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both, we ruled out herpes simplex virus and varicella zoster virus clinically and by performing polymerase chain reaction.

Most patients who presented with an erythematous rash had mild itch. There was no correlation between the presence of rash and fever. Involved sites were primarily the trunk and upper limbs, but the head and face were largely spared. In this group, younger patients seem to display more intense and disseminated cutaneous manifestations, including darker red, larger wheal-like and purpuric lesions. All exanthems were short-lived and resolved spontaneously without specific dermatologic treatment after mean of 3 days (range, 2-5 days). The dermatologic manifestations could not be correlated to COVID-19 severity.

Diffuse petechiae, gravity-dependent, and multiple, generalized palpable purpura, and acroischemia (primarily finger/toe cyanosis, but neither skin bulla nor dry gangrene) were seen in more severe cases. These manifestations were associated with clotting disorders, reflected in increased prothrombin time and fibrinogen and D-dimer levels, which are seen in intensive care patients.³⁻⁵

In conclusion, some patients with COVID-19 present with inflammatory cutaneous findings: 7.8% in our cohort of hospitalized adults. These skin findings are generally mild and self-limiting and do not correlate with overall prognosis. They generally resolve promptly without specific therapy.

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COVID-19 and personal protective equipment: Treatment and prevention of skin conditions related to the occupational use of personal protective equipment



To the Editor: There have been an increasing number of reports of occupationally induced skin conditions in health care workers related to the use of personal protective equipment (PPE) during the coronavirus disease 2019 (COVID-19) pandemic.^{1,2} The breadth and variety of different types of PPE, such as facemasks, gloves, and respiratory equipment, as well as the extended use beyond previous standards, have led to a spectrum of common dermatologic conditions, including contact/irritant dermatitis, pressure-related skin injury, acneiform eruptions, and moisture-associated skin irritation (Table 1).

Surgical and N95 masks, as well as goggles and face shields, have been reported to cause contact dermatitis, typically behind the ears (from elastic straps), on

Table I. Skin condition related to masks—treatment and prevention strategies

Skin condition	Surgical mask	N95 mask
Contact/irritant dermatitis	Use alcohol-free barrier film wipe behind the ears before wearing, or Apply thin foam dressing behind the ear beneath ear loop of surgical mask.	N95 mask straps should be worn on the crown of the head, so should not be sitting on top of the ears.
Pressure-related skin injury	Apply thin foam dressing behind the ears beneath ear loop of surgical mask. Prophylactic dressings can be used under surgical masks for treatment/prevention. Proposed materials include a thin hydrocolloid dressing or thin foam dressing. Cut/adjust material to application site and apply dressing to skin without tension. Once PPE is removed <i>at end of shift</i> , wash hands, don clean gloves, gently remove dressings, and wash hands again. When removing prophylactic dressings, close eyes and avoid inhaling any aerosolized virus or particles.	Apply alcohol-free barrier film wipe (not spray) on areas of direct PPE contact (eg, nose, cheeks, forehead, behind the ears) to protect skin from moisture and friction. Before applying, ensure the area is free of make-up, etc. Do not apply to eyes or eyelids. Allow to dry for 90 seconds before donning PPE. Wear facial PPE correctly and make sure size is correct. If skin damage is present, consider applying petrolatum to open areas 3-4 times a day <i>when away from work</i> . If an open area of skin is present, a hydrocolloid dressing may be used to help it heal; however, using these dressings under N95 masks requires refit testing to ensure adequate seal.
Acne	Wash your face with gentle, mild fragrance free, noncomedogenic cleanser in the morning and at the end of the day. Take appropriate breaks from the mask: 15 minutes off every 2 hours.	Wash your face with gentle, mild fragrance-free, noncomedogenic cleanser in the morning and at the end of the day. Take appropriate breaks from the mask: 15 minutes off every 2 hours.
Moisture-associated skin irritation	Wash your face with gentle, mild fragrance-free, noncomedogenic cleanser in the morning and at the end of the day. Take appropriate breaks from the mask: 15 minutes off every 2 hours.	Wash your face with gentle, mild fragrance-free, noncomedogenic cleanser in the morning and at the end of the day. Take appropriate breaks from the mask: 15 minutes off every 2 hours—if safe and practical to do so.

PPE, Personal protective equipment.

the bridge of the nose, or rarely on the entire face. Mask-induced contact dermatitis and contact urticaria can occur due to adhesives, rubber in straps, free formaldehyde released from the nonwoven polypropylene, and from metals in clips.^{3,4} The tighter and more secure N95 masks can cause significant skin damage due to pressure on anatomic points such as the bridge of the nose and across the zygoma.

Moisture can accumulate under either type of facemask and predispose to skin breakdown and, potentially, superinfection. Facial PPE should be adjusted to fit correctly and should not lead to excess pressure or discomfort on any one particular area of the face. Skin should be routinely cleaned and moisturized using noncomedogenic emollients at least 1 hour before using facial PPE. Petrolatum-based products are not recommended as a skin sealing or repair agent because they may interfere with the integrity of the mask itself, in particular, the N95.⁵

According to the Centers for Diseases Control and Prevention, contact dermatitis accounts for 10%

to 15% of all health care occupational illnesses. Glove-related allergic contact dermatitis is relatively common in health care workers. The most common causes are rubber accelerators used in the manufacturing of gloves. Skin manifestations include pruritus, erythema, scale, vesicles, and in prolonged cases, hyperpigmentation and lichenification. Health care workers should be encouraged to use moisturizers frequently, especially when not in direct patient care, and ensure hands are clean and dry before the use of gloves and other PPE during patient contact time. For more severe cases of contact dermatitis, topical corticosteroids and other prescription therapies may be warranted.

In addition to masks, gloves, and respirators, the repetitive and prolonged use of sterilizing agents, including hand soaps, detergents, and repeated exposure to water, can lead to irritated skin and an increased risk for contact sensitization. To reduce this risk, especially after handwashing, emollients with ceramides or petrolatum, or both, may be beneficial.⁶

As health care workers, we are ultimately responsible for protecting our patients, ourselves, and the broader community. Wearing PPE for extended periods, as has occurred in the era of COVID-19, can have potentially serious consequences for health care workers. Recognizing occupationally induced skin conditions from PPE, and which of these can be prevented or minimized with proper measures, is critical to help mitigate long-term skin sequelae and maintain compliance.

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The risk of respiratory tract infections and symptoms in psoriasis patients treated with interleukin 17 pathway—inhibiting biologics: A meta-estimate of pivotal trials relevant to decision making during the COVID-19 pandemic



To the Editor: Biologic agents have revolutionized psoriasis treatment.¹ However, they are considered “immunosuppressive,” and thus, safety assessments focus on infection, particularly those that are serious or opportunistic, or both. The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic has focused attention on respiratory tract infections (RTIs).² The conceptual model of COVID-19 is that immunosuppression early in disease may be harmful, yet may be helpful in “late” severe COVID-19 illness; which may be mediated by a dysregulated hyperimmune response characterized by proinflammatory cytokines including interleukin 17 (IL-17).³

The effect of IL-17 inhibitors on COVID-19 is unknown, neither the risk of initial infection nor the risk of progression to worse disease. Current understanding of viral immunology suggests that IL-17 is not a dominant cytokine in viral immunity; however, IL-17 is important to mucosal immunity, raising the hypothesis that biologics targeting IL-17 could potentially increase RTI risk.⁴

To test this hypothesis, we calculated a meta-estimate from the placebo-controlled period of phase 3 pivotal IL-17 trials of terms consistent with