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*Published in:*  
The Australian Hospital Healthcare Bulletin

E-pub ahead of print: 29/07/2013

*Document Version:*  
Peer reviewed version

*Licence:*  
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[Link to publication in Bond University research repository.](#)

*Recommended citation(APA):*

Murphy, C. (2013). Automating measurement of hand hygiene compliance - The next big question for Australian hospitals. *The Australian Hospital Healthcare Bulletin*, (WINTER).  
<https://www.hospitalhealth.com.au/content/nursing/news/automating-measurement-of-hand-hygiene-compliance-the-next-big-question-for-australian-hospitals-415688673#axzz5RQShb4j4>

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## **Automating Measurement of Hand Hygiene Compliance: The Next Big Question For Australian Hospitals**

Since 2009 Australian hospitals have directly observed staff compliance with national hand hygiene recommendations.<sup>1</sup> Depending on hospital size and type, each month a specially trained hand hygiene observer selects a convenient time and assumes a position where he or she can watch and record the activity and associated hand hygiene practice of their peers. Australia's national rate of hand hygiene compliance has improved from 63.5% to its current 76.4%.<sup>2</sup> Less than 100% compliance places patients at risk by providing opportunities for harmful microbes to contaminate the patient and their environment. Australian hand hygiene experts must diligently review our current approaches to hand hygiene promotion, education and monitoring. This article briefly reviews international experience with automated measurement of hand hygiene activity and considers opportunities and risks associated with Australia adopting similar systems.

Internationally researchers have reported a variety of technologies used as alternatives to direct observation of hand hygiene.<sup>3-7</sup> These include systems employing non radio-frequency measurement devices, pressure-sensitive mats located at sinks, various recording devices and real time video monitoring. Hospitals employing these systems have almost all reported lower rates of hand hygiene when monitoring is done automatically compared to those rates reported when direct observation has been used in the same setting. This suggests that concerns regarding the validity, reliability and impartiality of directly observed hand hygiene compliance may be legitimate. Perhaps it also should provoke Australian health care providers and consumers to ask "is Australia's reported hand hygiene compliance rate accurate or grossly over inflated?"

Professor Elaine Larson from New York's Columbia University argues that "*direct observation is not sustainable and should be replaced with more automated monitoring methods*". A world leader in hand hygiene, Larson recognises the importance of providing immediate feedback to individuals and groups regarding their performance.<sup>8</sup> One recent innovative study confirmed this by reporting a remarkable 75% improvement in hand hygiene compliance following the introduction of continuous real-time video monitoring and immediate display of hand hygiene compliance rates.<sup>9</sup> Other systems include instant alerts that immediately prompt a healthcare worker to clean their hands if they inadvertently forget or are distracted. Debate continues regarding the most accurate and appropriate automated system for hand hygiene monitoring; however, most experts agree with Larson that direct observation of hand hygiene is no longer the best option.

Healthcare workers frequently resist change, especially change involving new technologies. Opponents often cite patient and staff privacy concerns as barriers to introducing technologies. This is particularly applicable to those innovations which produce recorded data. US clinicians have expressed serious privacy concerns about the use of video observation for hand hygiene monitoring.<sup>10</sup> Supporters argue that careful placement of cameras can limit vision to areas such as sinks and hand hygiene product dispensers only.<sup>11</sup> The current balanced viewpoint is that clear evidence of efficacy should exist before any infection control measure that potentially jeopardises patient privacy is introduced.<sup>8, 10</sup> Further issues for consideration include necessary protections to ensure access to recordings is limited, assurances that storage is secured and that reproduction or broadcasting is impossible. It appears that no researchers have addressed the question of action to be taken if a patient or family member requests access to hand hygiene footage related to their own or their loved one's care. A patient developing a healthcare associated infection could potentially use recordings in legal proceedings against an organisation or its staff.

There are many advantages to automated hand hygiene monitoring systems. They are less resource intensive than direct observation. They eliminate bias. They rapidly provide large sets of data with the potential to further inform our understanding of healthcare worker hand hygiene behaviour. Conversely, they eliminate one opportunity for infection control and prevention staff to interact directly with staff at grassroots level. They are often incapable of providing necessary detail about hand hygiene technique and preceding activity. They are expensive to install. Importantly, for hospitals to continue to compare their results with other like institutions it is critical that data is collected and reported consistently in all settings. Data collected through direct observation cannot be compared to data collected through automated systems. Direct comparison of data collected by automated systems is only possible if the same automated system is used.

Ideally Australia will adopt automated systems of hand hygiene observation. Such systems will unburden infection control teams and provide accurate, reliable data. This data is essential to help better understand the complex issue of healthcare worker hand hygiene behaviour. It also has the potential to reduce transmission of infections in hospitals and will improve the safety of Australian health consumers. At 75% Australia's current hand hygiene compliance rate compels us to pursue better systems of monitoring. We must do so thoughtfully in a manner that safeguards patient and healthcare worker privacy.

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