



# Workplace Screening for Hand Dermatitis: *A Series of Studies*

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**creod**

Centre for  
Research Expertise  
in Occupational Disease

*Research that makes a Difference*

# Background

- Wet work – a high hazard activity in healthcare
- Risk factor in occupational contact dermatitis (OCD) – primarily affecting the hands
- Rate of occurrence in HCWs is 21-30% (general population is 2-15%)

# Background

- Affects patient care providers, environmental service workers and dietary workers due to frequent hand hygiene, glove use, and cleaning and washing activities
- Difficult to treat, costly and can severely impact quality of life
- Prevention and early detection is critical







# Workplace Screening

- Not feasible to reduce the frequency of hand hygiene, glove use or cleaning practices
- Most effective methods for reducing prevalence are programs aimed at prevention and early detection
- Many established diagnostic tools, but none are appropriate for rapid screening

# Workplace Screening

- Detection of pre-clinical phase of disease
- Beneficial if
  - Disease is serious
  - Treating before symptoms improves outcomes
  - Prevalence is high
- Characteristics of good test
  - Inexpensive, brief, easy to administer, quick, minimal discomfort, reliable, valid

# Study Team

- Kathryn Nichol
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- Ray Copes
- Karon Kersey
- Anson Kendall
- Jonas Eriksson
- Helen Kelly
- Sonca Lengoc, Sarah McMillan, Kris Bandayrel, Jeanne Evans

## Collaborators

- Toronto Occupational Health Leaders Group
- Expert occupational dermatologists
- ONA
- OPSEU
- OHA
- MOL
- PSHSA



# A Series of Studies

## **Derm 1**

- Development and pilot testing of a short hand dermatitis screening tool in one acute care hospital (CREOD Pilot Funding)

## **Derm 2**

- Descriptive study of how healthcare organizations track prevalence and impact of hand dermatitis and the types of dermatitis screening, education and treatment options that are provided (CREOD Pilot Funding)

# A Series of Studies con't

## **Derm 3**

- Collection of photos of mild and moderate/severe hand dermatitis from an occupational health clinic setting to create a photo guide (CREOD Pilot Funding)

## **Derm 4**

- Assess the validity of the Hand Dermatitis Screening Tool and describe the feasibility of implementing workplace screening for OCD in healthcare (MOL ROP Funding)

# Derm 1

Development and pilot testing of a short hand dermatitis screening tool in one acute care hospital

- Phase 1 – Tool development
- Phase 2 – Pilot testing in one organization
- Phase 3 – Feasibility testing





# Methods

- Participant Recruitment
  - New Employee Orientation - Visit to OHC
  - Occupational Health Clinic Drop-in
  - On patient care units (during IPAC visits)
- Screening conducted by trained health professional (Occupational Health Clinic Nurse or Clinical Research Coordinator)

# A New Screening Tool

**UHN** Toronto General Hospital **creod** Centre for Research Expertise in Occupational Disease

**Appendix A: Hand Dermatitis Screening Study Tool**

Please complete the following:

Sex:  Male  Female Participant ID: \_\_\_\_\_  
(for administrative use only)

Occupation: \_\_\_\_\_

Are you a UHN employee?  Yes  No

Age Range:  20 - 29  30 - 39  40 - 49  50 - 59  60+

Do you currently work directly with patients?  Yes  No

How many years have you worked in a healthcare setting?  Less than 1 year  
 1 year or greater, but less than 5 years  
 5 or greater, but less than 10 years  
 10 or greater, but less than 20 years  
 20 years or greater

What is your most common method of hand hygiene in the workplace?  Soap and warm water only  
 Alcohol based hand rub only  
 Both equally  
 Other: \_\_\_\_\_

How many times a day do you wash your hands?  0-5  6-10  11-15  16-20  >20

In the past week, estimate how many hours a day you wore protective gloves.  0-2 hours  
 3-5 hours  
 6-9 hours  
 10+ hours

If applicable, estimate how many times per day you changed your protective gloves.  0-2  
 3-5  
 6-9  
 10+

Have you ever had eczema or dermatitis?  Yes  No

Have you had a rash on your hands in the past year?  Yes  No  
 If yes, do you still have a rash today?  Yes  No

**To be completed by clinician:**

Normal  Mild  Moderate/Severe

Clear skin: No redness, dryness | Small areas of hands have slight redness, dryness | Large areas of hands have slight redness, dryness  
 Small areas of hands have severe redness, dryness | Large areas of hands have severe redness, dryness, scaling, fissures, crusts or scabs, vesicles and papules

Educational information provided  Referral to Occupational Health clinic

Total time for screening: \_\_\_\_\_

Dermatitis Screening Tool – Feb. 2013, v4

## Normal

- Clear skin
- No redness, dryness

## Mild

- Small areas of hands have slight redness, dryness.

## Moderate/Severe

- Large areas of hands have slight redness, dryness
- Small areas of hands have severe redness, dryness
- Large areas of hands have severe redness, dryness, scaling, fissures, crusts or scabs, vesicles and papules.

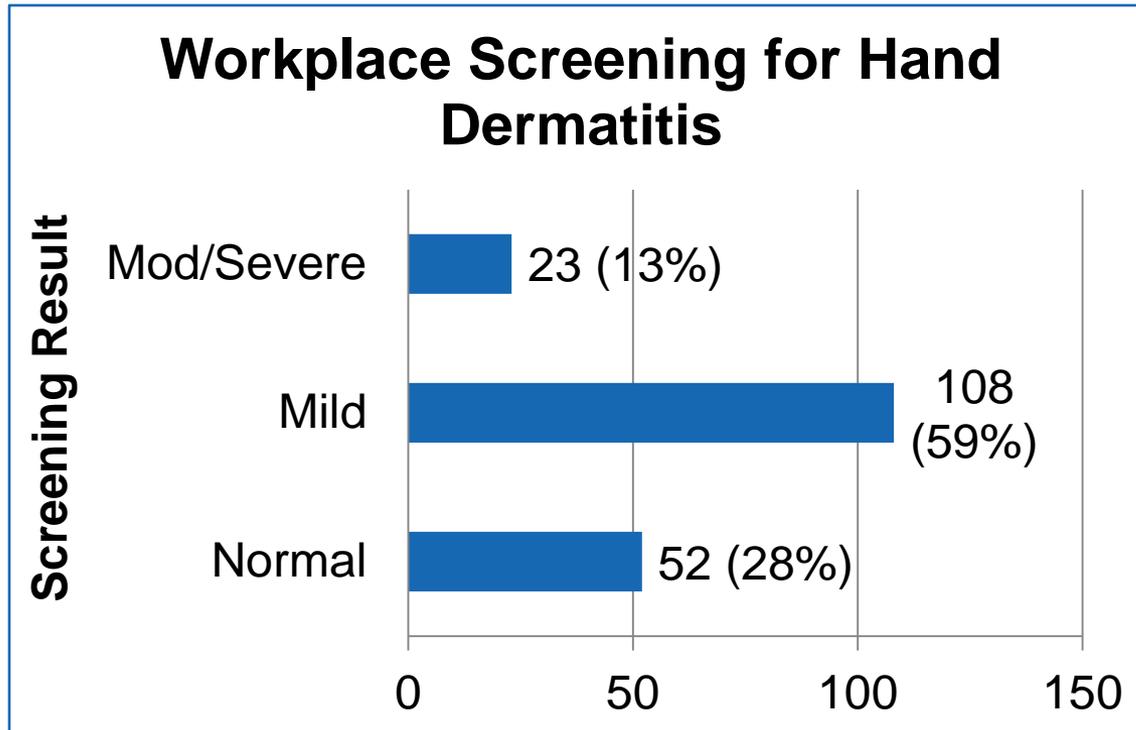
# Results

Demographic Characteristics (n=183)		
Sex	Female	153 (84%)
	Male	30 (16%)
Age	20-29	52 (28%)
	30-39	47 (26%)
	40-49	40 (22%)
	50-59	32 (17%)
	60+	12 (7%)
Years in Healthcare	Less than 1 year	28 (15%)
	1 year or greater, but less than 5 years	33 (18%)
	5 years or greater, but less than 10 years	34 (19%)
	10 years or greater, but less than 20 years	43 (23%)
	20 years or greater	45 (25%)
Works with Patients	Yes	138 (75%)
	No	45 (25%)
Occupation	Nursing	125 (69%)
	Allied Health Professions	14 (8%)
	Housekeeping	7 (4%)
	Administration/Research	34 (19%)

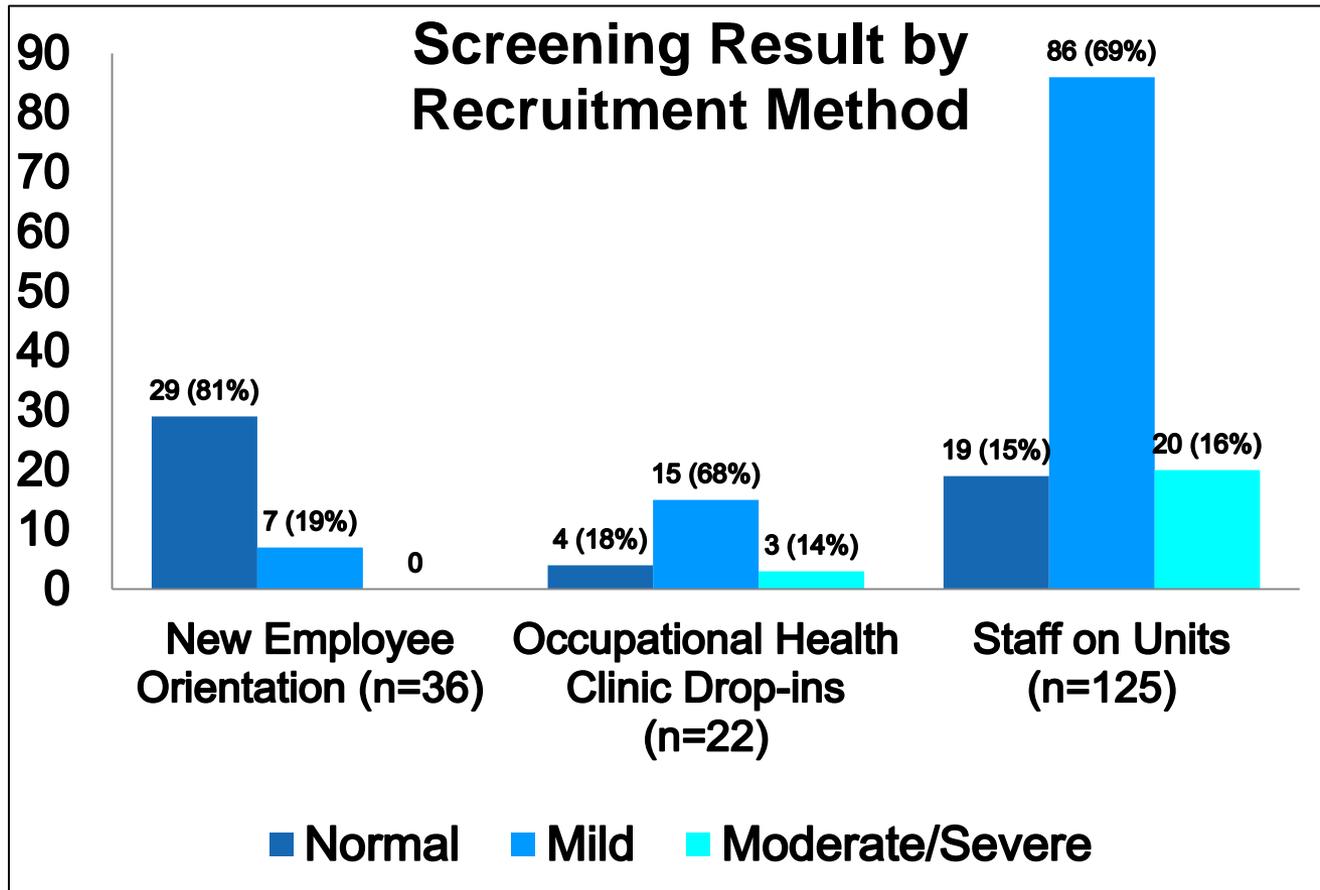
# Results

Work Practices and Skin Condition (n=183)		
Most Common Method of Hand Hygiene	Soap & warm water only	34 (19%)
	Alcohol based hand rub only	24 (13%)
	Both equally	125 (68%)
Daily Hand Washing Frequency	0-5	8 (4%)
	6-10	25 (14%)
	11-15	28 (15%)
	16-20	22 (12%)
	> 20	100 (55%)
Daily Glove Use	0-2 hours	72 (39%)
	3-5 hours	36 (20%)
	6-9 hours	37 (20%)
	10+ hours	38 (21%)
Daily Glove Changes	0-2	53 (29%)
	3-5	12 (7%)
	6-9	15 (8%)
	10+	103 (56%)
Past Eczema or Dermatitis	No	131 (72%)
	Yes	52 (28%)
Rash in Past Year	No	118 (64.5%)
	Yes	65 (35.5%)
Rash Today	No	171 (93%)
	Yes	12 (7%)

# Results



# Results



# Results

	Positive Screen		$\chi^2$ (N=183)
	Yes	No	
<b>Years working in Healthcare</b>			$\chi^2(4)=30.674, p<.001, \phi=.409$
<1	32.1%	67.9%	
$\geq 1$ - <5	63.6%	36.4%	
$\geq 5$ - <10	88.2%	11.8%	
$\geq 10$ - <20	81.4%	18.6%	
$\geq 20$	80.0%	20.0%	
<b>Works with patients</b>			$\chi^2(1)=7.538, p=.006, \phi=.203$
Yes	76.8%	23.2%	
No	55.6%	44.4%	
<b>Hand washing (times/day)</b>			$\chi^2(4)=14.867, p=.005, \phi=.285$
0-5	25.0%	75.0%	
6-10	56.0%	44.0%	
11-15	67.9%	32.1%	
16-20	81.8%	18.2%	
>20	78.0%	22.0%	
<b>Glove changes per day</b>			$\chi^2(3)=11.341, p=.010, \phi=.249$
0-2	54.7%	45.3%	
3-5	66.7%	33.3%	
6-9	80.0%	20.0%	
>10	79.6%	20.4%	
<b>Hours wearing gloves per day (last week)</b>			$\chi^2(3)=7.372, p=.061, \phi=.201$
0-2	61.1%	38.9%	
3-5	75.0%	25.0%	
6-9	75.7%	24.3%	
10+	84.2%	15.8%	



# Conclusions

- The study identified a high proportion of healthcare workers with hand dermatitis using a new rapid workplace screening tool.
- This finding makes the case for increased attention to prevention and early identification of hand dermatitis in health care.
- Risk factors identified for those with a positive screening result were generally consistent with the research literature that supports further testing of the tool.

# Knowledge Dissemination

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## Workplace screening for hand dermatitis: a pilot study

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<b>Background</b>	Health care workers (HCWs) are at increased risk for developing occupational skin disease (OSD) such as dermatitis primarily due to exposure to wet work. Identification of risk factors and workplace screening can help early detection of OSD to avoid the condition becoming chronic.
<b>Aims</b>	To determine risk factors and clinical findings for hand dermatitis using a workplace screening tool.
<b>Methods</b>	Employees at a large teaching hospital in Toronto, Canada, were invited to complete a two-part hand dermatitis screening tool. Part 1 inquired about hand hygiene practices and Part 2 comprised a visual assessment of participants' hands by a health professional and classification as (i) normal, (ii) mild dermatitis or (iii) moderate/severe dermatitis. Risk factors were determined using chi-square and Cochran-Armitage analysis on a dichotomous variable, where Yes represented either a mild or moderate/severe disease classification.
<b>Results</b>	There were 183 participants out of 643 eligible employees; response rate 28%. Mild or moderate/severe dermatitis was present in 72% of participants. These employees were more likely to work directly with patients, have worked longer in a health care setting, wash hands and change gloves more frequently, wear gloves for more hours per day, have a history of eczema or dermatitis and report a current rash on the hands or rash in the past 12 months.
<b>Conclusions</b>	There was a high percentage of HCWs with dermatitis and risk factors for dermatitis. These findings argue for increased attention to prevention and early identification of hand dermatitis and support further testing of the workplace screening tool.
<b>Key words</b>	Dermatitis; health care workers; occupational skin disease; screening.

### Introduction

Health care workers (HCWs) are at high risk for developing occupational skin disease (OSD) [1–5] such as dermatitis primarily due to exposure to wet work including frequent hand washing and glove use [3]. While OSD tends to become chronic, early recognition and treatment may lead to better outcomes [6,7]. While there are established tools for surveying work-related skin diseases and exposures, such as the Nordic Occupational Skin Questionnaire [8], they are not specific to assessing exposure to wet work in health care and even the shorter, abridged versions may

be too long for rapid screening on an ongoing basis. The objective of this study was to pilot test a new *rapid* workplace screening tool for hand dermatitis in HCWs.

### Methods

Employees at a large teaching hospital in Toronto, Canada, were recruited for the study while visiting the hospital's occupational health clinic or while working on in-patient units. All available staff were approached and invited to participate. Ethics approval was obtained through the administering organization.

# Derm 2

A descriptive study of how healthcare organizations track prevalence and impact of dermatitis and the types of dermatitis screening, education and treatment options that are provided.

- Participants – 23 hospitals (22 from Toronto Central and Central LHIN and 1 additional hospital that asked to participate)



# Methods

## OH Leader Survey

- Confidential, voluntary, 15 minute on-line survey
- Describe occupational health resources and ability to track and calculate the prevalence and impact of hand dermatitis among employees

## OH Nurse Interviews

- Confidential, voluntary 45 minute semi-structured telephone interview
- Describe practices for dermatitis screening, education and treatment regimens
- Copies of any tools, resources

# Results – OH Leader Survey

- 74% (17/23) response rate
- 77% of participants reported having a standard screening protocol - primarily used during hiring or when employees had skin complaints
- None of the hospitals calculated incidence or prevalence information
- Training related to skin protection was usually carried out by Infection Prevention and Control
- Relatively few WSIB claims reported



# Results – OHN Interviews

- 52% (12/23) response rate
- Participants noted that hand dermatitis is under-reported due to fear of being removed from patient care duties and a lack of meaningful modified work
- Participants reported a lack of collaboration between OH (responsible for identifying and treating hand dermatitis) and IPAC (responsible for hand hygiene) – ie. barrier creams



# Conclusions

- Screening for hand dermatitis was primarily done during orientation but not regularly thereafter
- Lack of standardization of practice across hospitals
- Low compensation claims filed despite high prevalence suggests workers do not report hand dermatitis

# Knowledge Dissemination

■ RESEARCH

## DERMATITIS SCREENING PRACTICES WITHIN TORONTO HOSPITALS

by K. Nichol, K. Kersey, R. Copes, A. Kendall, J. Eriksson and D. Linn Holness

### Background

Hand dermatitis is one of the most common occupational diseases (Smedley, Williams, Peel, & Pedersen, 2011). In the general population, the prevalence rate of hand dermatitis ranges between 2-15% (Sustaival et al., 2003). However, it is especially prevalent among healthcare workers (HCW), with a rate of occurrence estimated at approximately 21-30% (Ibler, Jemec, Flyvholm, et al., 2012). Occurrence of dermatitis has been linked to the frequent "wet work" required for HCW, such as frequent hand washing, the use of alcohol based hand sanitizers and prolonged glove use (Ibler, Jemec, & Agner, 2012).

Severe cases of dermatitis are costly due to lost time from work, occupational retraining and workers' compensation and disability payments (Lynde et al., 2010). One study estimated the cost of hand dermatitis to the Canadian healthcare system to be between 390 and 737 million dollars per year (Iskedjian, Pivko, Shear, Langley, & Einatson, 2004). Dermatitis can also have a very detrimental and long-lasting impact on an affected person's quality of life, sometimes to the point where workers may have to change jobs (Holness, 2011). Furthermore, there is limited evidence that hands affected by dermatitis have higher rates of bacterial colonization and carry a greater number of organisms. Cases have been documented where patient infection has been directly traced back to a HCW with dermatitis (Smedley et al., 2011).

Occupational skin disease is often under-reported (Keegel, Mac-

Implementation and evaluation of ongoing screening programs that track the prevalence and frequency of dermatitis would allow hospitals to achieve a better sense of the impact skin disease has on their HCW.

Farlane, Nixon, & LaMontagne, 2012). Ontario Workplace Safety and Insurance Board claims statistics report 400 cases in the health care sector between 2008 and 2012 (personal communication, October, 17, 2013). While we know that dermatitis has a major effect on the healthcare system and its workers, it is unclear how many cases of dermatitis are officially reported and treated in healthcare settings in Ontario. It is also unclear what screening and prevention practices are currently in place.

The objectives of the study were:

1. to describe, where possible, approaches to tracking prevalence, impact and frequency of dermatitis for HCW, and;
2. to describe the different screening, education, and treatment practices provided to healthcare workers in hospitals across the Greater Toronto Area (GTA).

### Study Design and Methods

This mixed method study consisted of two parts:

1. a survey of occupational health leaders who had oversight of occupational health and safety

departments and/or occupational health and safety clinics and; 2. qualitative interviews with Occupational Health nurses.

Both sets of participants were recruited from hospitals within the Central and Toronto Central LHINs during late winter/early spring 2014. Invitations to participate in the study were distributed through the Toronto occupational health leaders group. Ethics approval was obtained from the administering organization.

The survey of occupational health leaders was conducted using an online questionnaire in order to minimize the time commitment associated with participation. After providing informed consent online, participants proceeded to the short online survey consisting of several open and closed ended questions. Participants were asked to describe their occupational health resources and ability to track and calculate the prevalence and impact of hand dermatitis among their employees.

Qualitative semi-structured interviews were conducted with Occupational Health nurses who agreed to participate in the study. After obtaining informed con-

# Derm 3

Collection of photos of mild and moderate/severe hand dermatitis from an occupational health clinic setting

- Photo guide created in collaboration with expert occupational dermatologists



# Photo Guide

Normal



Mild



Moderate-Severe



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# Derm 4

Assess the validity of the Hand Dermatitis Screening Tool and describe the feasibility of implementing workplace screening for OCD in healthcare.



# Participants

- Hospital employees who engage in wet work and are at high risk for occupational hand dermatitis
  - Patient care providers, dietary and environmental service workers
- Three large acute care hospitals in Ontario, Canada
- Recruited in occupational health clinic and on patient care units



# Methods

- Participants completed new Hand Dermatitis Screening Tool
  - Sections 1-3 - Evaluation of risk factors, exposures, skin health
  - Section 4 - Screened for hand dermatitis - Occupational health nurse (OHN) or self-screened
  - Section 5 - Feasibility questions
  - Section 6 - Educational material, referral for medical follow up (positive screens only)
- Photos taken of participants hands



# Thank you

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