

Review Article

Skin protection programmes

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Educational programmes, including evidence-based recommendations on skin protection (skin protection programmes), have been proposed for the prevention of irritant contact dermatitis in occupations with a high frequency of this disease. Recent intervention studies directed at wet-work employees showed a positive influence on wet-work behaviour and on clinical skin symptoms. The structure and implementation of skin protection programmes are discussed.

Key words: educational programme; gloves; irritant contact dermatitis, moisturizers; occupational, prevention; skin protection programme. © Blackwell Munksgaard, 2002.

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Occupational contact dermatitis (OCD) is a common disease with considerable economic consequences for society(1–5), and with an annual incidence recently reported as high as 12.9 per 100 000 workers (4). OCD mostly affects young people, and most often affects the hands, with hand dermatitis frequently becoming chronic with a mean duration of >10 years (1). The social consequences of the disease are therefore important, and skin diseases were found in a recent study to be a significant contributory risk factor in long-term unemployment (2). Preventive measures are therefore greatly needed.

Over the years, preventive measures have focused on important aspects such as regulation of the environment to protect the workers and identification of high-risk groups. Protective measures such as the use of moisturizers and gloves have, in a number of experimental studies, been shown to be effective in the prevention of irritant contact dermatitis(6–19), but the beneficial effects have not been convincingly confirmed in field studies(20–22). This discrepancy between observations in experimentally designed studies and studies in the workplace can be explained in several ways. One explanation is that intervention with respect to just one factor may not have enough impact to change the situation. Another explanation is that, while the design of an experimental study is in most cases simple, with exposure of the skin to only one irritant at a time, exposure in the workplace is complex with exposure to several irritants and allergens at the same time. However, recently published intervention studies demonstrate that struc-

tured information given as a skin protection programme may prevent skin symptoms(23–25). Such studies show that detailed information about skin care influences behaviour during working hours (23, 25), which is followed by a reduction in skin symptoms (25).

What is a skin protection programme?

A skin protection programme is a series of practical instructions about skin care aimed at a well-defined group of people. In relation to OCD the programme may be directed at a certain occupation (i.e. wet workers, mechanics, hairdressers, etc.), or at a certain workplace. It is necessary that the skin protection programme is an integrated part of an educational programme, which should provide information on healthy and diseased skin, lead to early recognition of skin symptoms, and give the employees prerequisites to understand evidence-based recommendations regarding skin protective procedures. Ideally, an educational programme should improve knowledge about skin care, followed by a change in behaviour in favour of skin protection and a decrease in clinical skin symptoms.

Recommendations given in a skin protection programme should be evidence-based, as far as this is available. The practice of evidence-based medicine means 'integrating *individual* clinical expertise with the best available *external* clinical evidence from systematic research' (26)Table 1. While the individual clinical expertise is the skill and judgment that individual clinicians acquire through clinical experience and practice, the best

Table 1. Skin protection programme

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- 1 Wash your hands in lukewarm water. Rinse and dry your hands thoroughly after washing
 - 2 Use protective gloves when starting wet-work tasks
 - 3 Protective gloves should be used when necessary but for as short a time as possible
 - 4 Protective gloves should be intact and clean and dry inside
 - 5 When protective gloves are used for more than 10 min, cotton gloves should be worn underneath
 - 6 Do not wear rings at work
 - 7 Disinfectant should be used according to the recommendations for the workplace
 - 8 Apply moisturizers on your hands during the working day or after work. Select a lipid-rich moisturizer free from fragrances and with preservatives having the lowest allergen potential
 - 9 Moisturizers should be applied all over the hands including the fingerwebs, fingertips and back of the hand.
 - 10 Take care also when doing housework, use protective gloves for dishwashing and warm gloves when going outside in winter
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available external clinical evidence is data obtained from relevant research, especially patient-centered clinical research into the efficacy of (in this case) preventive regimens. Such studies are hardly available within the area of prevention of OCD, and data from experimental studies have to be relied on in the preparation of a skin protection programme.

Recently, the importance of employee involvement has been emphasized, called *participatory action research* (27, 28). This implies that the employees and/or their representatives participate actively in all phases of the intervention process. One practical way to manage this is first to let a group of frontline employees undergo a training programme, then let them develop written guidelines regarding skin protection and hazard management and subsequently pass on the information to their colleagues (25). A protection programme is more likely to be successful when managers and members of the local safety board are involved in the programme as well as the employees. Ideally, a policy about the management of work-related skin problems should exist in all workplaces, but a recent survey from the UK disappointingly illustrated that this was only true in 27% of all workplaces (29).

The information in the programme should be directed at the group to which it is given, and information should be given in a comprehensible way. Communication of the message of the programme should be done with respect to the group/employees at which the programme is aimed. Ways of communication may include individual instruction, information meetings, posters, booklets and video programmes. Implementation of written instructions (guidelines) in the workplace for each working sector is strongly recommended (25).

The success of a skin protection programme depends on the protective measures recommended in the programme (gloves and moisturizers) being available in the workplace and at home. Freely available moisturizers and gloves are recommended. Attention to the programme should be maintained, and the programme should be regularly repeated or – better still – be incorporated as

a natural part of the health and safety routines in the workplace, with new employees routinely being introduced to the programme.

What should a skin protection programme include?

An example of a skin protection programme with relevance to wet-work occupations is given in Table 1. The recommendations are briefly discussed below, and the experimental investigations and clinical studies on which the recommendations are based are given as references.

1 – Wash your hands in lukewarm water. Rinse and dry your hands thoroughly after washing

The skin damaging potential of a detergent is temperature dependent. Warm, soapy water causes more skin irritation than lukewarm or cold soapy water (30, 31).

2 – Use protective gloves when starting wet-work tasks

Unprotected wet work is a significant risk factor for the development of skin irritation (32, 33). Gloves are essential for protecting the skin against water, dirt, detergents, shampoos, and foodstuffs.

3 – Protective gloves should be used when necessary but for as short a time as possible

Irritant reactions due to wearing gloves are frequently reported. Prolonged use of gloves leads to impairment of the skin barrier, especially if the skin has previously been exposed to detergents (7, 8, 34, 35).

4 – Protective gloves should be intact and clean and dry inside

Even a small amount of an irritant may act as a strong irritant when the skin is occluded (8). Fur-

thermore, allergens trapped inside a glove could induce sensitization or elicit allergic contact dermatitis in a person already sensitized.

5 – When protective gloves are used for more than 10 min, cotton gloves should be worn underneath

Wearing a cotton glove inside the protective glove has been shown to protect the skin from deterioration caused by using gloves (7).

6 – Do not wear rings at work

Eczema often starts under a finger ring (36). Irritants may become trapped under the ring, causing irritation and irritant contact dermatitis (37).

7 – Disinfectants should be used according to the recommendations for the workplace

Use of disinfectants may cause skin irritation followed by irritant contact dermatitis, and was recently reported as a contributory factor for development of hand dermatitis (23, 38, 39). However, individual factors for each workplace have to be considered.

8 – Apply moisturizers on your hands during the working day or after work. Select a lipid-rich moisturizer free from fragrance and with preservatives having the lowest allergen potential

Moisturizers have been shown to promote regeneration of barrier-damaged skin (40, 41). Moisturizers that are rich in lipids promote regeneration faster than those that contain less lipid (42). Fragrance and preservatives are common causes of allergic reactions to cosmetic products (43).

9 – Moisturizers should be applied all over the hands, including the fingerwebs, fingertips and back of the hand

Application of moisturizers to the hands is often incomplete, since many areas are skipped during application (44).

10 – Take care also when doing housework, use protective gloves for dishwashing and warm gloves when going outside in winter

Development of irritant contact dermatitis is caused by exposure to cumulative irritants, often in low concentrations (45). Domestic exposure therefore adds to exposure at work. Domestic wet work has been recognised as an important risk factor for the development of hand eczema (46). Dur-

ing the winter, the skin is more susceptible to irritant exposure (47).

Discussion

The introduction of skin protection programmes in workplaces is an important element in the prevention of occupational contact dermatitis. There is evidence of positive effects of the implementation of a skin protection programme in workplaces (23, 25), and this programme was recently reported to change behaviour and decrease skin symptoms in wet occupations. More studies – ideally long-term large-scale studies – to confirm further the efficacy of this and other skin protection programmes, and to investigate the cost-effectiveness of skin protection programmes are needed.

To sum up, it is important that the information in the programme is based on the best available medical evidence, and that newly available information is included in the programme on an ongoing basis. It is also important that the information in the programme is comprehensible to the workers to whom it is addressed, and that awareness of the programme is continually fostered. Since the efficacy of skin protection programmes for reduction of skin symptoms in wet occupations has now been established, further work on refinement of structure and implementation of skin protection programmes within different occupations should be initiated.

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