

# Mask Associated Dry Eye (MADE)

The COVID-19 pandemic has increased use of face masks, including N95 respirators and cloth and surgical masks. Reports of dry eyes amongst mask wearers are common.

Cloth or surgical masks are used most commonly. As these masks are loose in fitting, a steady inflow and outflow of air occurs from different areas around the mask edges. As a result, exhaled air flows upwards towards the eyes, and is further trapped if spectacles are worn.

N95 respirators are designed to fit to the face with reduced gaps between the mask and skin. They are used in areas with high risk of transmission of COVID-19 such as hospitals.

## What is MADE?

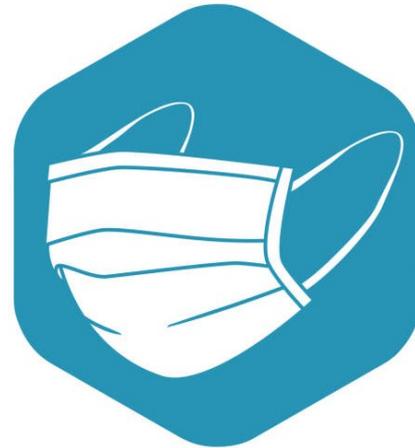
Mask Associated Dry Eye (MADE) is a disturbance to the eye's surface and tear film resulting in eye irritation, dryness and discomfort.

Studies show that more than 6 hours of loose-fitting mask wear results in increased eye symptoms (discomfort, redness, tearing, burning and dryness).<sup>1,2</sup> Mask wear damages the eye surface and changes the tear film, resulting in less tear production, more tear evaporation and poorer quality tears.<sup>2</sup>

## How does MADE occur?

MADE results from wearing of loose-fitting face masks to reduce transmission of COVID-19. When exhaled air flows upwards from beneath the mask towards the eyes, the delicate homeostasis of the eye's surface can be altered. This air is warmer (temperature 36-37°C) and has more carbon dioxide and less oxygen than ambient air. This can adversely affect the tears, causing tear instability, greater evaporation, hyperosmolarity and reduced tear pH.<sup>2</sup>

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## Who is most at risk?

- **People who wear masks for many hours each day**, including health care workers.
- **People with pre-existing eye conditions** like dry eye, meibomian gland dysfunction (MGD), ocular allergy, blepharitis, ectropion (droopy lower eyelid).
- **Contact lens and spectacle wearers.**
- **Older adults**, as they are more likely to have dry eye disease and may wear masks more often due to greater vulnerability to COVID-19.

## To prevent and manage MADE:

- **Use ocular lubricants** (non-preserved gels and ointments) before, during and after mask use.
- **Use face-fitting masks with metal strips** at the nose to limit air flow towards the eyes.
- **Tape the upper edge of the mask to the cheek** with medical tape. If wearing spectacles tape should be applied under the spectacles. Be careful to not restrict movement of the lower eyelid or induce drooping of the lower eyelid.
- **Reduce time spent in air-conditioned environments** and ensure **regular breaks when using computer screens.**
- **Avoid rubbing eyes** to relieve the irritation caused by MADE, as this may increase the risk of COVID transmission.