Why do you wash your hands?

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Does the solution to Hand Hygiene compliance lie in understanding different types of Hand Hygiene behaviour - **Inherent** and **Elective**?

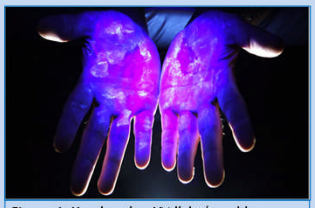


Figure 1: Hands using UV light/sensitive material to demonstrate contamination

Figure 2: Hand print culture contaminated with *C. difficile* spores

Background

Effective Hand Hygiene has been empirically proven to remove contamination from hand surfaces (e.g. see Figures 1,2), preventing cross-contamination of infection between both Patients and Healthcare Professionals[1,2]. Despite such evidence, Hand Hygiene compliance rates amongst Healthcare Professionals are widely known to be less than 100% - with studies from multiple settings showing compliance rates ranging from as low as 8%[3,4].

To aid understanding of when to perform Hand Hygiene, in 2009 the World Health Organisation (WHO) developed the "My 5 Moments for Hand Hygiene"[5] (see Figure 7) – evidence based guidelines on when to perform Hand Hygiene at key risk moments for infection transmission.

This research explores underlying mechanisms surrounding Hand Hygiene behaviour, technologies currently being promoted to increase Hand Hygiene compliance, and suggests the next step for the 5 Moments may be to explore a 'combination approach' encompassing both Human Behaviour and Technology to aid the promotion of effective Hand Hygiene.

Hand Hygiene and Human Behaviour: Research suggests **Hand Hygiene is not a homogenous behaviour**[6,7]

Figure 3: Taking blood – potentially an example of an "Inherent" Trigger

but consists of 2 separate triggers:

1. Inherent: Hand Hygiene performed when hands appear or feel dirty, or when danger is sensed – *want* to clean hands (e.g. see Figure 3)

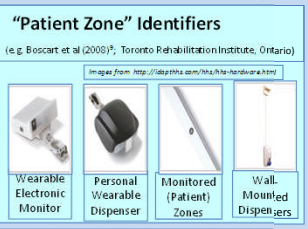
2. Elective: Hand Hygiene not performed automatically, but because of learnt practices of care – *know* that hands need to be cleaned (e.g. see Figure 4)

Figure 4: Using Ward machines – potentially an example of an "Elective" Trigger

Hand Hygiene and Technology: Hand Hygiene technologies have been introduced into Healthcare[8,9] to aid with monitoring, measuring and feeding back performance of Healthcare Professionals (e.g. see Figures 5, 6).

Figure 5: (Left) Here a Healthcare Professional wears a badge which senses location, reminding the wearer of the need to perform Hand Hygiene by glowing RED, changing colour to GREEN once hands have been cleaned using substance containing alcohol, which is sensed as hands are held up to badge. Instant visual feedback provided to peers and Patients, data is stored for analysis.

Figure 6: (Right) With this technology Healthcare Professionals wear both a monitor and dispenser, which interact with ceiling sensors defining a "Patient Zone". Sensors can also be placed within existing wall dispensers and sinks, to work together to build a picture of Hand Hygiene Events within the defined zone, with data being recorded for analysis and feedback.



Current Research – What impact could Hand Hygiene Technologies have on the WHO 5 Moments?

Limitations of Technology: Our literature review of Hand Hygiene and Technology identified 7,870 reports, of which 124 were reviewed in detail. Only 3 were eligible accuracy studies, and **no studies showed technology able to accurately detect Hand Hygiene Events at all "5 Moments"** –with "2" and "3" proving most problematic.

Human Behaviour Study: To add empirical data to the field of Inherent/Elective theory, this research is employing a series of structured observations to monitor Hand Hygiene compliance at activities categorised by Healthcare Professionals as either "Inherent" or "Elective". **Due to their automatic element, frequency of Hand Hygiene is expected to be higher after Inherent Trigger activities than Elective Trigger activities.**

Implications for 5 Moments: The theme this research is developing is that the WHO 5 Moments (see Figure 7) could be split into "Inherent" or "Elective", with the early hypothesis that Moments "2" and "3" be Inherent and Moments "1", "4", "5" Elective . For **technology** this suggests innovators could continue to focus on improving compliance or auditing, but concentrate solely on Elective moments - where behaviour is more likely to need external cues , as opposed to Inherent moments - where behaviour is more likely to have an automatic element.

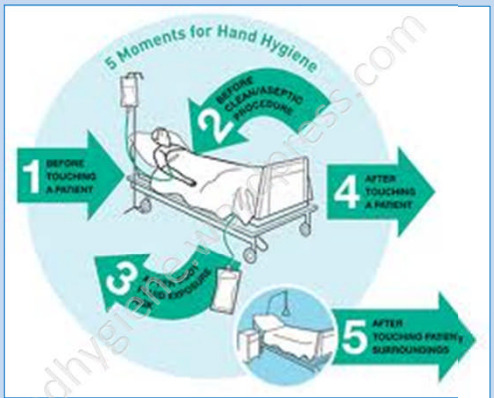


Figure 7: WHO 5 Moments[5] – Can we revisit with a behavioural focus?

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