practices

Under-recognition and under-reporting

- Literature
  - Physician and diagnosis-related challenges
  - Workplace dynamics and social relationships at work
  - Structural determinants
- Study (Eakin, House, Holness, Howse)
  - Psycho-social factors
  - Workplace cultural factors
  - Systemic and structural factors

The health care problem

- Health care providers
  - Don’t know
  - Don’t ask
  - Don’t make the link
  - Don’t know how to confirm diagnosis
  - Don’t report

OSD and Health Care

- Worker perceptions
  - –Workers reported 67% of GP's asked about job, 3% asked for information about exposures
  - –Workers reported 53% of dermatologists asked about job, 5% asked for information about exposures

  - –Holness *Dermatitis* 2004;15:18-24

OSD and Health Care

- Physician perceptions of their practice
- Family physicians and dermatologists

- Holness et al, *Aust J Derm* 2007;48:22-27

OSD and Health Care

- I ask about work history always/most of time
  - GPs – 57%
  - Derms – 92%
- If not, why not
  - Lack of knowledge, time constraints
  - GPs – forget to ask
  - Derms – lack of adequate reimbursement/forms

OSD and Health Care

- If suspect ACD, do you diagnose yourself
  - –GPs – 13% always, 77% sometimes
  - –Derms – 11% always, 64% sometimes
- If do if yourself, why
  - –GPs – feel competent to diagnose myself, lack of timely access to specialists, lack of access to specialists
  - –Derms – feel competent to diagnose myself, lack of timely access to specialists, enjoy it

OSD and Health Care

- If refer why
  - –GPs – lack of expertise, lack of testing facilities, lack of knowledge of WSIB
  - –Derms – lack of testing facilities, time constraints, lack of adequate reimbursement

OSD and Health Care

- Knowledge and education
  - GPs – 1/3 good/excellent knowledge, 70% want further education
  - Derms – 2/3 good/excellent knowledge, 70% want further education
- Why don’t you want further education
  - Don’t see enough patients, times constraints, have access to specialists

OSD and Health Care

- Health care utilization
  - Who seen
    - Family physician (66%), walk-in clinic (18%), emergency dept (6%)
  - Family physician
    - 2000 study – median number of visits - 3 (1-90)
    - 2013 study – median number of visits - 3 (1-30)
  - Dermatologist
    - Number of visits – median 3 (1-50)

OSD and Health Care

- The time factor
  - Time to definitive diagnosis
    - 1980's study – mean 50m
    - 2000 study – mean 25m
    - 2013 study - mean 61m, median 18m
      - 20% >1y for first visit

OSD and Health Care

- Why do workers delay seeking care?
  - Thought it would get better
  - Not serious enough
  - Symptoms not limiting work or other activities
  - Concern about missing work
  - Thought symptoms a natural consequence of work

  - Nurmohamed et al, *Dermatitis* 2014;25:268-272

OSD and Health Care

- The time factor – why is it important?
- Early diagnosis and management improves outcomes
  - –rash<1y 53% improved, rash>1y 23% improved
  - –Malkonen et al, BJD 2010 - <1y 56% improved, >10y 21% improved

Application

- Goal – early recognition and diagnosis
  - Practice issues
    - Family physician – early recognition
    - Specialist - diagnosis
  - Education needs
    - Knowledge, general knowledge vs specific disease
    - Practical information – referrals, WC process

Prevention – primary

- Hierarchy of controls
  - Premarketing assessment
  - Elimination/substitution
  - Engineering controls
  - Education
  - Administrative controls
  - Personal protective equipment
  - Environmental monitoring

Does prevention happen?

- Clinic population
- Workers being seen for possible contact dermatitis
- Collect basic data on ongoing basis
- Deep dives

Prevention practices

- Current study in progress
- 127 workers
- Mean age 44, 46% male
- Sectors
  - Manufacturing 28%
  - Health care 27%
- 46% unionized
- Wear gloves – 86%

Prevention practices

- Training
  - General OHS training – 80%
  - WHMIS training – 76%
  - Skin exposure and prevention – 49%
  - Education about gloves – 35%

Prevention practices

- Of those who received training related to the skin exposures and prevention
  - Avoid exposure – 88%
  - Hand washing – 91%
  - Gloves – 78%
  - Creams – 51%
  - Symptoms – 35%

Where do we start?

- Awareness

Awareness – services sector

- Study to explore OSD awareness and prevention in the services sector
- Methods
  - Focus groups – identify issues
  - Electronic survey
  - Participants
    - OSSA Advisory Committee (39)
      - Representatives from various industries in sector
    - OSSA staff (37)
      - Provide OHS advice and consultation of sector

Study Results – OSD a problem

	Advisory Cte	Staff
Do you think skin disease in a problem in sector?	21%	92%
Do you think the sector sees skin disease as a problem in sector?	18%	8%

Study Results - Knowledge

	Advisory Cte	Staff
Your level of knowledge re skin disease: moderate-expert	19%	38%
Services sector workplace level of knowledge re skin disease: moderate-expert	0	3%

Study Results - Barriers

- Advisory Committee
  - Lack of knowledge
  - Not a priority – few incidents/claims
  - Lack of training materials, tools
  - Time
  - Cost
  - Management support
  - Culture

Study Results - Barriers

- OSSA staff
  - Similar to Advisory Committee
  - Also raised
    - Non-work related causes
    - Healthcare providers don’t recognize OSD

Study – HSA frontline staff

- HSAs provide OHS prevention services to employers throughout the province
- Objectives
  - Relating to OD generally and OSD specifically
    - To identify and assess gaps in awareness, knowledge, skills and resources and explore potential barriers to implementation
    - To inform about the development of education programs and tools that bring knowledge to the point of practice in OSD prevention

Methods

Phase 1

- 8 focus groups; 64 participants
- Survey, focus group (1 hour)

Phase 2

- Facilitated workshop: 20 OHS “system” participants to review and validate findings
- Top messages & next steps identified

Results: Challenge of Addressing OSD/OD

- Driven by MOL (top 4 safety hazards (injuries, accidents)
- Desire to return to “the old days”
  - –3 weeks certification training, 50% devoted to occupational health
- Inadequate knowledge of OSD prevention
- Need for OSD awareness
- Challenging to serve diverse workplaces
- Consolidation of 12 HSAs into 4 has strained capacity of front-line

Results: Resources Needs for Consultants

- Access
  - –Quick and easy
  - –Central repository
- Trust in source
  - –Their legacy organization
  - –Colleagues
- Applicability – usefulness
  - –Applied
  - –Sector specific (anecdotes, stories)
- Development of core competencies

Results: Consultants' Use of Research

- Generally not aware of research
- Keeping up with research is challenging
- Generally don't use – time pressure
- Refer to experts (but shrinking pool)
- Challenge of access

Barriers to Addressing OSD

- Lack of awareness/knowledge
- Focus on safety; OD/OSD seen as low risk
- Lack of legislation/enforcement/policy
- Workplace culture (“part of the job”)
- Large diverse work force a challenge
- Lack of valid statistics
- Shrinking pool of experts
- OD/OSD strategy not linked to HAS business plans
- Issue fatigue
- Cost

Poster Project

- Work to develop a set of awareness posters

- Equal split for preferring positive versus negative image
- Suggestions for format

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It's not just a rash. It can be prevented.

ASK ABOUT DERMATITIS.

INFORMATION

WSPS.CA

Things you handle at work put you at risk. Speak to your doctor.
ASK ABOUT DERMATITIS.

Your skin matters. Keep it clean.
PREVENT DERMATITIS.

Use the right personal protective equipment. Use it correctly.
PREVENT DERMATITIS.

Know the hazards. Avoid exposures.
PREVENT DERMATITIS.

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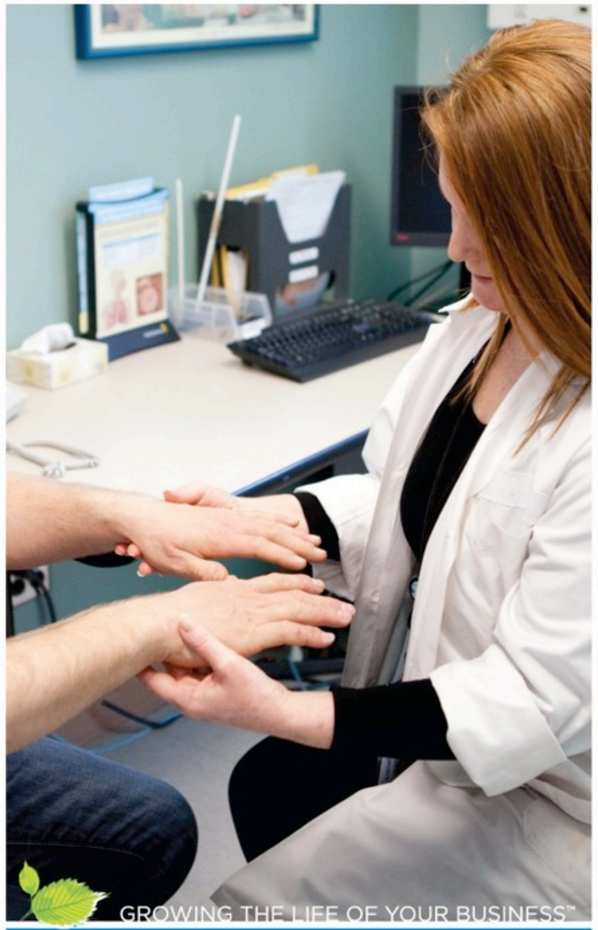

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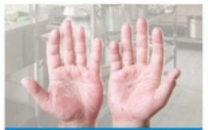

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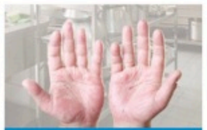

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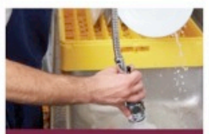

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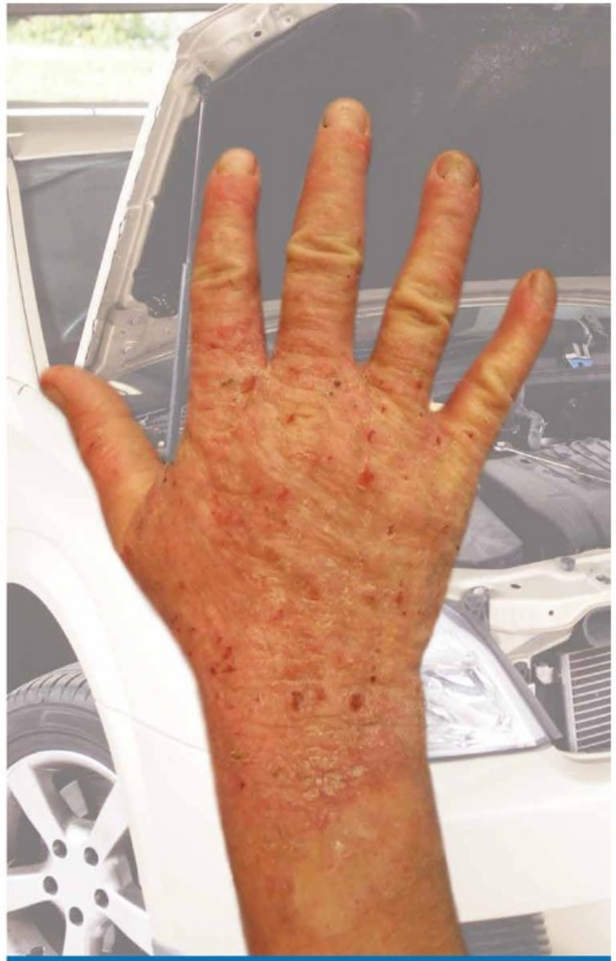

Things you handle at work put you at risk. Speak to your doctor.
ASK ABOUT DERMATITIS.

Your skin matters. Keep it clean.
PREVENT DERMATITIS.

Use the right personal protective equipment. Use it correctly.
PREVENT DERMATITIS.

Know the hazards. Avoid exposures.
PREVENT DERMATITIS.

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Your skin is important. Protect it.

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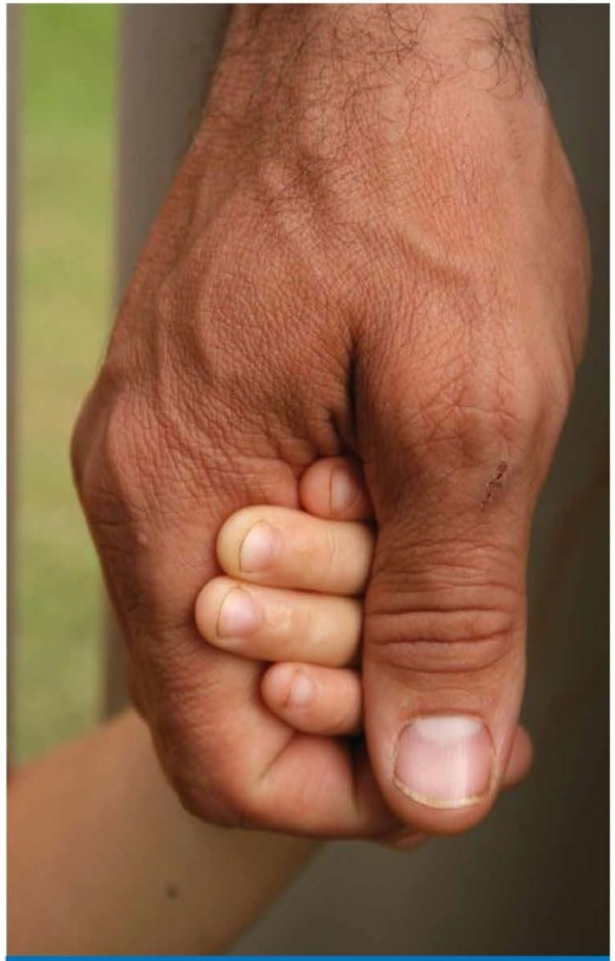

It's not just a rash. It can be prevented.
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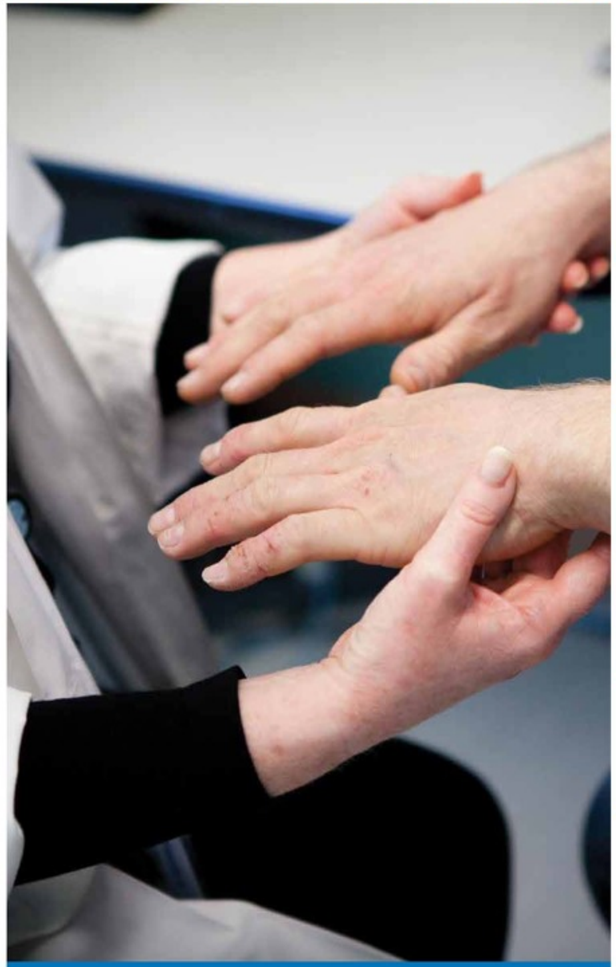

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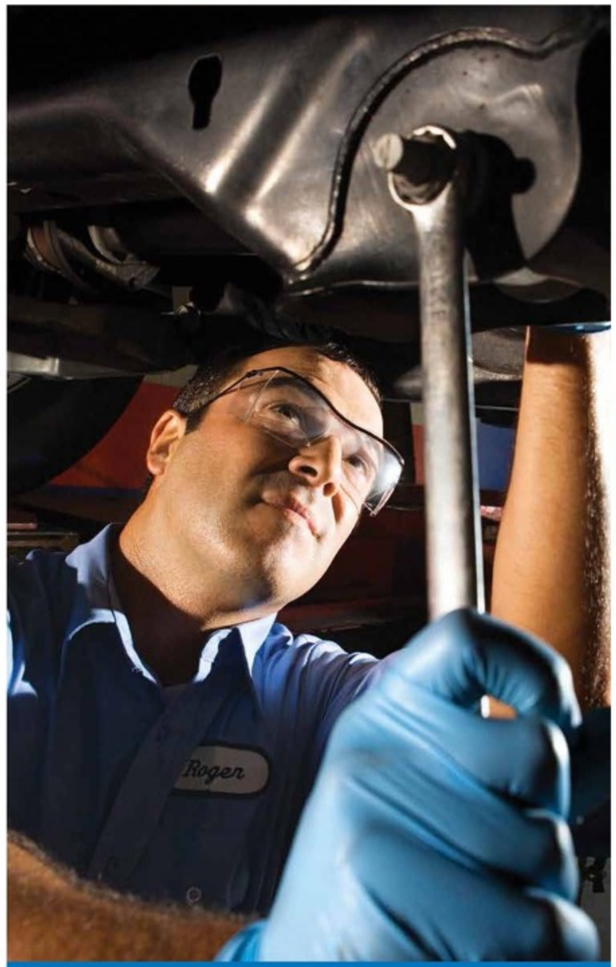

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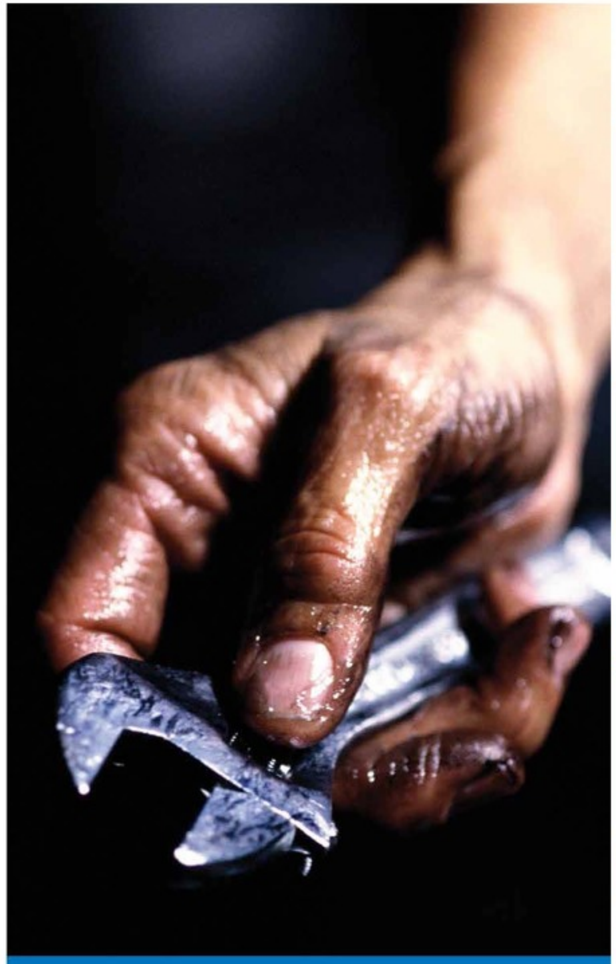

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Going back to the nurse

- Developed a common OD in HCW
- No specific prevention training
- Specialist did not make the link even though clear allergic response
- No workplace intervention
- Claim denied – she is not in the statistics
- Does poorly
- **No one seems to be aware**