

Why ICU doctors do not wash their hands

Paul DR Johnson

In the great tradition of the physician–scientist, Michael Buist has allowed himself to be the subject of his own research. The article by Witterick and colleagues in this issue of the Journal (page 285) describes Buist’s hand hygiene performance over four 1-hour observation periods while he worked in intensive care and a medical ward in his own hospital.¹ Unfortunately, Buist scored only 43% for this 4-hour exam, which, if I recall correctly from high school days, is an “E”. What does this mean? We are told that Buist knew what was expected of him, so why did he not do better? Was the exam just too hard for him? The answers to these questions are important, as evidence is accumulating that good hand hygiene compliance helps control cross-transmission of important hospital pathogens such as methicillin-resistant *Staphylococcus aureus* (MRSA) and antibiotic-resistant gram-negative bacteria.^{2–5}

While pondering this, I began to consider the careers of other clinician–scientists and their willingness to seek the truth through self-experimentation. Of the many examples, I will mention two. In 1900, Dr Jesse Lazear, who was working in Cuba for the United States Army Yellow Fever Commission, allowed himself to be bitten by an infected mosquito. He helped prove that mosquitoes transmit yellow fever but, sadly, died of the infection a few days later.^{6,7} In the 1960s, Dr Jack Barnes of Cairns spent many hours in the water looking for the cause of the extremely painful and potentially fatal Irukandji syndrome. When a previously unknown thumbnail-sized jellyfish finally swam past, he trapped it and used it to sting himself, his 9-year-old son and a young lifesaver, all of whom developed Irukandji syndrome over the next 25 minutes.⁸ We will never know whether Lazear would have been prepared to let himself be infected a second time, but it is pretty likely that Barnes would have gone to great lengths to avoid the next Irukandji jellyfish that swam towards him.

What has this got to do with hand hygiene? Clearly, the work of Lazear and Barnes had extreme, direct consequences, whereas nothing apparently happened either to Buist or to any of his patients during the 4 hours in which he practised hand hygiene half as often as recommended. The problem is that, although multiresistant organisms are transmitted readily on the hands of health care workers from already colonised inpatients to newly admitted ones, adverse events are rare compared with the number of times hand hygiene rules are broken. Here is a classic and deep problem in human psychology — we all try to minimise effort. If there is only a very uncommon consequence from

taking a short cut, we tend to keep taking that short cut. There are examples where humans can be trained to do something correctly every time, even though the consequence of failure is uncommon — for example, I wear my seat belt because I *feel* naked without it, not because I think rationally that using it will lower my chances of dying in the statistically unlikely event of an accident. Presumably, I now have a “seat belt habit” because I have repeated the same behaviour many thousands of times. After 7 years of helping promote alcohol–chlorhexidine hand hygiene at my hospital, I now *feel* unclean if I fail to use hand hygiene before and after every patient contact. My hand hygiene habit has become wired-in through repetition, and is no longer the result of a choice that follows from knowing the consequences of non-compliance.

So, perhaps now we understand why Buist complied only 43% of the time, and we can see there is hope he might improve his performance with further practice. But does he actually need to? In a recently published computer model (so much cleaner and quicker to do than real research), the reproductive number “ R_0 ” for staphylococcal outbreaks is predicted to begin to fall below 1 when hand hygiene compliance rises to 20%, and the benefit is predicted to reach a maximum at around 50% compliance, after which the law of diminishing returns sets in.⁹ Interestingly, this is similar to the level of compliance we reached at Austin Health in 2002, after which our MRSA epidemic finally began to abate.³ In view of this, Buist was probably helping reduce cross transmission, even though he failed his compliance exam. Perhaps we need to ask the examiners to change his mark from E to A, or at least to B+. The pessimism about Buist implied in the conclusion of Witterick et al is unjustified — he is actually a clinical champion, he should confidently keep going, perhaps strive just a tiny bit harder, and encourage all those around him to follow his effective — if not excellent — example.

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