

EVIDENCE-BASED HAND HYGIENE: MICROBIOLOGICAL VALIDATION OF THE FLUORESCENIN TRAINING

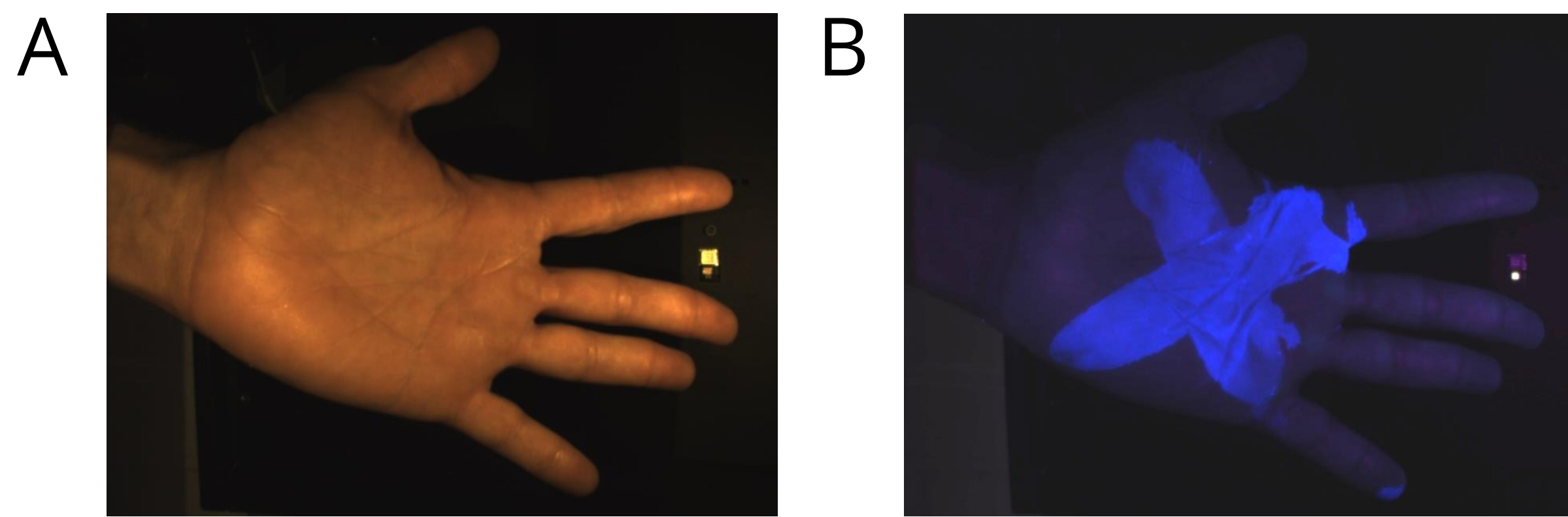
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INTRODUCTION

- Hand hygiene: most efficient tool in fighting nosocomial infections
- Fluorescent trial: the most common way to examine the hand hygiene technique



Distribution of UV-dyed handrub on hand surface (A) in normal light and (B) under UV light

OBJECTIVES

- To investigate whether the fluorescent marked regions on the hands correspond to the disinfected areas in fact
- Statistically evaluate the extent to which pathogen-free regions matched the disinfected areas

METHODS

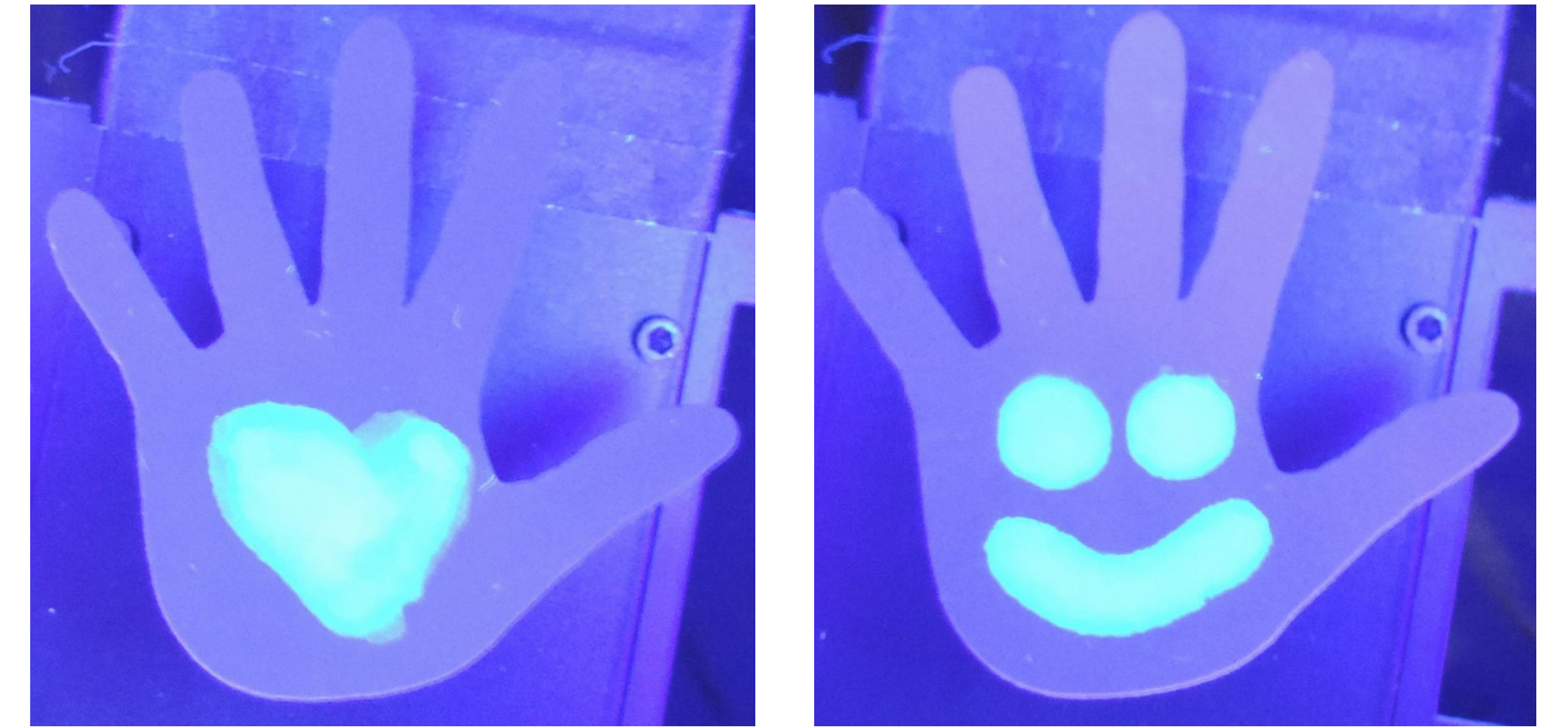
- Artificial hand phantoms: plastic covered with cow skin (fitting into regular-size Petri dishes) employed



1. 25 phantoms soaked into 0,5 McF *Staphylococcus epidermidis* suspension in random patterns
 2. Selected regions treated with fluorescent hand rub (Visirub, Hartmann)
 3. Images were recorded under 365 nm UV-A light
 4. Phantoms stamped onto blood agar
 5. Incubated at 37°C for 48 hours
 6. Image of *S. epidermidis* colonies also recorded
- Corresponding pairs of pictures (n=25) were fed to a robust software image registration algorithm
 - Algorithm performed pixel-to-pixel mapping between the two images

RESULTS

Images recorded under UV-A light



Results of software evaluation:
Disinfected vs.
Not properly disinfected areas

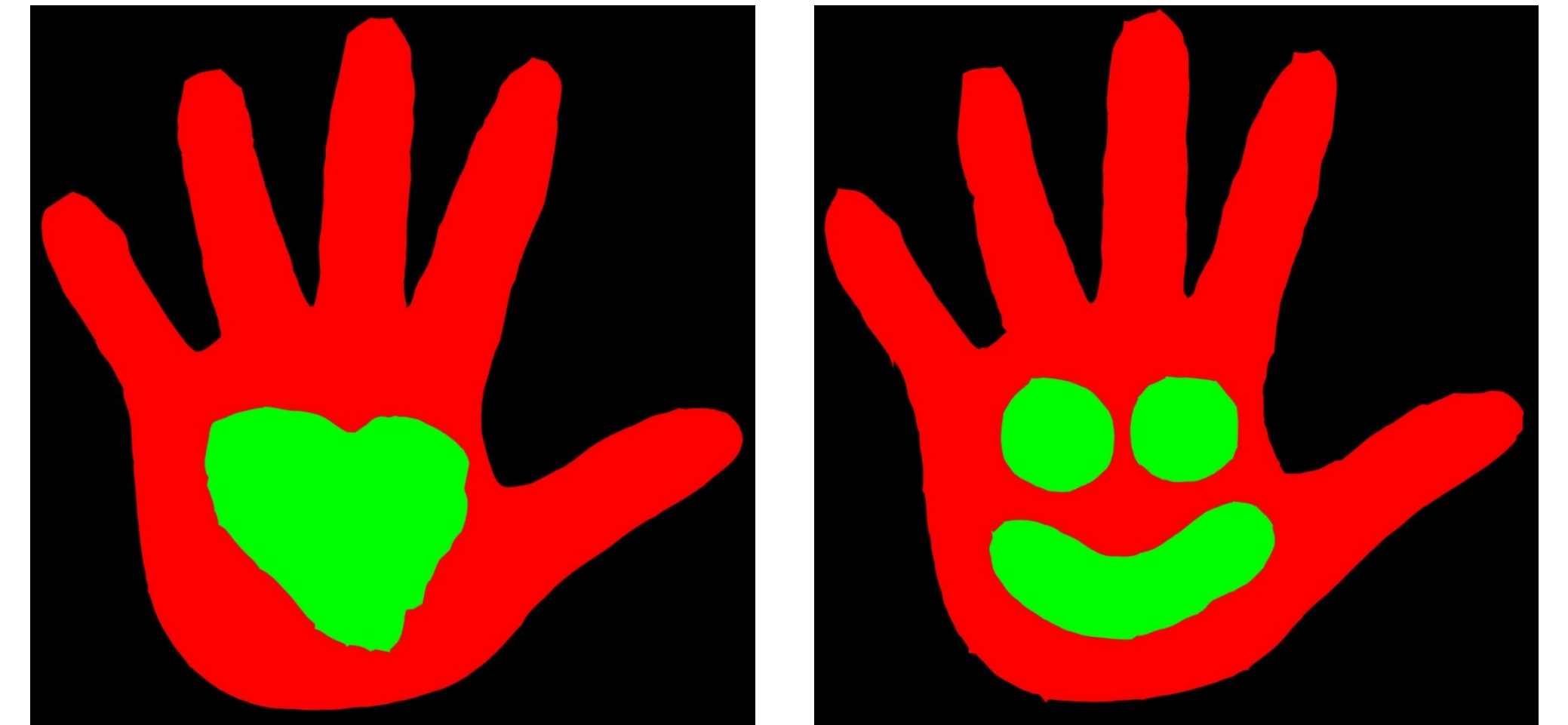


Image of *S. epidermidis* colonies after cultivation



Sensitivity: 0.97
Specificity: 0.98

Sensitivity: 0.95
Specificity: 0.97

- Average sensitivity (for all 25 samples): 0.95±0.03
- Average specificity (for all 25 samples): 0.98±0.02
- Images recorded under UV-light technically showed the same coverage that of the results of the agar plates after culturing

CONCLUSION

- Regions on the hand treated sufficiently with the UV-dye containing hand rub are in fact disinfected
- Fluorescent trial is a reliable method for verifying individual hand hygiene technique

REFERENCES

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