



Personal Protective Equipment–Related Equipment Dermatitis

A View From Here

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INTRODUCTION

The images of nurses, physicians, and other frontline healthcare workers have overwhelmed many of us who helplessly sit on the sidelines of the COVID-19 pandemic feeling impotent to do what we do best, alleviate pain and suffering. The extreme exhaustion on the faces of our nursing colleagues gives us pause. We cannot help but see the overwhelming fatigue and, importantly, the facial dermatological manifestations of prolonged exposure to personal protective equipment (PPE), just one of multiple side effects of the relentless pressure to do more, care more, be more.

This View From Here focuses on PPE-related facial skin complications, in particular, mask dermatitis and approaches to its topical management. Clinical manifestations range from mild erythema, rashes, and swelling to more severe inflammatory pustules, maceration, and lichenification of the nasal bridge, forehead, and post-auricle areas that come into contact with the mask. Cosmesis is substantially altered, negatively affecting quality of life and potentially impeding patient care. Lan and colleagues¹ conducted an online survey in January to February 2020 of nurses and physicians who worked in hospitals in Hubei, China; the prevalence of skin damage associated with the use of facial PPE was 97% (n = 526/542). Desquamation/peeling (70.3%) and dryness/tightness (62.2%) were the most commonly reported symptoms and signs, affecting predominantly the nasal bridge (83.1%), cheek, and forehead. Not surprisingly, those who wore facial PPE greater than 6 hours were more likely to experience skin damage than those who wore PPE for a shorter period of time. For example, if one wore an N95 mask, he or she experienced an odds ratio of 2.02 (95% confidence interval, 1.35-3.01), meaning the likelihood of experiencing some type of skin damage with wearing the N95

mask was slightly more than twice higher than providers who wore the same type of mask fewer than 6 hours.

We reviewed the literature, visited multiple Web sites, and reached out to our wound care and dermatology colleagues to obtain the latest prevention and treatment information on face mask dermatitis, also known as irritant contact dermatitis.^{2,3} We want to provide, whenever possible, evidence-based recommendations for the use of topical prevention and treatment approaches for irritant contact dermatitis associated with wearing of masks but acknowledge that our recommendations should be categorized best practice at this point (Table). Additional suggested readings are provided in the Box.

We are aware that some are using polyurethane foam dressing to prevent PPE-related skin damage. We concur that these dressings may be placed under face shields that do not require a seal against the skin to prevent and treat areas of skin damage *provided* the dressing does not interfere with or compromise the seal of the mask (Figure).



Figure. Silicone adhesive–bordered polyurethane foam dressing applied to cushion a face shield headband.

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TABLE.
Recommendations for Prevention and Treatment of Personal Protective Equipment–Related Skin Damage

<p>Recommendations for prevention</p>	<p>Prior to application of the mask, lightly wash your face with a gentle face wash, paying particular attention to your forehead, nasal bridge, cheeks, below the chin, and behind the auricles. Dry well.</p> <p>Apply a thin layer of a moisturizing or noncomedogenic (product that does not block pores of the skin), if acne-prone, facial lotion or cream to your entire face. The product will provide a barrier layer between the mask and skin. If you are likely to experience excessive moisture or sweating, apply an alcohol-free barrier film (cyanoacrylate-based moisture barrier); various applicators are available that use a wipe or wand for application to the skin. Apply the product to skin where the facepiece is likely to touch the skin or cause friction such as the nose bridge, cheeks, tops of ears, or forehead (do not use in or around the eye). Allow these products to dry completely (at least 90 s) prior to putting on your mask. Barrier films do not need to be removed. Apply daily but if buildup occurs, use less frequently or remove with a medical-grade adhesive remover.</p> <p>There are differences of opinion regarding the use of petrolatum-based products under certain types of masks as these could potentially influence the barrier seal of the mask. We asked and found most product manufacturers recommend against using petrolatum-based products. Petrolatum-based products would be a better choice to apply to damaged skin when not wearing the mask.</p> <p>Allergic reactions to mask materials may occur. The most common true allergens are glue strips or rubber along the nose, or a metal wire that allows it to be molded to the face. The wire may be made out of nickel, a common allergen, and can cause a reaction even through a thin fabric liner such as cotton.⁴ We also found reported in the literature reports of reuse sterilizing sprays causing contact reactions. Thus, care should be exercised when using these masks.</p>
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(continues)

TABLE.
Recommendations for Prevention and Treatment of Personal Protective Equipment–Related Skin Damage (Continued)

<p>Recommendations for treatment</p>	<p>For contact dermatitis, particularly when true ACD is suspected, a low-potency topical corticosteroid should be applied to reduce skin inflammation.</p> <p>To provide a more durable moisture barrier, or for actual skin loss, consider application of a breathable, no-sting cyanoacrylate-based skin protectant/sealant to the affected area as per package instructions. This product may be applied up to 3 times per day and is designed to bond with the skin.</p> <p>For contact dermatitis, particularly when true ACD is suspected, a low-potency topical corticosteroid should be applied to reduce skin inflammation.</p>
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Abbreviation: ACD, allergic contact dermatitis.

BOX.
Additional Readings

1. Yan Y, Chen H, Chen L, Cheng B, et al. Consensus of Chinese experts on protection of skin and mucous membrane barrier for health-care workers fighting against coronavirus disease 2019. *Dermatol Ther.* 2020:e13310. doi:10.1111/dth.13310.
2. Zuo Y, Hua W, Luo Y, Li L. Skin reactions of N95 and medial masks among health care personnel: a self-report questionnaire survey in China. *Contact Dermatitis.* 2020:e13555. doi:10.1111/cod.13555.

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1. Lan J, Song Z, Miao X, et al. Skin damage among healthcare workers managing coronavirus disease-2019. *J Am Acad Dermatol.* 2020;82(5):1215-1216.
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3. LaBlanc K, Heerschap C, Butt B, et al. *Prevention and Management of Skin Damage Related to Personal Protective Equipment: Update 2020.* Ottawa, ON, Canada: Nurses Specialized in Wound, Ostomy and Continence Canada; 2020.
4. National Eczema Association. Home page. <https://nationaleczema.org>. Accessed April 22, 2020.