

Hygiene is in your hands: comparative studies on hand drying solutions

Keith Redway,
Senior Academic,
Department of Biomedical Sciences,
University of Westminster,
London

Sponsored by the European Tissue Symposium, Brussels

Hand drying methods compared:

- Paper towel for 10 seconds
- Continuous roller towel for 10 seconds
- Warm air dryer for 20 seconds
- Jet air dryer for 10 seconds

Part 1

The amount of water removed from the hands of users in drying their hands using the four different hand drying methods was measured.

Hand-drying device	Drying time (seconds)	Dryness (%)
Paper towel	10	90.1
Continuous roller towel	10	89.0
Warm air dryer	20	52.3
Jet air dryer	10	90.0

Percentage dryness after using four different types of hand-drying device for the times indicated in seconds

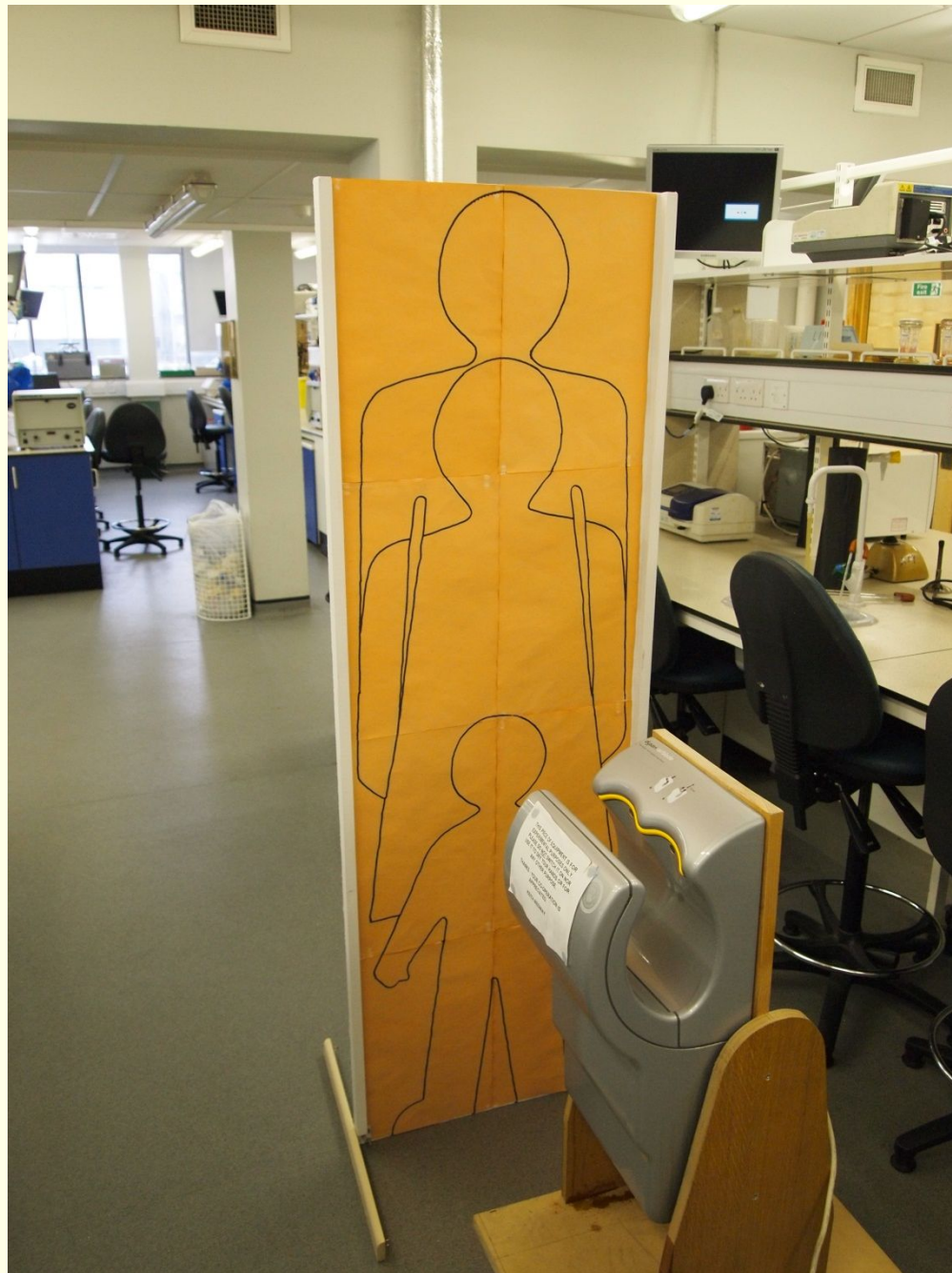
Conclusion for Part 1

The warm air dryer was considerably less efficient (slower) at drying the hands in normal use than the other 3 methods.

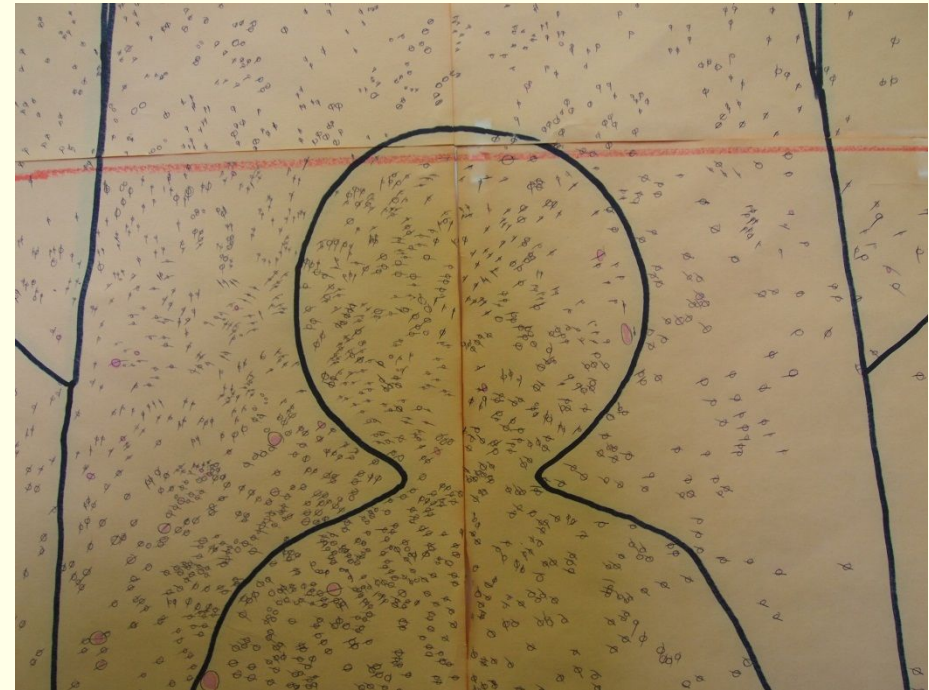
Part 2

The potential for the transmission of contamination on the hands of users was assessed at different distances and at different heights from each of the four types of hand-drying device using an acid-indicator model.





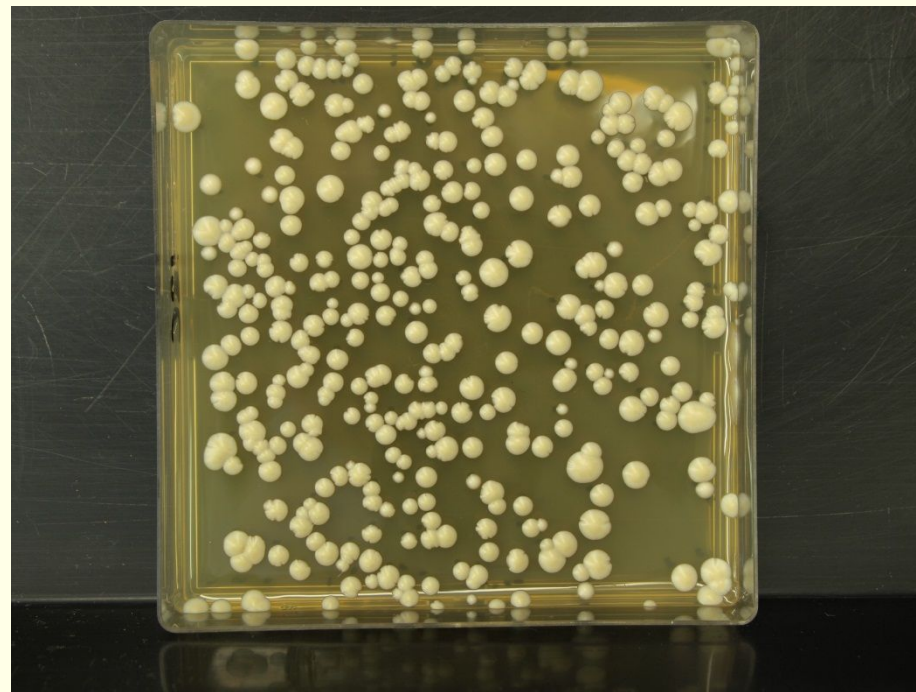




Typical results using the acid-indicator method for the jet air dryer

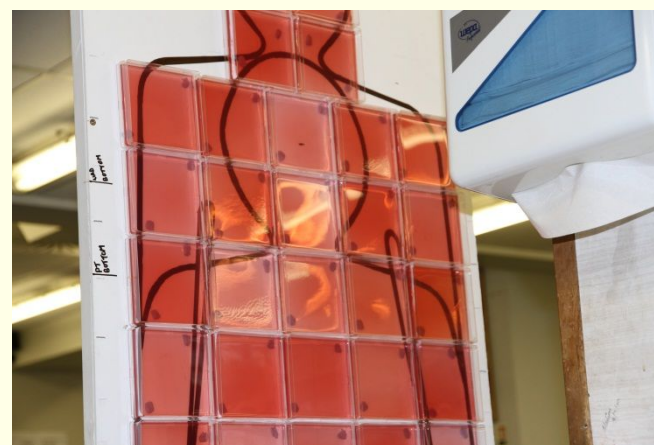
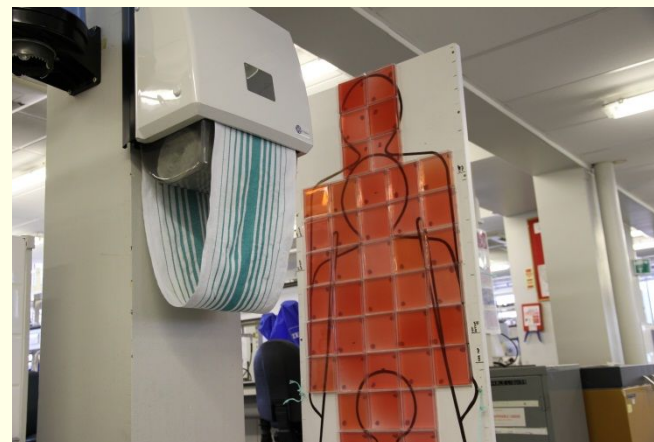
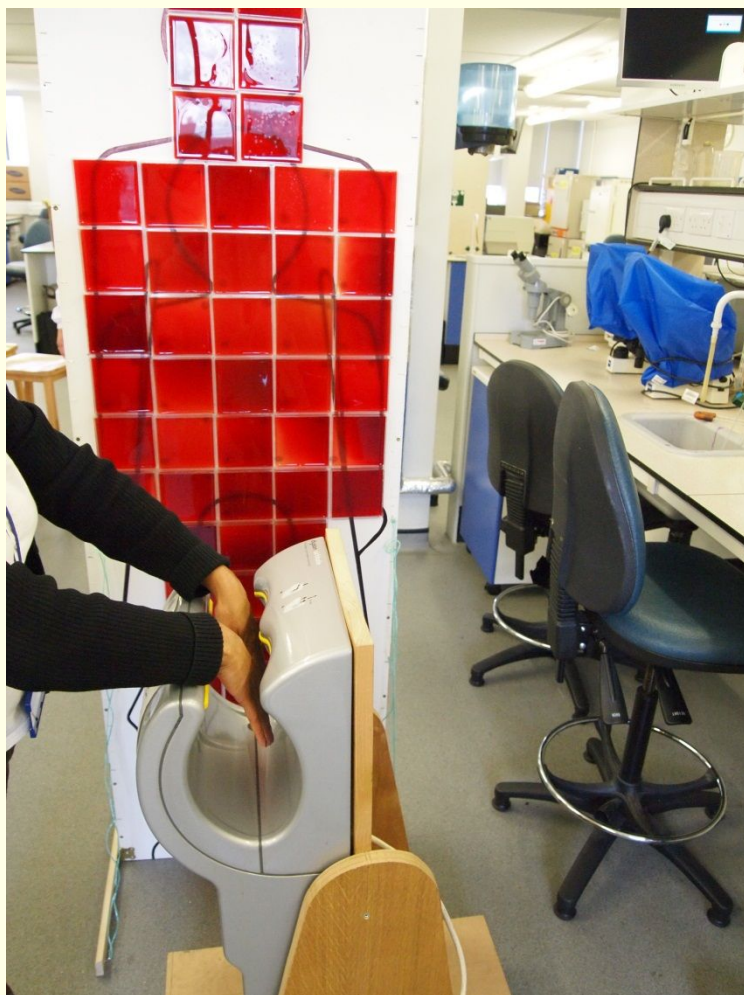
Part 3

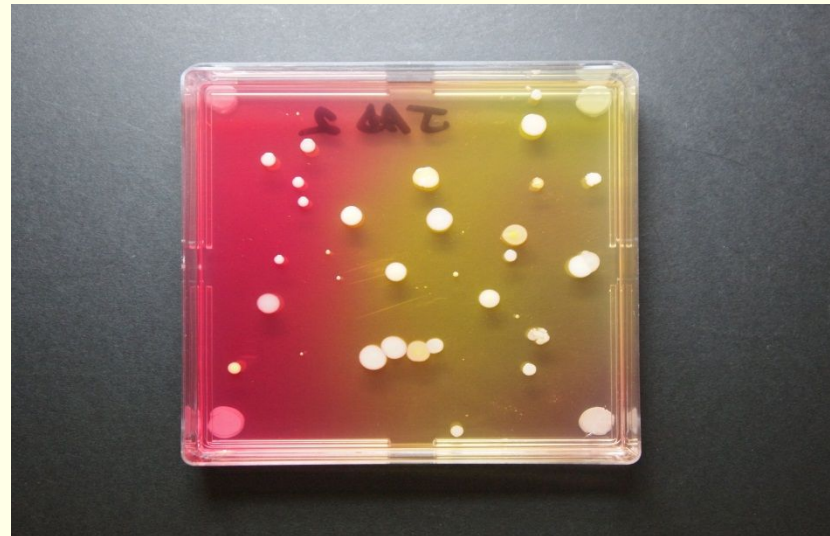
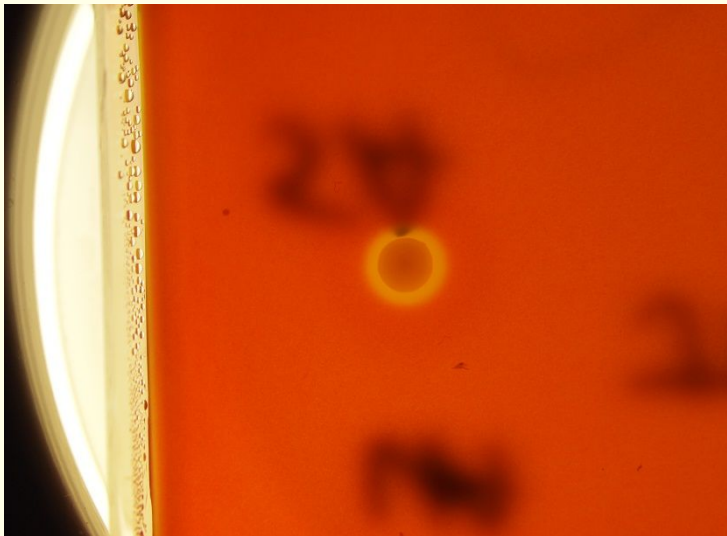
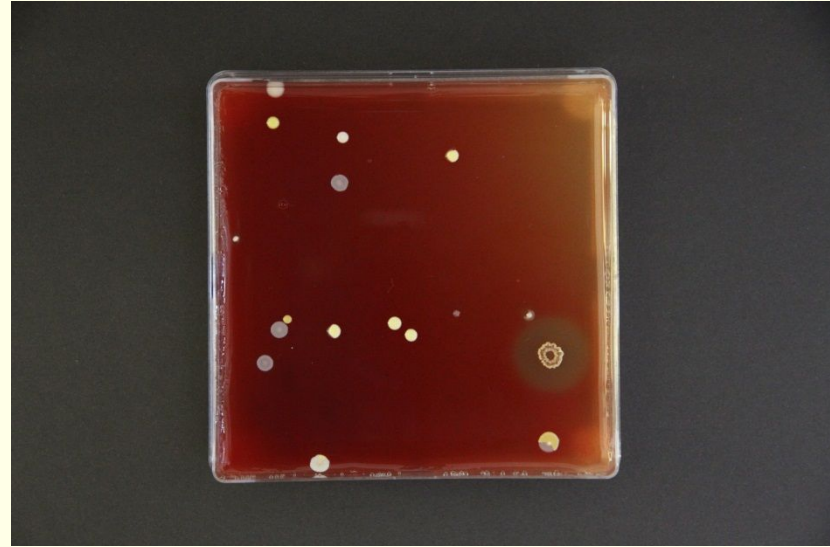
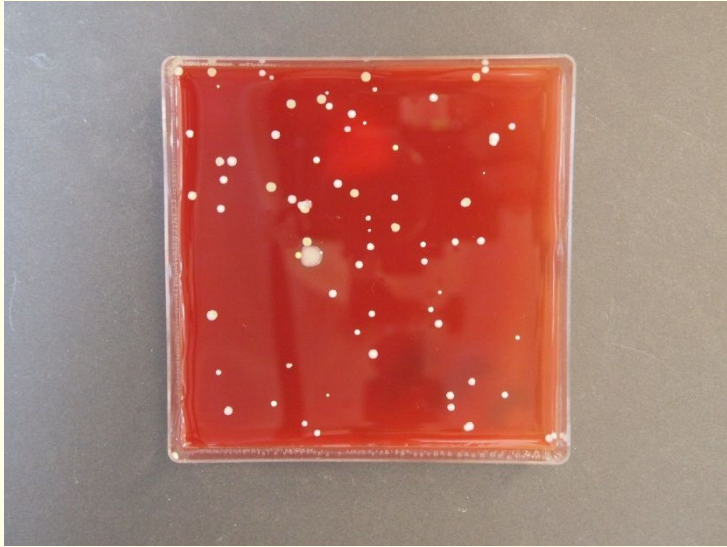
The potential for the transmission of contamination on the hands of users was also assessed at different heights and at different distances from each of the four types of hand-drying device using a yeast model.



Part 4

The actual transmission of different types of bacteria from the hands of users was assessed at different heights from each of the four types of hand-drying device.





Typical results from tests on a jet air dryer

Conclusion for Parts 2, 3 & 4

The jet air dryer showed a greater potential for the transmission of contamination* on the hands at varying distances and heights than the other 3 hand drying methods.

*** University of Westminster 1997 study showed that of the 68% of users of a public toilet who washed their hands, over half did not use soap.**

Part 5

Visualizations of the air flows produced by the four different hand-drying devices in









Conclusion for Part 5

Due to their air flow, the electric dryers showed a greater potential for the transmission of contamination on the hands than the towels.

**Keith Redway,
Senior Academic,
Department of Biomedical Sciences,
University of Westminster,
London
redwayk@westminster.ac.uk**