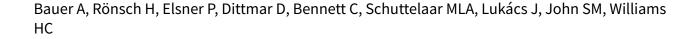


Cochrane Database of Systematic Reviews

Interventions for preventing occupational irritant hand dermatitis (Review)



Bauer A, Rönsch H, Elsner P, Dittmar D, Bennett C, Schuttelaar MLA, Lukács J, John SM, Williams HC. Interventions for preventing occupational irritant hand dermatitis. *Cochrane Database of Systematic Reviews* 2018, Issue 4. Art. No.: CD004414. DOI: 10.1002/14651858.CD004414.pub3.

www.cochranelibrary.com



[Intervention Review]

Interventions for preventing occupational irritant hand dermatitis

Andrea Bauer¹, Henriette Rönsch¹, Peter Elsner², Daan Dittmar³, Cathy Bennett⁴, Marie-Louise A Schuttelaar³, Judit Lukács⁵, Swen Malte John⁶, Hywel C Williams⁷

¹Department of Dermatology, University Hospital Carl Gustav Carus, Technical University Dresden, Dresden, Germany. ²Department of Dermatology and Allergology, Friedrich Schiller University, Jena, Germany. ³Department of Dermatology, University Medical Center Groningen, Groningen, Netherlands. ⁴Centre for Innovative Research Across the Life Course (CIRAL), Coventry University, Coventry, UK. ⁵Department of Dermatology, University Hospital Jena, Jena, Germany. ⁶Department of Dermatology, Environmental Medicine, Health Theory, University of Osnabrueck, Osnabrueck, Germany. ⁷Centre of Evidence Based Dermatology, University of Nottingham, Nottingham, UK

Contact address: Andrea Bauer, Department of Dermatology, University Hospital Carl Gustav Carus, Technical University Dresden, Fetscherstr. 74, Dresden, 01307, Germany. Andrea.Bauer@uniklinikum-dresden.de.

Editorial group: Cochrane Skin Group.

Publication status and date: New search for studies and content updated (conclusions changed), published in Issue 4, 2018.

Citation: Bauer A, Rönsch H, Elsner P, Dittmar D, Bennett C, Schuttelaar MLA, Lukács J, John SM, Williams HC. Interventions for preventing occupational irritant hand dermatitis. *Cochrane Database of Systematic Reviews* 2018, Issue 4. Art. No.: CD004414. DOI: 10.1002/14651858.CD004414.pub3.

Copyright © 2018 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

ABSTRACT

Background

Occupational irritant hand dermatitis (OIHD) causes significant functional impairment, disruption of work, and discomfort in the working population. Different preventive measures such as protective gloves, barrier creams and moisturisers can be used, but it is not clear how effective these are. This is an update of a Cochrane review which was previously published in 2010.

Objectives

To assess the effects of primary preventive interventions and strategies (physical and behavioural) for preventing OIHD in healthy people (who have no hand dermatitis) who work in occupations where the skin is at risk of damage due to contact with water, detergents, chemicals or other irritants, or from wearing gloves.

Search methods

We updated our searches of the following databases to January 2018: the Cochrane Skin Specialised Register, CENTRAL, MEDLINE, and Embase. We also searched five trials registers and checked the bibliographies of included studies for further references to relevant trials. We handsearched two sets of conference proceedings.

Selection criteria

We included parallel and cross-over randomised controlled trials (RCTs) which examined the effectiveness of barrier creams, moisturisers, gloves, or educational interventions compared to no intervention for the primary prevention of OIHD under field conditions.

Data collection and analysis

We used the standard methodological procedures expected by Cochrane. The primary outcomes were signs and symptoms of OIHD developed during the trials, and the frequency of treatment discontinuation due to adverse effects.



Main results

We included nine RCTs involving 2888 participants without occupational irritant hand dermatitis (OIHD) at baseline. Six studies, including 1533 participants, investigated the effects of barrier creams, moisturisers, or both. Three studies, including 1355 participants, assessed the effectiveness of skin protection education on the prevention of OIHD. No studies were eligible that investigated the effects of protective gloves. Among each type of intervention, there was heterogeneity concerning the criteria for assessing signs and symptoms of OIHD, the products, and the occupations. Selection bias, performance bias, and reporting bias were generally unclear across all studies. The risk of detection bias was low in five studies and high in one study. The risk of other biases was low in four studies and high in two studies.

The eligible trials involved a variety of participants, including: metal workers exposed to cutting fluids, dye and print factory workers, gut cleaners in swine slaughterhouses, cleaners and kitchen workers, nurse apprentices, hospital employees handling irritants, and hairdressing apprentices. All studies were undertaken at the respective work places. Study duration ranged from four weeks to three years. The participants' ages ranged from 16 to 67 years.

Meta-analyses for barrier creams, moisturisers, a combination of both barrier creams and moisturisers, or skin protection education showed imprecise effects favouring the intervention. Twenty-nine per cent of participants who applied barrier creams developed signs of OIHD, compared to 33% of the controls, so the risk may be slightly reduced with this measure (risk ratio (RR) 0.87, 95% confidence interval (CI) 0.72 to 1.06; 999 participants; 4 studies; low-quality evidence). However, this risk reduction may not be clinically important. There may be a clinically important protective effect with the use of moisturisers: in the intervention groups, 13% of participants developed symptoms of OIHD compared to 19% of the controls (RR 0.71, 95% CI 0.46 to 1.09; 507 participants; 3 studies; low-quality evidence). Likewise, there may be a clinically important protective effect from using a combination of barrier creams and moisturisers: 8% of participants in the intervention group developed signs of OIHD, compared to 13% of the controls (RR 0.68, 95% CI 0.33 to 1.42; 474 participants; 2 studies; low-quality evidence). We are uncertain whether skin protection education reduces the risk of developing signs of OIHD (RR 0.76, 95% CI 0.54 to 1.08; 1355 participants; 3 studies; very low-quality evidence). Twenty-one per cent of participants who received skin protection education developed signs of OIHD, compared to 28% of the controls.

None of the studies addressed the frequency of treatment discontinuation due to adverse effects of the products directly. However, in three studies of barrier creams, the reasons for withdrawal from the studies were unrelated to adverse effects. Likewise, in one study of moisturisers plus barrier creams, and in one study of skin protection education, reasons for dropout were unrelated to adverse effects. The remaining studies (one to two in each comparison) reported dropouts without stating how many of them may have been due to adverse reactions to the interventions. We judged the quality of this evidence as moderate, due to the indirectness of the results. The investigated interventions to prevent OIHD probably cause few or no serious adverse effects.

Authors' conclusions

Moisturisers used alone or in combination with barrier creams may result in a clinically important protective effect, either in the long- or short-term, for the primary prevention of OIHD. Barrier creams alone may have slight protective effect, but this does not appear to be clinically important. The results for all of these comparisons were imprecise, and the low quality of the evidence means that our confidence in the effect estimates is limited. For skin protection education, the results varied substantially across the trials, the effect was imprecise, and the pooled risk reduction was not large enough to be clinically important. The very low quality of the evidence means that we are unsure as to whether skin protection education reduces the risk of developing OIHD. The interventions probably cause few or no serious adverse effects

We conclude that at present there is insufficient evidence to confidently assess the effectiveness of interventions used in the primary prevention of OIHD. This does not necessarily mean that current measures are ineffective. Even though the update of this review included larger studies of reasonable quality, there is still a need for trials which apply standardised measures for the detection of OIHD in order to determine the effectiveness of the different prevention strategies.

PLAIN LANGUAGE SUMMARY

Treatments to prevent hand skin irritation in the workplace

Review question

In this review, we set out to assess the available evidence on the effect of barrier creams, moisturisers, gloves, and educational programmes for employees who are at risk of developing irritation of the skin on the hands. We found nine studies. None of them investigated protective gloves. The evidence in this review is current to 17 January 2018.

Background

Occupational irritant hand dermatitis (OIHD) is a skin disease that occurs on the hands of employees in certain jobs. The first signs are red and scaly patches in the finger webs and on the knuckle area of the hands. Itchy blisters, painful cracks, and possibly infection are common, and eventually the skin becomes thickened.



Hand skin irritation can affect employees who regularly come into contact with water, detergents, chemicals, and other irritants, or who wear gloves during their working day. People at particular risk include hairdressers, nurses, cleaners, builders, and people who work in the dye, printing, metal, and food industries. The condition is relatively common and affects about 5 to 20 out of 10,000 full-time workers per year. Preventing OIHD from developing is important because it is difficult to clear once it starts.

Study characteristics

We included nine studies in this review, involving 2888 male and female workers aged between 16 and 67. The studies included several types of workers: metal workers, dye and print factory workers, gut cleaners in swine slaughterhouses, cleaners and kitchen workers, hospital employees, and hairdressing apprentices. We were unable to find out whether or not the preventive measures were equally effective in all these professions because there were too few trials. The studies lasted from four weeks up to three years.

Key results

Some of the preventive measures may reduce the risk of hand skin irritations. However, there were too few studies to be sure of this. The studies were too different from each other to combine in a meaningful way, and the results were too imprecise. Our results are therefore still debatable.

Various barrier creams, moisturisers, and skin protection education programs were investigated. It is possible that barrier creams may slightly reduce the risk of developing OIHD. This result was based on four studies. In these studies, 29% of people who applied barrier creams developed hand skin irritations. In the control group, who did not apply barrier creams, 33% developed hand skin irritations. The results of three studies showed that moisturisers may reduce the risk of developing OIHD by a useful amount. Thirteen per cent of the people who used moisturisers developed hand skin irritations, compared to 19% of those who did not use moisturisers. Two studies showed that using a combination of barrier creams and moisturisers may reduce the risk of developing OIHD by a useful amount. Eight per cent of the people who used moisturisers and barrier creams developed hand skin irritations, compared to 13% of the control group. Based on three studies, we are uncertain whether skin protection education reduces the risk of developing OIHD. In these studies, 21% of the people who received skin protection education developed hand skin irritations, compared to 28% of the people in the control group.

The safety and tolerability of these measures were not systematically addressed in these studies. However, no serious reactions to the treatments were reported. Mild reactions like itching or reddening of the skin were reported for only few people who applied the barrier creams or moisturisers. The measures to prevent hand skin irritations probably cause only few or no serious adverse effects.

Quality of the evidence

For barrier creams, moisturisers, or a combination of both, the quality of the evidence was low concerning the prevention of OIHD. There was not enough information and hand dermatitis was assessed differently across the studies.

For educational programmes, the quality of the evidence was very low concerning the prevention of hand skin irritation. There was not enough information, hand dermatitis was assessed differently across the studies, and the studies were poorly conducted in some important respects.

For the other key outcome, safety and tolerability of the treatments, the quality of the evidence was moderate because only indirect results were available.