

EVALUATING THE FACIAL SKIN PHYSIOLOGY AND BACTERIAL CONTAMINATION OF FACEMASK WEARING BASED ON JOB CATEGORIES AND WEARING TIME

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No guidelines on how long can consumer wear a mask to enhance degree of protection



Are there other health risks of wearing a face mask for extended periods?



What other factors will influence the duration of wearing a face mask and the settings in which they are worn?





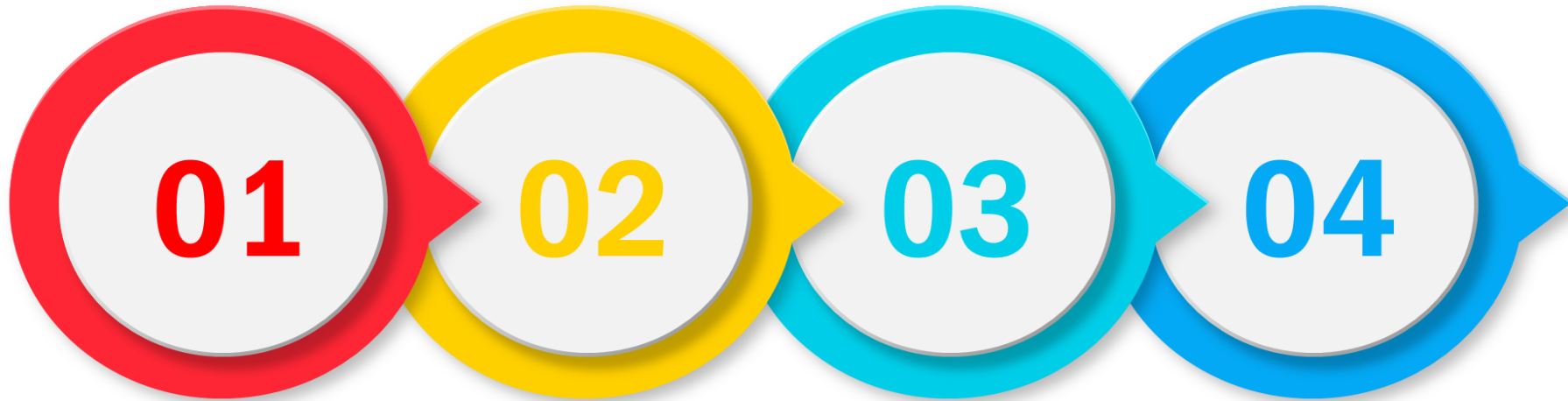
1

To test the relationship between the potential sources of bacterial shedding and its counting (CFU)

2

To measure different type of facemask performance base on physiological factors





NIOSH Premise

- Office workers
- staff trainers
- General Workers

3 Type

- 3 ply Mask
- KN95
- Cloth Mask

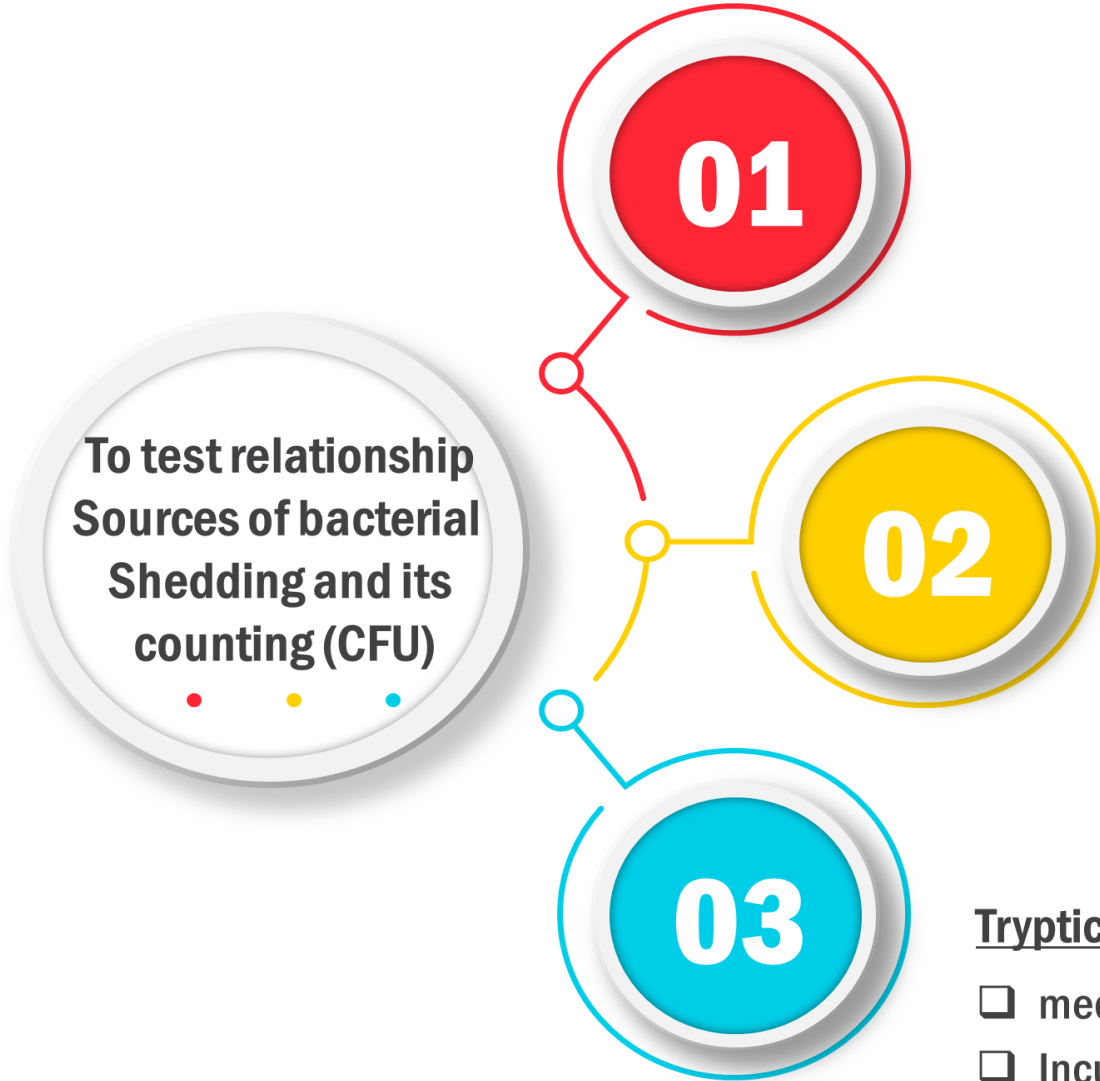
NIOSH Lab

- DML
- FMML
- CHL

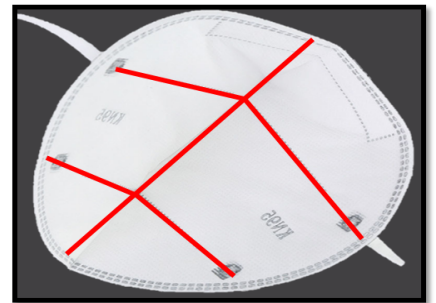
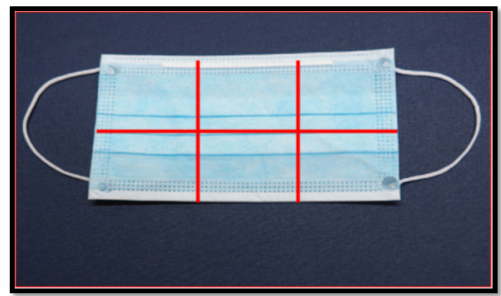
2 skin Measuring

- temperature
- Trans-epidermal water loss (TEWL)





Face mask were divided into six sections



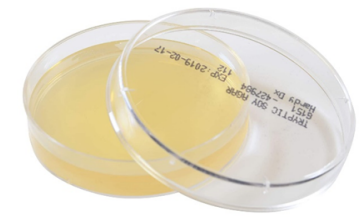
Ref: Homaira N, Sheils J, Stelzer-Braid S, et al. Respiratory syncytial virus is present in the neonatal intensive care unit. *J Med Virol.* 2016;88(2):196–201.

2 duration time

- ❖ 4 Hours
- ❖ 8 Hours

Tryptic Soy Agar (TSA)

- medium support growth of bacteria
- Incubating 24 Hrs Or 48 Hrs at 37°C



Skin physiology were measured:

- ❖ Temperature
- ❖ Trans-epidermal water loss (TEWL)

Devices

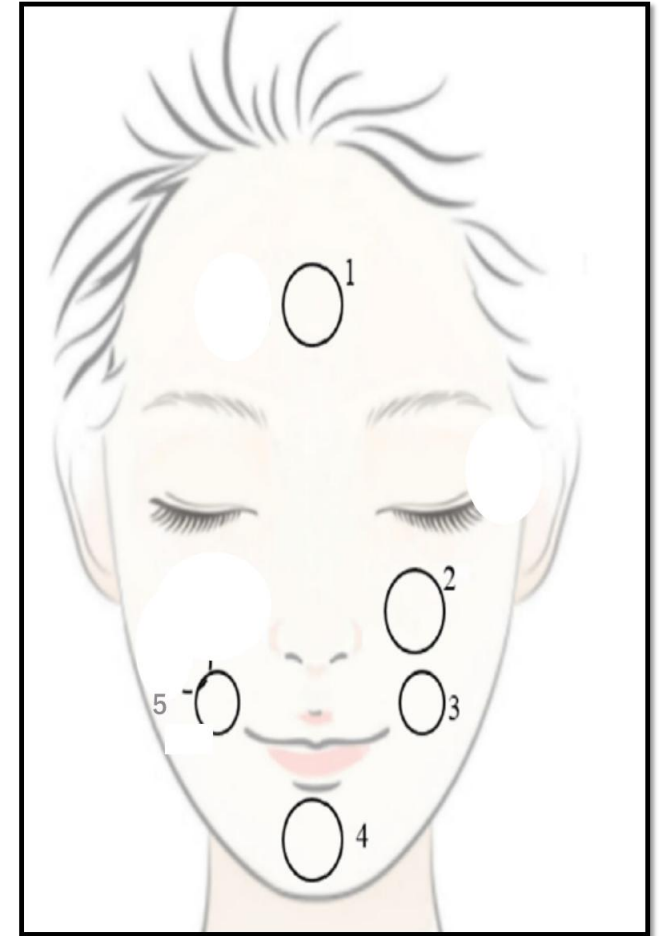
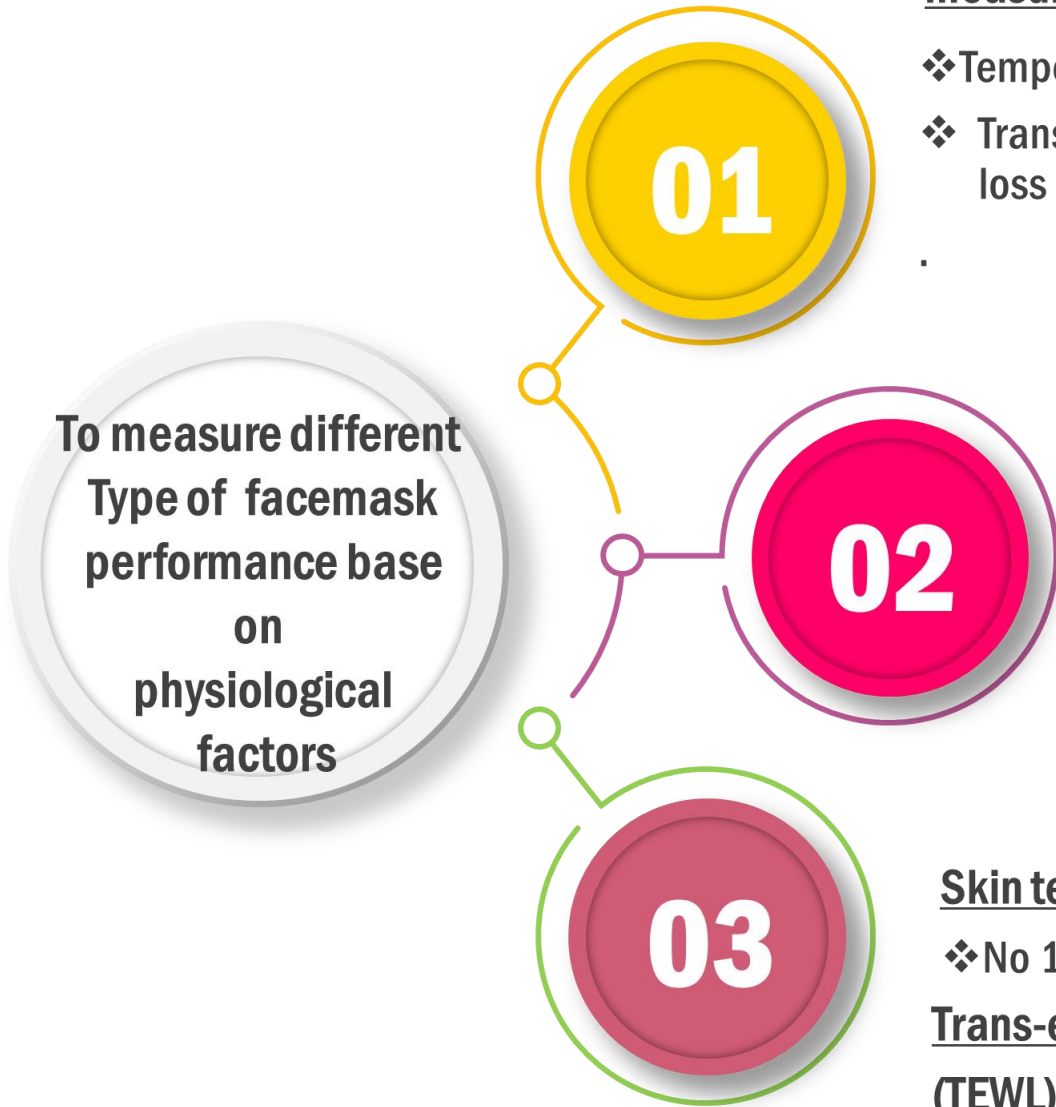
- Vapometer
- Thermal Imaging Camera

Skin temperature

- ❖ No 1, 2, 3 & 4

Trans-epidermal water loss (TEWL)

- ❖ No 4 & 5



Ref: Scarano A, Inchingolo F, Lorusso F. Facial skin temperature and discomfort when wearing protective face masks: thermal infrared imaging evaluation and hands moving the mask. *Int J Environ Res Public Health*. 2020;17:4624.





Trans-epidermal water loss (TEWL)

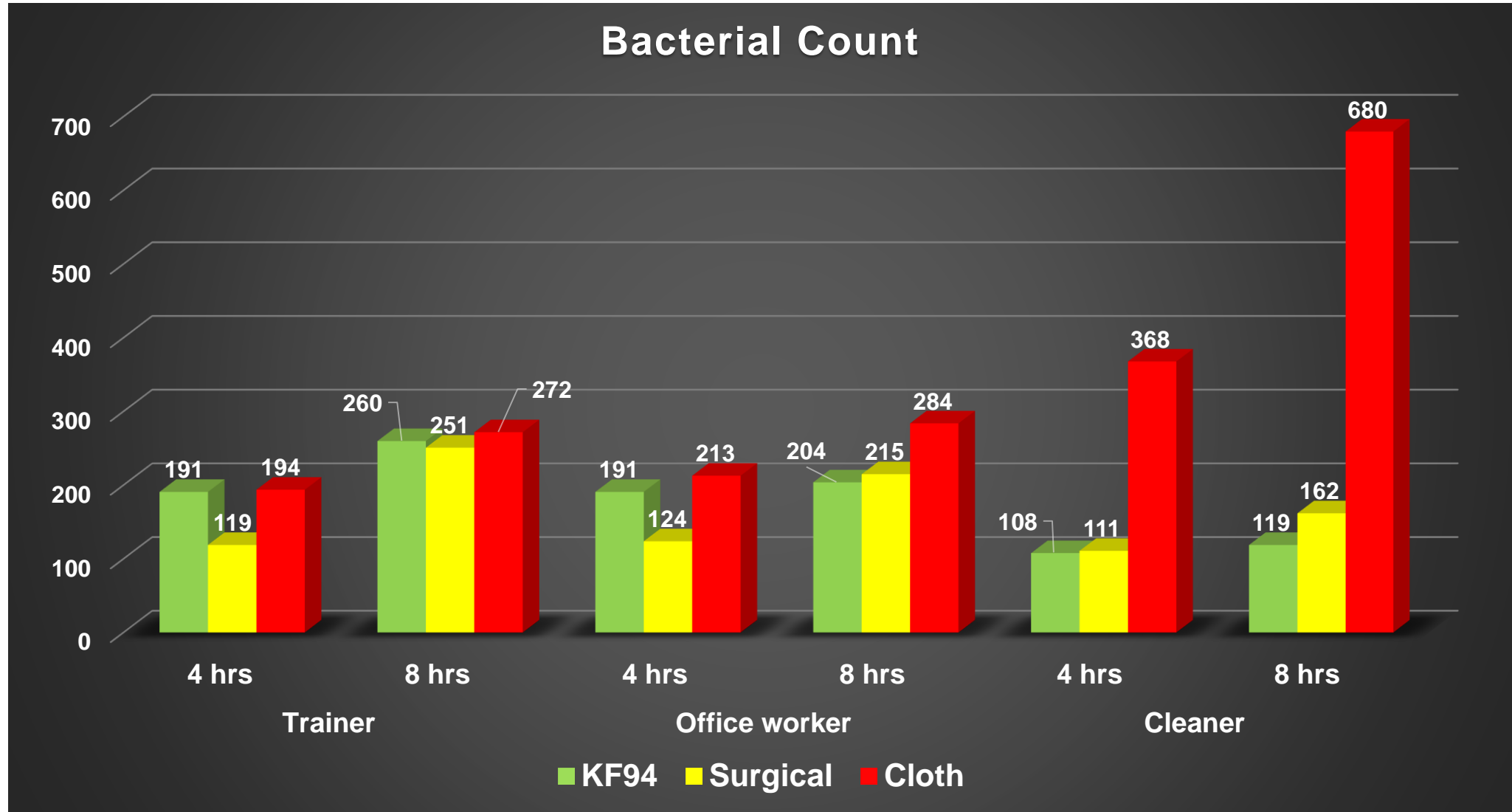


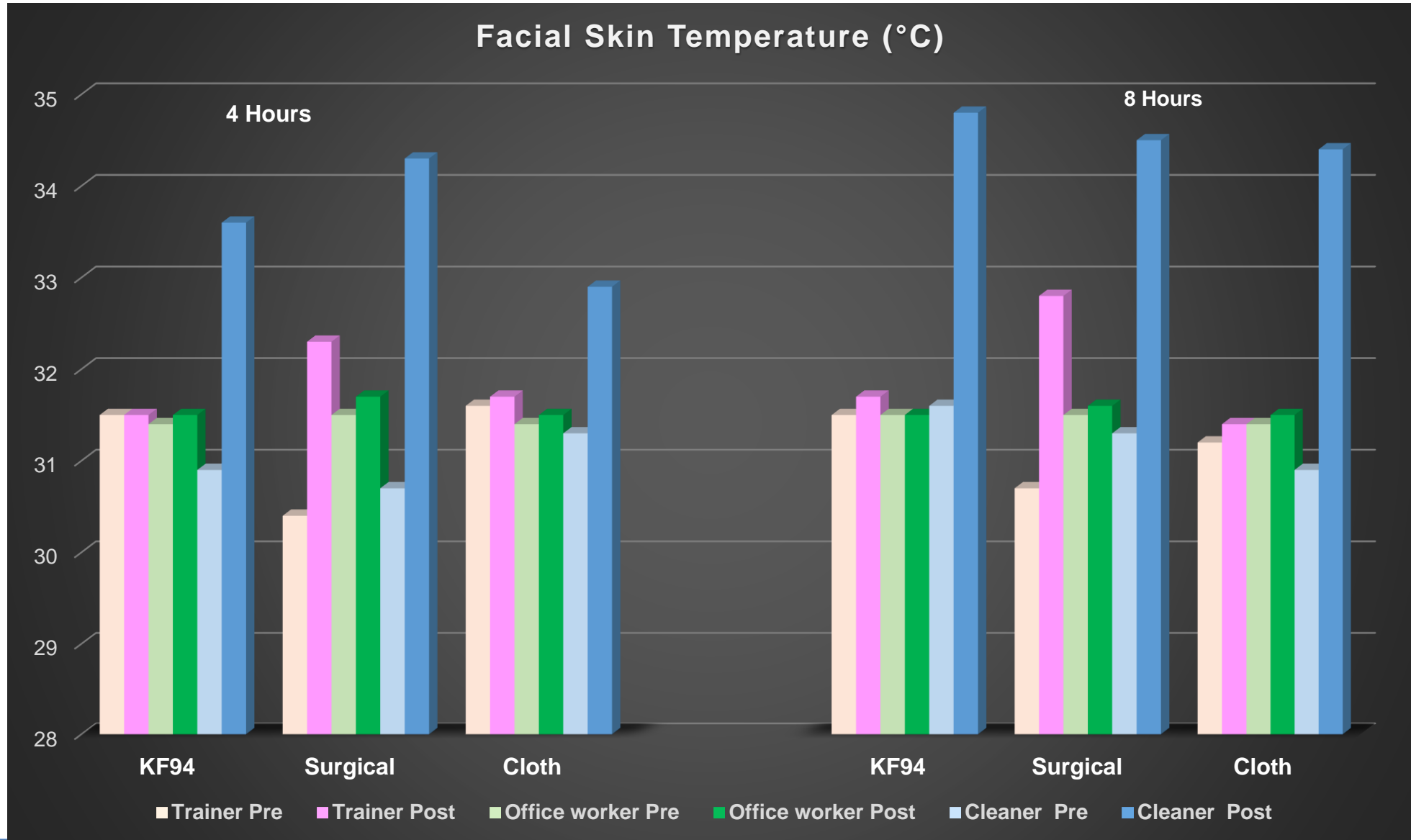
Skin temperature

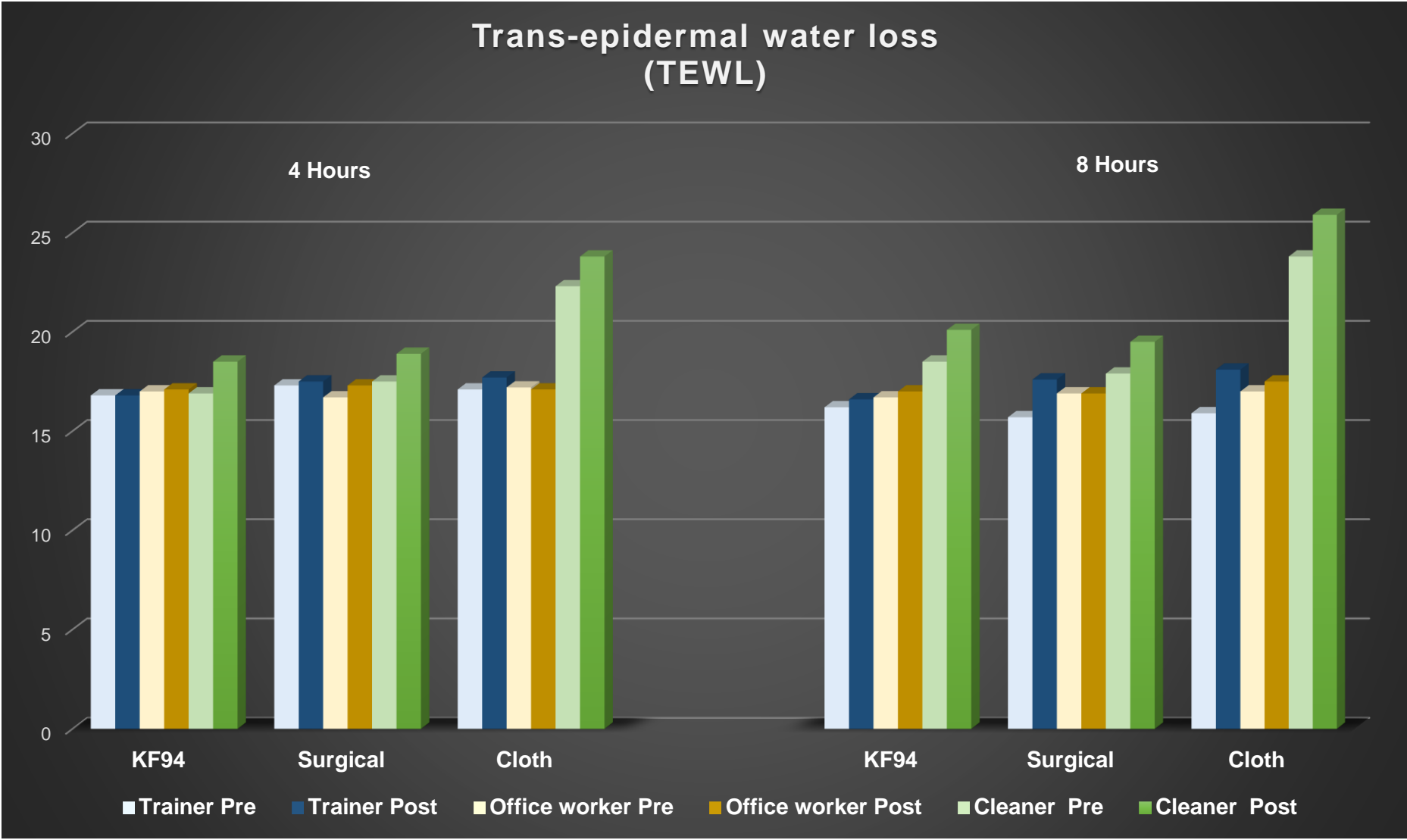




Bacterial Count







- **Surgical Mask Performance Varies Across Occupations and Wearing Time:** The result highlights that the effectiveness of surgical masks can be influenced by both the duration of use and the specific occupation.
- **Occupation and Wearing Time Impact Facial Skin Temperature and Transepidermal Water Loss:** The statistically significant interaction between wearing time and type of occupation on all types of mask facial skin temperature indicates that the combination of occupation and the duration of mask use can affect facial skin temperature.
- **Occupation Type Influences Bacterial Contamination:** The statistically significant interaction between wearing time and type of occupation on all types of mask bacterial count can be observed.



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THANK YOU