

WHAT WE'VE LEARNED ABOUT...

Occupational Skin Disease

A lay-language research synthesis from the Centre for Research Expertise in Occupational Disease (CREOD)



Centre for
Research Expertise
in Occupational Disease

Research that makes a Difference



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Background

What is Contact Dermatitis?

Contact dermatitis is a skin reaction that looks like a rash or burn. It can be itchy or painful. It's caused by exposure to an irritant (irritant contact dermatitis) or an allergen (allergic contact dermatitis). First symptoms may appear a day or two after first exposure, or after years of using an irritant or allergen on a regular basis.

What is Work-related Contact Dermatitis (WRCD)?

Work-related contact dermatitis (WRCD) is dermatitis that's caused by exposure to an irritant or allergen at work. WRCD is common, especially among people involved in wet work. Dishwashers, cleaners, mechanics, hairdressers and people who work in health care are particularly vulnerable to irritant WRCD. People who work with allergens like resins, rubber chemicals, metals and biocides are vulnerable to allergic WRCD.

How well do we understand WRCD?

While much is known about WRCD, there is still more to learn about its prevention, its treatment, and how to help workers with WRCD continue or go back to work. Several recent reviews – including an initial systematic review by our group in 2005 – have focused on WRCD prevention. Another focused on WRCD prevention, diagnosis and management. These reviews have all noted the limited amount of available evidence. However, some excellent references do exist, including the book “Controlling Skin Exposure to Chemicals and Wet-Work”, by Rajadurai Sithampanadaraj.

GENERAL REFERENCES:

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WRCD IS PREVENTABLE:

Avoid contact with the skin.

↳ *Elimination, substitution, ventilation, process change*

Protect the skin from contact with an irritant or allergen.

↳ *Personal protective equipment, skin care*

Check for early signs of exposure.

↳ *Redness, dryness, rash*

“It’s not just a rash!”

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About this Document

The following is a lay-language synthesis of CREOD's body of research on Work-related Contact Dermatitis (WRCD), 2004-2012.

Key Messages

- WRCD is common.
- WRCD is preventable.
- Many workers are at risk of WRCD, but don't know it.
- WRCD prevention and education are low priorities in many Ontario workplaces.
- There are serious gaps in occupational health care delivery in Ontario. Many doctors don't ask patients about work and work exposures, and it takes workers a long time and many doctors visits to get a diagnosis.
- Recovering from WRCD can be difficult. Research shows that people with WRCD suffer poor clinical and functional outcomes, and can have a hard time continuing work, or returning to work.
- Workers with WRCD may not file workers' compensation claims.
- Early medical intervention is critical – the longer a person experiences WRCD symptoms before they're diagnosed, the less likely they are to get better.

ABOUT THE CENTRE FOR RESEARCH EXPERTISE IN OCCUPATIONAL DISEASE (CREOD)

The Centre for Research Expertise in Occupational Disease is dedicated to improving understanding and prevention of occupational disease. Our research addresses the full spectrum of the health and safety continuum: from prevention, through exposure assessment, early recognition, diagnosis, treatment, return-to-work and outcomes. We work across disciplines and methodological paradigms to contribute to policy, knowledge and practice in both the workplace and clinical settings. Our programs include Occupational Lung Disease, Occupational Skin Disease, Hand-Arm Vibration Syndrome (HAVS) and Biological Hazards.

CREOD was founded in 2004 with the active support and generous funding of the Workplace Safety and Insurance Board, and is now funded by the Ontario Ministry of Labour. We are a collaborative program of the University of Toronto and St Michael's Hospital.

To learn more about CREOD and to access plain language summaries of the studies referenced in this synthesis, visit our website at www.creod.on.ca.

CREOD Findings: Burden and Risk of Work-related Contact Dermatitis

WRCD is common.

We analyzed the Canadian data from the North American Contact Dermatitis Group (NACDG) database and found that 17% of the people tested had a work-related diagnosis. Of these work-related cases, 64% had an allergic diagnosis and 34% had an irritant diagnosis.⁽¹⁾ Other CREOD studies found that 21% of male indoor cleaners reported a rash in the past year⁽²⁾, and 31% of hospital personnel reported hand dermatitis⁽³⁾.

Top ten occupational allergens.

Our NACDG database study identified the following as the top ten occupational allergens: epoxy resin, thiuram, carba mix, nickel sulphate, cobalt chloride, potassium dichromate, glyceryl thioglycolate, p-phenylenediamine, formaldehyde and glutaraldehyde.⁽¹⁾

Many industries are affected by WRCD.

Our NACDG database study⁽¹⁾ found that industries most commonly affected by WRCD were aircrafts and parts, beauty shops and hospitals. People at highest risk of WRCD were electrical equipment assemblers, precision assemblers, hairdressers and cosmetologists. High rates were also found in health care workers and cleaners.

Many exposures are associated with WRCD.

There's a significant association between wet work and WRCD; a CREOD study⁽³⁾ found that hospital personnel involved in wet work were 4.8 times more likely to report hand eczema in the past year, compared to those involved in dry work.

A study of 100 workers being assessed for contact dermatitis found common exposures in those with WRCD included cleaning agents, oils and greases, metal, solvents and plastics.⁽⁴⁾ Another small study of people with WRCD⁽⁵⁾ demonstrated a wide variety of exposures including metals, oils and lubricants, solvents, mechanical irritation, metalworking fluids or corrosives (acids/alkalis). About half reported exposure to wet work, glues/adhesives/sealants, heat and epoxy compounds.

Some exposures can put people at risk of both WRCD and occupational asthma (OA).

Our NACDG database study⁽¹⁾ found that epoxy resin, nickel sulfate, cobalt chloride, potassium dichromate, paraphenylenediamine, formaldehyde and glutaraldehyde have established associations with both WRCD and OA. When we looked at symptoms among embalmers, soda ash workers (ammonia), softwood workers and cabinet makers, we found that 11% reported both lung and skin symptoms.⁽⁶⁾ Our survey of indoor cleaners found that if workers had reported a rash in the past year, they were more likely to also have work-related asthma symptoms.⁽²⁾

CREOD Findings: Prevention of Work-related Contact Dermatitis

WRCD can be prevented.

In a systematic review⁽⁷⁾ of 49 studies on contact dermatitis, we found that people who wore cotton liners in gloves and fabrics treated with fabric softener were less likely to develop irritant contact dermatitis. The use of lipid-rich moisturizers, barrier creams containing dimethicone or perfluoropolyethers, topical skin protectant, quaternium 18 bentonite (organoclay) and diethylene triaminepenta-acetic acid (chelator) cream also appeared to prevent various forms of dermatitis.

Our study of dental staff and students⁽⁸⁾ found that changing to non-powdered latex gloves led to a decrease in latex sensitivity. Students who had entered the school after the introduction of powder free gloves showed no sensitivity at all.

Few Ontario workplaces have practices or programs in place to prevent or address WRCD.

Training programs for WRCD prevention are particularly lacking. In a survey of 100 workers with hand dermatitis being patch tested and assessed for CD⁽⁴⁾, we found that most had been through some occupational health and safety or WHMIS training in their workplace, but training for glove use, skin care and hand washing was much less common – especially among workers involved in wet work.

We surveyed 139 hospital personnel and found that only about one-third of respondents had received skin protection training.⁽³⁾ Our survey of indoor cleaners found that cleaners with a skin rash were less likely than other cleaners to have received workplace training regarding their skin. Among those who had received training, the workers with rash were more likely to report that they had found the training hard to understand.⁽²⁾ In a small study of workers with WRCD who were off work because of their skin problems⁽⁵⁾, only about one quarter of respondents reported that their workplace conducted assessments for skin hazards, provided access to an onsite occupational nurse/physician or pre-placement medical skin examinations. Almost none reported skin protection programs in their workplaces. About half reported that incident reports were routinely filled out, and that modified work was available for people with skin problems. Although moisturizer or barrier cream have been shown to prevent WRCD, only about one-quarter of participants reported that they were available in their workplace.

There is a significant lack of awareness regarding WRCD in Ontario's service sector.

We conducted focus groups and electronic surveys of 37 Ontario Services Safety Alliance (OSSA) staff and 39 OSSA Advisory Committee members, and found that they didn't know very much about WRCD. Both groups also rated knowledge among people in their sectors as "low". Participants told us that WRCD prevention programs are a low priority in their sector.⁽⁹⁾

Skin allergens may not be identified as skin sensitizers in commonly-used occupational health and safety resource material.

A CREOD study⁽¹⁾ that identified the ten most common skin allergens found that only the NLM Haz-Map identified all ten as potential skin sensitizers. The ACGIH TLV booklet didn't list three of the substances and only listed three of the remaining with sensitizer notation. The NIOSH Pocket Guide didn't list four of the substances and only listed three of the remaining with sensitizer notation. Listings between these two sources were inconsistent. Occupational health and safety professionals using these resources would not necessarily be aware of their sensitizing potential.

CREOD Findings: Diagnosis and Treatment of Work-related Contact Dermatitis – Health Care Services

The right treatment can make a difference.

Our systematic review of 49 studies on contact dermatitis⁽⁸⁾ found that potent or moderately potent steroids were effective in treating allergic contact dermatitis, and lipid-rich moisturizers were effective in treating irritant contact dermatitis. Pentoxifylline and barrier cream containing aluminum chlorohydrate did not have an effect on WRCD.

Getting a diagnosis for WRCD can take a long time, and many doctors visits.

In our survey of 100 workers with hand dermatitis⁽¹⁰⁾, we found that the average time before a worker was seen in our clinic was 25 months. On average, workers had seen their family doctor five times before they were referred to our clinic. About 70% had seen a dermatologist, on average of eight times. Another study found that 20% of people with WRCD had seen their family physicians more than five times before coming to the clinic; 15% had seen a dermatologist more than five times.⁽¹¹⁾

Many family doctors don't ask people with contact dermatitis about workplace exposures.

CREOD patient surveys^(10, 11) have found that only 5-45% of family physicians and 36-54% of dermatologists asked patients about workplace exposures. However, our physician survey⁽¹²⁾ found that almost all dermatologists and half of all family practitioners report taking routine workplace exposure history. Both groups reported that the main barriers to detailed history-taking were lack of time and expertise.

Patients get little information and advice from physicians regarding their problem.

A CREOD survey of workers with WRCD⁽¹⁰⁾ showed that doctors provided minimal advice about how to modify work to protect skin and hands. Another found that only 43% of patients reported that visits with family physicians or dermatologists helped them to understand their problem. There was a relationship between workers' satisfaction with care and how long their symptoms lasted.⁽¹¹⁾

Streamlined tools and processes, and more training would make recognition, referral, and treatment of WRCD easier for physicians.

Our physician survey⁽¹²⁾ told us that improved remuneration, easily available standard tests and referral sources, templates for asking questions during history taking and 1-800 numbers or websites for information would improve recognition and treatment of WRCD. They also asked for education on how to detect WRCD early, initiate a claim and refer to specialists. Both groups reported that a lack of timely access to specialists was an important barrier to referral.

Standard practice models and screening tests may not be enough.

A study of workers with⁽¹³⁾ CD thought to be related to glove use found that it's important to both prick and patch test; workers may have multiple diagnoses. When we looked at patch test results for auto mechanics and machinists, we found positive results for allergens not included on a mechanics tray.⁽¹⁴⁾

CREOD Findings: Outcomes for People with Work-related Contact Dermatitis

It takes a long time to recover from WRCD - disease outcomes are very poor.

A CREOD study found that only 40% of people with WRCD showed clinical improvement six months after assessment in our clinic.⁽¹⁰⁾

Contact dermatitis (CD) affects quality of life and impairs hand function.

In a survey of 339 people with CD⁽¹⁵⁾, almost three-quarters of participants experienced itching or pain. About a third reported that CD was embarrassing, interfered with work, and interfered with sleep. About a quarter said that it interfered with housework and social/leisure activities, and one in five said that treatment was bothersome. Embarrassment was most commonly associated with hand dermatitis, and itch was most commonly associated with work-related and allergic contact dermatitis.

A study of hand and upper extremity function in patients with CD⁽¹⁶⁾ found that four out of five had impaired grip strength, and half had numbness. Thirty-one per cent were less productive at work.

Many people with WRCD lose time at work, mainly due to their skin problem.

Only 62% of our clinic's patients were back at work six months after assessment in our clinic. Of the people who had returned to work (RTW), about one-third had changed jobs. Almost all of this group had changed jobs because of their skin problem.⁽¹⁷⁾

One of the most-reported RTW barriers is fear of exposure.^(18,19) Workers have told us that this concern was due to their inability to identify and then avoid the exposures that may have caused or contributed to their dermatitis. They worried that their pain, itching and bleeding would continue or get worse. These fears were linked to perceptions of poor hygiene and housekeeping practices at work.

Other RTW barriers reported by the occupational health and safety personnel included: Ability to do the job safely (e.g. inability to use required tools), appearance (e.g. embarrassment, issues of self-esteem and body image), issues with workplace modifications (e.g. perceived inability to accommodate), issues with personal protective equipment (e.g. worry that it may get caught in machinery), worker or co-worker fear that rash is contagious, workplace attitudes (e.g. management and/or coworkers unwilling to cooperate with RTW accommodations) and pain.⁽¹⁸⁾

Available protective equipment and modified work are important RTW facilitators.

Many workers told us that availability of appropriate gloves, face shield and other protective clothing, as well as modified work, helped people remain at work.⁽¹⁹⁾ Our case series of people with frictional hand dermatitis (FHD)⁽²⁰⁾ found that when people were treated with a steroid cream, tazarotene cream and anti-impaction gloves, all people were able to return to work.

Many people with WRCD don't file worker compensation claims.

We found that six months after assessment in our clinic, two-thirds of workers assessed had filed a workers' compensation claim, and 70% were accepted.⁽³⁾ Our physician survey⁽¹²⁾ found that family practitioners and dermatologists report seeing many more patients with WRCD than filed workers' compensation claims for WRCD that year.

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