

Correspondence to: Shari Lipner, MD, PhD, 1305
York Ave, 9th Floor, New York, New York 10021

E-mail: sbl9032@med.cornell.edu

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Diagnostic and management considerations for “maskne” in the era of COVID-19



To the Editor: “Maskne,” coined during the coronavirus disease 2019 (COVID-19) pandemic, is a variant of acne mechanica, previously associated with headgear or personal protective equipment. This report focuses on the widespread use of reusable fabric masks and the impact of the skin microenvironment and mechanical factors (ie, textile-skin friction), which to my knowledge has not been previously evaluated.

Our understanding of maskne is largely observational, although it is likely a disorder of follicular occlusion and directly related to mechanical stress¹ (pressure, occlusion, friction) and microbiome dysbiosis² (heat, pH, moisture from biofluids). Both of these are affected by increased duration of mask wear. Tropical climates and outdoor exposure (increased sweating) are risk factors for acne-susceptible populations (active young adults, seborrhea, genetic predisposition).

Clinical criteria proposed for maskne: onset of acne within 6 weeks of start of regular face mask wear or exacerbation of acne over the masked area, distinct pattern, referred to as the O-zone in this report (Fig 1), and exclusion of differential diagnoses, including perioral dermatitis, seborrheic dermatitis, pityrosporum folliculitis, and acne rosacea.

Special consideration for skin care should include antibacterial gentle cleansers and moisturizers formulated as prescription emollient devices, which help maintain a healthy skin barrier/microbiome.

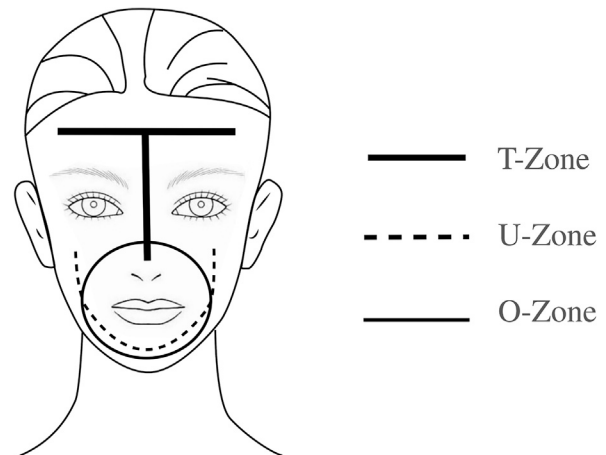


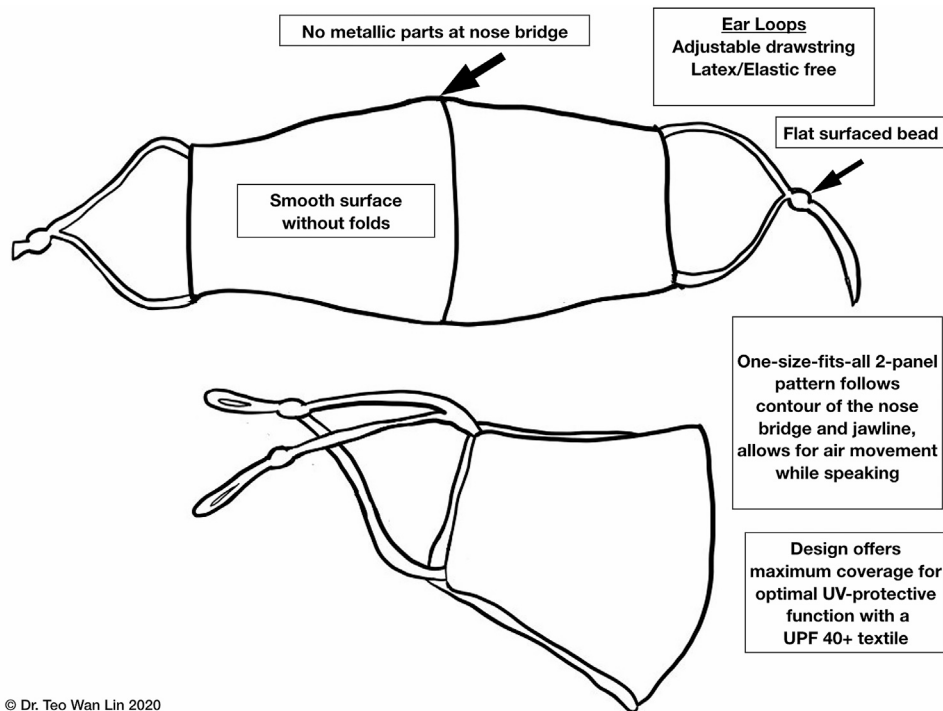
Fig 1. Distinct acne patterns seen in the T zone of physiologic acne, the U zone of adult acne, and the O zone of maskne.

Spot acne treatment with benzoyl peroxide, salicylic acid, sulfur, α -hydroxy acids, and retinoids predispose to irritant contact dermatitis under occlusion. Botanical actives with anti-inflammatory, antioxidant, sebum regulation, and antimicrobial properties are preferred. Hydrogel carrier formulations of retinoid/antibiotic combination topicals can minimize local irritation by ensuring better drug tolerance and efficacy.

Chemical sunscreen sensitivity and comedogenicity increase under occlusion. Ultraviolet protection factor (UPF) 50+ fabric masks should replace the wearing of sunscreen (eliminates constant reapplication) as a practical photoprotective measure for the lower half of the face, to improve compliance to sun protection and incentivize mask wearing. Dermatologists' prescribing patterns for maskne may potentially influence the development of antibiotic resistance worldwide.

Dermatologists can advise on design of face masks, encouraging patient compliance. Natural fibers wick moisture but have increased fluid saturation, heightening discomfort and stickiness sensation (accumulated stickiness magnitude).³ Synthetic biofunctional textiles have a high evaporation/cooling coefficient and are water resistant, preventing biofluid spread. High thread count and tightly woven fabrics have higher UPF and minimize textile-skin friction, relevant to individuals with atopic conditions. Light/reflective colors disperse heat (Fig 2).

Reusable fabric masks should allow for movement while speaking, with minimal displacement over orifices. Fabric masks should omit abrasive metallic parts that also cause nickel sensitization. Allergic contact dermatitis and transcutaneous absorption of



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Fig 2. The ideal fabric face mask design to minimize textile-skin friction. *UPF*, Ultraviolet protection factor; *UV*, ultraviolet.

potential carcinogens can occur from textiles used for fabric face masks, which is currently unregulated.

The skin microbiome is influenced by genetic and external factors (ie, environment, pH, and temperature), which are modified with mask wearing. Microbiome dysbiosis is implicated in the pathogenesis of eczema, acne, perioral dermatitis, seborrheic dermatitis, pityrosporum folliculitis, and rosacea. Biofunctional textiles with UPF, antioxidant, and antiaging benefits may incentivize mask wearing. Copper oxide polyesters are associated with reduced facial wrinkles,⁴ elevation of elastin, procollagen 1, and transforming growth factor- β 1 levels.⁵ Textiles that incorporate silver, zinc oxide, and copper oxide have broad-spectrum biocidal properties that are therapeutic for dermatologic conditions, besides reducing antibiotic resistance in acne treatment.

Wan-Lin Teo, MBBS, MRCS (UK), FAMS (Dermatology)

From TWL Specialist Skin & Laser Centre, Singapore.

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Correspondence and reprint requests to: Wan-Lin Teo, MBBS, MRCS (UK), FAMS (Dermatology), 101 Irrawaddy Rd #17-07, Singapore 329565

E-mail: wanlinteo@gmail.com

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