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EXECUTIVE SUMMARY

Recommendations for the Prevention, Detection and Management of Occupational Contact Dermatitis in Health Care Settings

October 2019

Overview

The *Recommendations for the Prevention, Detection and Management of Occupational Contact Dermatitis in Health Care Settings* document covers the primary, secondary and tertiary prevention of irritant and allergic contact dermatitis in health care workers (HCW) in health care settings. The focus is on HCWs with exposures to wet work and allergenic substances in the workplace, with the goal of providing recommendations for the prevention, early diagnosis and management of contact dermatitis.

The document focuses on:

- Clinical diagnosis and prognosis of occupational contact dermatitis
- Recommendations for workplace interventions, including modified work and re-deployment
- Impact of disease on personal health and quality of life
- Organizational risk assessment and the occupational hierarchy of controls
- Selection and use of gloves and cotton glove liners
- Barriers to hand hygiene best practices
- Use of emollient hand creams or lotions to maintain skin integrity
- Risk of colonization and transmission of microbial organisms when skin is not intact
- Education and training of health care workers
- Health equity considerations

The occupational dermatitis in health care committee (ODHCC) members were instrumental in the development of the document and were consulted at regular intervals to ensure the document would adequately address the identified needs of HCWs across all health care settings. Their active participation ensured that the unique interests and perspectives of their respective disciplines were properly represented.

In addition to ODHCC members, the document was circulated to stakeholders identified by the ODHCC for feedback prior to publication. This included experts in dermatology, dentistry, occupational medicine, infection prevention and control; as well as professional associations in the fields of occupational health and safety, occupational medicine, dentistry, occupational health nursing and two national public health entities. Feedback received was incorporated into the document, which included inquiring about tools and receiving suggestions from stakeholders to support implementation of the recommendations.

Key Messages

- Occupational contact dermatitis among HCWs is a common condition, with reported one-year prevalence varying between 11% and 24%.[1-3] The true prevalence and incidence is unknown due to significant under-reporting.[1,4,5]

- Wet work (including hand washing with soap and water and frequent glove use) is the greatest risk factor for the development of irritant contact dermatitis in HCWs, making up the majority of occupational contact dermatitis cases (75%-80%). The remainder of cases are allergic contact dermatitis, related to exposures in the work environment that cause an immunologic response, such as rubber accelerators in gloves, certain disinfectants, preservatives, fragrances or methacrylates (e.g., methylmethacrylates) used in orthopedic and dental practices.

- Occupational contact dermatitis is associated with considerable morbidity,[6] time lost from work or need for change in occupation, and can have negative long-term impacts on quality of work and home life.[7-25]

- HCWs with hand dermatitis are more likely to be colonized with microorganisms than HCWs with normal skin which can result in transmission of infection. This risk increases with the acuity and severity of the lesions.

- Early recognition of disease within 12 months can improve outcomes. Although mild disease may be managed with education, use of emollients and simple work modifications, moderate to severe disease should be evaluated by a physician with expertise in diagnosing contact dermatitis, including testing by skin prick or patch test where relevant, and initiation of appropriate treatment regimens.

- A comprehensive, multifaceted hand care program, including skin screening, best practices for hand hygiene and glove use, easy access to emollient hand care products, as well as education and training may benefit HCWs by reducing the incidence of disease (prevention) and improving disability outcomes.

Recommendations

The recommendations for occupational contact dermatitis put forward by the occupational dermatitis in health care committee (ODHCC) are summarized in Tables 1 through 8. There is a total of 25 recommendations numbered sequentially across eight categories as follows:

- Assessment and diagnosis (Table 1)
- Workplace management (Table 2)
- Screening and surveillance (Table 3)
- Gloves (personal protective equipment) and exposure control (Table 4)
- Skin care programs (including education) (Table 5)
- Emollient hand creams and lotions (Table 6)
- Hand hygiene (Table 7)
- Infection prevention and control (Table 8)

Table 1. Recommendations for the Assessment and Diagnosis of Occupational Contact Dermatitis—Ratings and Relevant Research Questions

#	Recommendation	Rating	Research Question(s)
1	Health care practitioners should take a full occupational history and relevant nonoccupational history when a health care worker presents with a skin rash, asking the health care worker about their job, the materials with which they work, the location of the rash and any temporal relationship with work. A clinical assessment should be made by the health care practitioner to inform medical treatment and workplace modifications.	IIA	24; 26
2	If the diagnosis is uncertain or the dermatitis is persistent despite clinical assessment and treatment by the health care practitioner, then the health care worker should be assessed by a physician with expertise in occupational contact dermatitis for recommendations regarding appropriate medical treatment and workplace modifications.	IIIB	3; 20; 26
3	A diagnosis of occupational contact dermatitis should be confirmed by a physician (e.g., dermatologist) with the knowledge, skills and training to diagnose this condition with reasonable accuracy (including objective testing where indicated), and not be made solely on the basis of a compatible history.	IIA	24
4	In order to provide additional diagnostic information, a physician with expertise in occupational contact dermatitis may conduct custom patch testing using haptens that are not commercially available in a standard tray.	IIIB	24

Table 2. Recommendations for Workplace Management of Occupational Contact Dermatitis—Ratings and Relevant Research Questions

#	Recommendation	Rating	Research Question(s)
5	If workplace modifications are unsuccessful, redeployment should be considered as the next step before occupation change, job loss or retirement.	IIIB	21
6	Specialized, intensive individual prevention programs, including workplace modification, should be developed for health care workers with moderate to severe occupational contact dermatitis. These programs should use approaches that target improvements in both physical and mental health.	IIIB	18; 20; 27

Table 3. Recommendations for Screening and Surveillance of Occupational Contact Dermatitis—Ratings and Relevant Research Questions

#	Recommendation	Rating	Research Question(s)
7	As timely diagnosis of contact dermatitis within one year of onset of symptoms can improve outcomes, routine screening (preplacement and periodic) using a validated and feasible tool can be used to identify individuals who may benefit from further expert evaluation and diagnosis.	IIIB	9; 10; 24; 25

Table 4. Recommendations for Gloves (Personal Protective Equipment) and Exposure Control in Occupational Contact Dermatitis—Ratings and Relevant Research Questions

#	Recommendation	Rating	Research Question(s)
8	Employers should implement strategies to eliminate or reduce exposure to agents that cause occupational contact dermatitis.	IIA	2
9	Employers should provide appropriate gloves where the risk of developing occupational contact dermatitis cannot be eliminated by removing exposure.	IIA	22
10	When occlusive glove use cannot be reduced or eliminated, using cotton glove liners may decrease the incidence of occupational contact dermatitis.	IIIB	22
11	When glove use is indicated, health care workers with hand dermatitis should be provided with cotton glove liners and instructed on their use.	IIIB	23

Table 5. Recommendations for Skin Care Programs (including Education)—Ratings and Relevant Research Questions

#	Recommendation	Rating	Research Question(s)
12	Employers should provide ongoing education, training, information, resources and products that will reduce the incidence and prevalence of occupational contact dermatitis in health care workers. A multifaceted hand hygiene program is recommended to effect behaviour change. The program should include: targeted and sustained education and training on hand hygiene best practices; a hand care program with education on skin self-screening and reporting; direction for appropriate selection and use of gloves, emollient hand creams and lotions; and provision of ready access to emollient hand creams and lotions, hand hygiene products and appropriate gloves.	IIA	4; 5; 6; 14; 16; 18

Table 6. Recommendations for the Use of Emollient Hand Creams and Lotions in Occupational Contact Dermatitis—Ratings and Relevant Research Questions

#	Recommendation	Rating	Research Question(s)
13	Employers should provide emollient hand lotions in the workplace and educate health care workers to use them regularly.	IA	11
14	To prevent contamination, emollient hand lotions should be provided by the facility in dispensers or pumps that are not topped up or refilled.	IIA	13
15	Communal tubs and tubes of hand cream or lotion should not be used.	IIA	13
16	Employers should not promote the use of prework (barrier) creams by health care workers in health care settings.	IIB	12; 16; 18
17	Emollient hand creams or lotions, that are free of allergens, should be used regularly. Hand creams or lotions should be applied all over the hands, including between the fingers and the back of the hand.	IIA	13
18	Emollient hand creams and lotions used in the health care setting must not compromise the efficacy of the hand hygiene products or gloves used.	IIIA	13
19	Workers with existing dermatitis should be advised to use emollient hand creams or lotions, that are free of allergens, at work.	IIIA	16; 18

Table 7. Recommendations for Hand Hygiene in Occupational Contact Dermatitis—Ratings and Relevant Research Questions

#	Recommendation	Rating	Research Question(s)
20	Workers should use alcohol-based hand rub containing emollients as the preferred method of hand hygiene when hands are not visibly soiled.	IIB	13
21	Hands should not be washed immediately after using alcohol-based hand rub.	IIIA	13
22	Health care workers with dermatitis should use alcohol-based hand rub containing emollients, if tolerated, when hands are not visibly soiled. Those who experience discomfort from hand hygiene should be individually assessed, preferably by an occupational health professional.	IIB	16; 18

Table 8. Recommendations for Infection Prevention and Control—Ratings and Relevant Research Questions

#	Recommendation	Rating	Research Question(s)
23	Health care practitioners should advise health care workers with dermatitis that areas of skin affected by dermatitis are more likely than normal skin to be colonized with microorganisms and that this risk is higher with more acute and more severe lesions.	IIA	28
24	Health care practitioners should advise health care workers with dermatitis, who may be at increased risk for colonization, that there is a potential risk they are more likely than health care workers who do not have dermatitis to transmit microorganisms that could colonize or cause infection (e.g., methicillin-resistant *Staphylococcus aureus*) to patients.	IIIA	29

#	Recommendation	Rating	Research Question(s)
25	For health care workers who have hand dermatitis, health care practitioners may recommend, during disease outbreaks, temporary redeployment to jobs that do not involve direct patient care. For health care workers who have moderate to severe dermatitis and provide direct care to patients who are at increased risk for infection (e.g., neonates, severely immunocompromised patients, patients in intensive care or post-operative units), temporary redeployment may be recommended until symptoms resolve or are reclassified as mild.	IIIB	29

Grading of Recommendations

The ODHCC adapted the grading scheme of the Provincial Infectious Diseases Advisory Committee.[26] The quality of the evidence (see Table 9) was based primarily on the study designs of the evidence evaluating the efficacy of an intervention. The strength of the recommendation (see Table 10) took into account the ODHCC's assessment of the quality of the evidence and the potential risks associated with the intervention as follows:

- Category A recommendations for an intervention are those where the ODHCC determined that the benefit of the intervention clearly outweighs the risks. ***The ODHCC intends that category A recommendations must be followed in all applicable health care settings.***

  Note: For interventions with no or trivial associated risks (e.g., Recommendation 1), weak supportive evidence can result in a category A recommendation as benefits will clearly outweigh risks.

- Category B recommendations for an intervention are those where benefits most likely outweigh the risk in most settings. ***The ODHCC intends that category B recommendations should be followed in most applicable health care settings.***

Categories A and B recommendations may also be made against an intervention if the risks of the intervention clearly or most likely outweigh the benefits.

Table 9. Assessment of the Quality of Evidence Supporting a Recommendation

Grade	Definition
I	Evidence from at least one properly randomized, controlled trial.
II	Evidence from at least one well-designed clinical trial without randomization, from cohort or case-controlled analytic studies, preferably from more than one centre, from multiple time series or from dramatic results in uncontrolled experiments.
III	Evidence from opinions of respected authorities on the basis of clinical experience, descriptive studies or reports of expert committees.

Table 10. Determination of the Strength of a Recommendation

Category	Definition
A	Recommendations that must be followed in all health care settings. The benefits of these practices outweigh the risks.
B	Recommendations that should be followed in most health care settings. The benefits of these practices likely outweigh the risks in most, but not all, settings and situations.

Note: When a recommendation is based on a regulation, no grading will apply.

Methodology

A working group at Public Health Ontario assembled a committee with broad expertise and experience. The occupational dermatitis in health care committee (ODHCC) consisted of members from a range of stakeholder groups across multiple disciplines. Members included researchers with expertise in occupational contact dermatitis; professionals in infection prevention and control and in occupational health; as well as representatives from the Ontario Occupational Health Nurses Association, the Ontario Ministry of Labour and the Public Services Health & Safety Association.

The working group and the ODHCC followed a protocol developed a priori to perform the literature review and evidence synthesis that informed the recommendations. Due to the breadth of research questions, some deviations from the standard systematic review protocol were required to complete the project in a timely manner. Further information regarding the protocol and any deviations can be made available on request.

Systematic Literature Search

Literature searches were developed by library information specialists in conjunction with the working group. MEDLINE, Embase and CINAHL databases were searched for articles from January 1980 to January 2017. Grey literature searches of guidelines were completed, together with a brief scan of conference abstracts. Experts from the ODHCC were asked to identify any articles that may not have been captured in the literature search. A few additional articles were provided.

Review of Abstracts

The search yielded a total of 11,970 results. Experimental and observational studies were included. Generally, qualitative studies were excluded, except for outcomes related to preferences, values and impact on workers. Case series, case reports, opinions, editorials, commentaries and reviews were excluded. Populations included were those occupations with high risk of occupational contact dermatitis, particularly as a result of wet work. Two independent reviewers screened the search results for full text review. Two independent reviewers determined whether articles marked for full text review would be included. Reference lists were scanned to identify additional articles. Consensus was used in cases of disagreement, or a third reviewer acting as an arbitrator made a final decision. In total, 52 peer-reviewed publications were selected to inform the recommendations presented in the document.

Critical Appraisal of Papers

During the data abstraction step, limitations related to the study design and results were included based on authors' stated limitations and abstractors' informal critical appraisal. Single reviewer abstraction with validation by another reviewer was conducted. Studies were excluded if significant issues with the applicability of the data were identified from the critical appraisal (e.g., use of hand hygiene products no longer used in health care settings or employing strategies contrary to infection control protocols such as reducing hand hygiene frequency).

Evidence Tables and Statements

Evidence tables were developed in advance and populated by a single reviewer, then validated by a second reviewer. The tables included study information (e.g., sample size, study design, timeframe, interventions and comparisons); study participants (e.g., occupation, job sector, demography); outcomes measured; effects reported; and main conclusions. Information on study quality, including considerations of relevance, reliability, validity and applicability, was also included in a limitations column.

Evidence Statements and Recommendations

Evidence statements, written based on the evidence tables, were reviewed by the ODHCC to inform development of recommendations. The body of evidence was not formally graded but limitations of individual studies were considered when forming recommendations.

Research Questions

An initial list of questions were derived from three guidelines identified from a grey literature search that were critically appraised by three reviewers using the AGREE-II tool as having the highest overall score amongst other identified guidelines and a high score in the rigour of development domain. It was important that the included guidelines used a strong evidence-based approach. The research questions were reviewed by the ODHCC. Questions were added or modified based on the specific needs and regional context of health care settings in Ontario. Broadly, questions covered aspects of primary, secondary and tertiary prevention, as well as diagnosis and management of occupational contact dermatitis, impact on workers, and infection prevention and control. (See Table 11).

Table 11. Research Questions and Recommendations

#	Research Question	Recommendation Number(s)
1	What personal factors could be measured at preplacement to better inform the management of risk for occupational dermatitis?	Insufficient evidence; no recommendations
2	Is the incidence of occupational contact dermatitis reduced by controlling exposure through elimination or substitution?	8
3	Does avoidance or control of exposure lead to improvement or recovery?	2
4	Do education and training programs help prevent the development of occupational contact dermatitis?	12

#	Research Question	Recommendation Number(s)
5	Do education and training programs increase the likelihood of secondary prevention of occupational contact dermatitis?	12
6	Do education and training programs for management of occupational contact dermatitis enable affected workers to avoid occupation change, job loss or retirement?	12
7	Does skin screening prevent occupational contact dermatitis?	Insufficient evidence; no recommendations
8	Does skin health surveillance prevent occupational contact dermatitis?	Insufficient evidence; no recommendations
9	Does skin screening result in earlier diagnosis of occupational contact dermatitis?	7
10	Is skin screening to identify workers with suspected occupational contact dermatitis for further evaluation by a dermatologist using a self-administered questionnaire (symptoms and/or picture-based) effective to replace screening by skin inspection by a trained occupational health expert?	7
11	Does the application of emollients help prevent the development of occupational contact dermatitis?	13
12	Do prework (barrier) creams help prevent the development of occupational contact dermatitis?	16
13	How can skin integrity be maintained when performing hand hygiene in order to minimize the development of occupational contact dermatitis?	14, 15, 17, 18, 20, 21
14	Does adhering to hand hygiene best practices, including a hand care program and appropriate selection and use of gloves, improve primary prevention of dermatitis in the workplace?	12

#	Research Question	Recommendation Number(s)
15	What is the comparative effectiveness of different hand hygiene best practices, including a hand care program and appropriate selection and use of gloves, on the primary prevention of occupational contact dermatitis?	Insufficient evidence; no recommendations
16	Does adhering to hand hygiene best practices, including a hand care program and appropriate selection and use of gloves, improve secondary prevention of dermatitis in the workplace?	12, 16, 19, 22
17	What is the comparative effectiveness of different hand hygiene best practices, including a hand care program and appropriate selection and use of gloves on the secondary prevention of occupational contact dermatitis?	Insufficient evidence; no recommendations
18	Does adhering to hand hygiene best practices, including a hand care program and appropriate selection and use of gloves, improve tertiary prevention of dermatitis in the workplace?	6, 12, 16, 19, 22
19	What is the comparative effectiveness of different hand hygiene best practices, including a hand care program and appropriate selection and use of gloves on the tertiary prevention of occupational contact dermatitis?	Insufficient evidence; no recommendations
20	What evidence is there for benefit of workplace modification for tertiary prevention of occupational contact dermatitis?	2, 6
21	What evidence is there for benefit of redeployment for tertiary prevention of occupational contact dermatitis?	5
22	Is the incidence of occupational contact dermatitis reduced by personal protective equipment (i.e., gloves [including cotton glove liners])?	9, 10
23	What evidence is there for benefit of use of personal protective equipment (i.e., gloves [including cotton glove liners]) for tertiary prevention of occupational contact dermatitis?	11

#	Research Question	Recommendation Number(s)
24	How effective are the criteria for the diagnosis of occupational contact dermatitis to differentiate from nonoccupational contact dermatitis or other skin diseases?	1, 3, 4, 7
25	Does earlier diagnosis of occupational contact dermatitis make a difference in outcomes?	7
26	What is the clinical prognosis for workers with occupational contact dermatitis?	1, 2
27	What is the impact of occupational contact dermatitis on the worker, including e.g., work life, personal life and employment?	6
28	Are health care workers with dermatitis at higher risk for skin colonization or skin infection than health care workers without dermatitis?	23
29	Are health care workers with dermatitis more likely to transmit infections to patients than health care workers without dermatitis?	24, 25

About the Document

The recommendations are intended for those who would provide advice to HCWs on hand care or on the diagnosis and basic clinical management of contact dermatitis. This includes occupational health professionals, primary care practitioners and other healthcare professionals. Depending on an individual's role within a health care setting, the use of the document may vary (see Table 12).

Recommendations from this document can be used to complete an organizational risk assessment to eliminate, substitute or engineer changes in the workplace that reduce exposures to irritant or allergenic substances. Effective education and training programs, policies and procedures, together with ready access to appropriate hand-care products and gloves, will support the HCW, their supervisor(s), educators and management, in preventing or mitigating occupational contact dermatitis in the workplace.

Table 12. Impact of Recommendations Based on Role within Health Care Settings

Role	Impact of Recommendations
Front-line health care workers (HCWs)	Direct beneficiaries of recommendations for improved prevention, detection and management of occupational contact dermatitis. Note: Resources specific to the educational needs of each sector of this heterogeneous population (e.g., nurses, environmental service workers, home-care workers, dental assistants) need to be developed.
Occupational Health, Infection Prevention and Control, primary care professionals, educators	Provides an evidence-based approach to the early detection of disease, advice regarding screening, hand hygiene, emollients, use of gloves and cotton glove liners, as well as recommendations for modified work.
Employers, supervisors, managers	Promotes provision and support of resources for effective education and training of HCWs, and ready access to hand-care products (emollients) and gloves.
Joint health and safety committee; health and safety representatives	Provides evidence-based information to educate health and safety committees and representatives.
Procurement	Ensures appropriate selection of hand care products (emollients), gloves and glove liners within health care settings.

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