

# Step-up Therapy with Skin Barrier Repair Emulsion in Personal Protective Equipment (PPE) Associated Adverse Skin Reactions during the COVID-19 Pandemic

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## SYNOPSIS

Dermatology professionals, even prior to the coronavirus disease 2019 (COVID-19) pandemic, have identified that the use of prolonged PPE (i.e. masks, gloves, and gowns) is associated with high rates of various adverse skin reactions (ASRs).<sup>1</sup> Recently, ASRs incidence has been reported to range from 61% to 95% and with current CDC hygiene recommendations regarding hand washing and using a 60%-95% alcohol-based hand rub, it is expected to see skin damage.<sup>2,3</sup> Characteristics most often include dryness, redness, itching, disease flares, and associated risk factors depending on the type of PPE (Table 1). With the size and scope of the current pandemic, the healthcare community is most susceptible to these ASRs and are often the ones who first seek treatment.

**Table 1:** Clinical Symptoms following prolonged use of PPE<sup>1</sup>

Type of PPE Used	Symptom Identified
<b>N95 Mask</b>	Acne • Itch • Rash • Pigmentation • Scar/Redness at nosebridge • Dry Skin • Wheals Increased Pore Size • Peeling Nose/Runny Nose • Worsened Asthma
<b>Gloves</b>	Dry Skin • Itch • Rash • Wheals
<b>Gown</b>	Itch • Rash

## OBJECTIVE

EpiCeram is a skin barrier repair emulsion containing ceramides, conjugated linoleic acid, and cholesterol (as a 3:1:1 ratio) in an emollient base. Lipid-based barrier repair therapy, if comprised of the 3 key stratum corneum lipids, in sufficient quantities and at an appropriate molar ratio, may have the potential to correct the barrier abnormality and reduce inflammation in a variety of dermatoses.<sup>4</sup>

The aim was to identify individual cases of PPE associated ASRs in healthcare workers and evaluate the step-up therapy and maintenance use of a lipid based barrier repair therapy.

## CONCLUSIONS

*Step-up and maintenance therapy with a 3:1:1 skin barrier repair emulsion was associated with improved outcomes in PPE associated skin irritation on the hands. As COVID-19 has enhanced a focus on proper hygiene and PPE, ASRs are likely to become more prevalent not only in the healthcare community but at some point will move towards frontline workers, in general.*

*It is therefore important to re-evaluate and evolve approaches in the prevention, treatment, and maintenance of PPE associated ASRs. Further well controlled analyses are needed to elucidate the findings of this case report.*

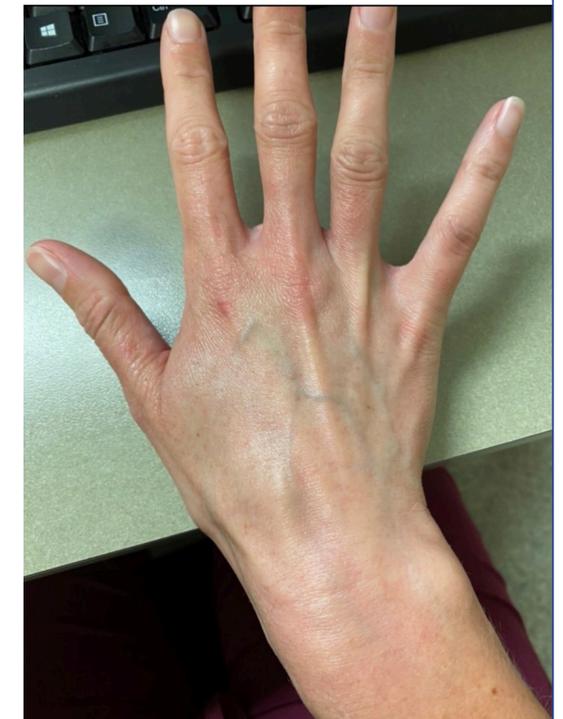
## RESULTS



**PRESENTATION:** 30-year-old female nurse noticed a hand rash following PPE attire (repeated gloves) The rash became erythematous itchy scales with painful blistering and fissuring. Prior failed treatments included: variety of over-the-counter ointment and creams utilized for weeks, mometasone and tacrolimus - all of which provided no relief.



**2-WEEKS:** The patient was given clobetasol for 2 weeks once daily and EpiCeram, a skin barrier repair emulsion containing ceramides, conjugated linoleic acid, and cholesterol (as a 3:1:1 ratio) in an emollient base, once to twice daily as a step-up therapy. The patient stated improvement in pain, blistering, and fissuring within 2 to 3 days of use. A few days later, the itching and erythema also began to improve.



**MAINTENANCE PHASE (6MONTHS):** The patient continues to use skin barrier repair emulsion daily as a preventative measure after each hand wash and reports no further PPE associated skin irritation on her hands and has incorporated lifestyle changes (i.e. chemical free soaps and detergents).

## METHODS

This patient case report reviews the signs, symptoms, diagnostic work-up, treatment, and follow up of a 30-year old female nurse working in Allergy and Asthma.

## DISCLOSURES

Katlyn Anderson is a paid consultant to Primus Pharmaceuticals.

## REFERENCES

- 1.Foo CC, Goon A, Leow YH, et al. Adverse skin reactions to personal protective equipment against severe acute respiratory syndrome – a descriptive study in Singapore. *Contact Dermatitis* 2006; 55: 291–294
- 2.Hu K, Fan J, Li X, Gou X, Li X, Zhou X. The adverse skin reactions of health care workers using personal protective equipment for COVID-19. *Medicine* 2020;99:24(e20603)
- 3.Centers for Disease Control and Prevention. Hand Hygiene Recommendations Guidance for Healthcare Providers about Hand Hygiene and COVID-19. <https://www.cdc.gov/coronavirus/2019-ncov/hcp/hand-hygiene.html>. Accessed 21 Sept 2020
- 4.Elias PM, Wakefield JS, Man M. Moisturizers versus Current and Next-Generation Barrier Repair Therapy for the Management of Atopic Dermatitis. *Skin Pharmacol Physiol* 2019;32:1–7