

Gloves Actually: A pilot project evaluating the feasibility of an inappropriate glove use audit

Walker, E¹; Henderson, R¹; McCullough, C²; Berger, S^{1,3}

¹Te Ratonga Ārai Mate Infection Prevention and Control Service, Health New Zealand | Te Whatu Ora Canterbury Waitaha and West Coast Te Tai o Poutini

²Older Persons Health and Rehabilitation, Health New Zealand | Te Whatu Ora Canterbury Waitaha

³Ōtākou Whakaihu Waka University of Otago, Te Tari Tapuhi Department of Nursing

Background

The Five Moments of hand hygiene, as well as appropriate glove use, are core elements of safe practice in healthcare and for infection prevention and control.

As part of Standard Precautions, the extent of PPE use should be determined by blood and body fluid exposure (BBFE) risk and healthcare workers should risk assess for appropriate PPE use prior to providing care. This includes assessment of the requirement for non-sterile gloves (NSG), which are widely available to healthcare workers as a way of preventing potential BBFE exposures.

Gloves are not a replacement for clean hands as gloves can tear or become contaminated, increasing risk of infection transmission if not used correctly with proper hand hygiene (see **Figure 1**). Wide availability of NSG and an inappropriate application of Standard Precautions may lead to inappropriate glove use where there is no risk of BBFE exposure [1][2].



Figure 1: An example of inappropriate glove use.

Methods

A 24-bed general rehabilitation ward was selected to pilot the audit tool. The inappropriate glove use audit tool from Wilson et al [1] was adapted for the New Zealand healthcare context and aligned with Hand Hygiene Australia terminology. Inappropriate NSG use was defined as glove use where there was no risk of BBFE, no contact with mucous membranes, and no contact with hazardous substances.

Between 11/08/2025 and 22/08/2025, two trained hand hygiene auditors spent approximately 30 minutes daily observing and recording glove-use episodes among all ward staff. To minimise the Hawthorne effect, staff (except the charge nurse manager) were not informed that inappropriate NSG use was being audited, and auditors used paper forms and clipboards to resemble routine hand hygiene auditing. Data was transcribed onto spreadsheets for analysis, with both auditors independently checking entries to ensure accuracy.

Development was guided by Kotter’s 8-Step model of change [3], to establish a data set that could be used to direct action under the first step of establishing a sense of urgency.

Results

55 events of non-sterile glove use were observed. Of the 55 events observed, 37 events (67% of events) were recorded as inappropriate glove use events (see **Figure 2**).

Although all healthcare worker (HCW) classifications included in the Hand Hygiene Australia auditing process were included on the audit form, only 4 groups of HCWs were observed at the time of audit using NSGs as reflected in **Figure 3** (Nurses, Healthcare Assistants, Nursing Students, and domestic staff which included cleaners and catering assistants).

Healthcare Assistants were the healthcare workers with the largest number of glove use events observed (n=19). Of these glove use events, 74% were inappropriate (n=14).

Domestic staff (Hand Hygiene Australia nomenclature used) includes cleaning and catering staff. Of the 12 glove use events observed in this group, 100% of the glove use events observed were inappropriate.

Nurses (Registered Nurses and Enrolled Nurses included) had an inappropriate glove use event rate of 37.5% (6 of 16 observed glove use moments were inappropriate). Student Nurses, in contrast, had an inappropriate glove use rate of 62.5% (5 of 8 observed glove use moments were inappropriate).

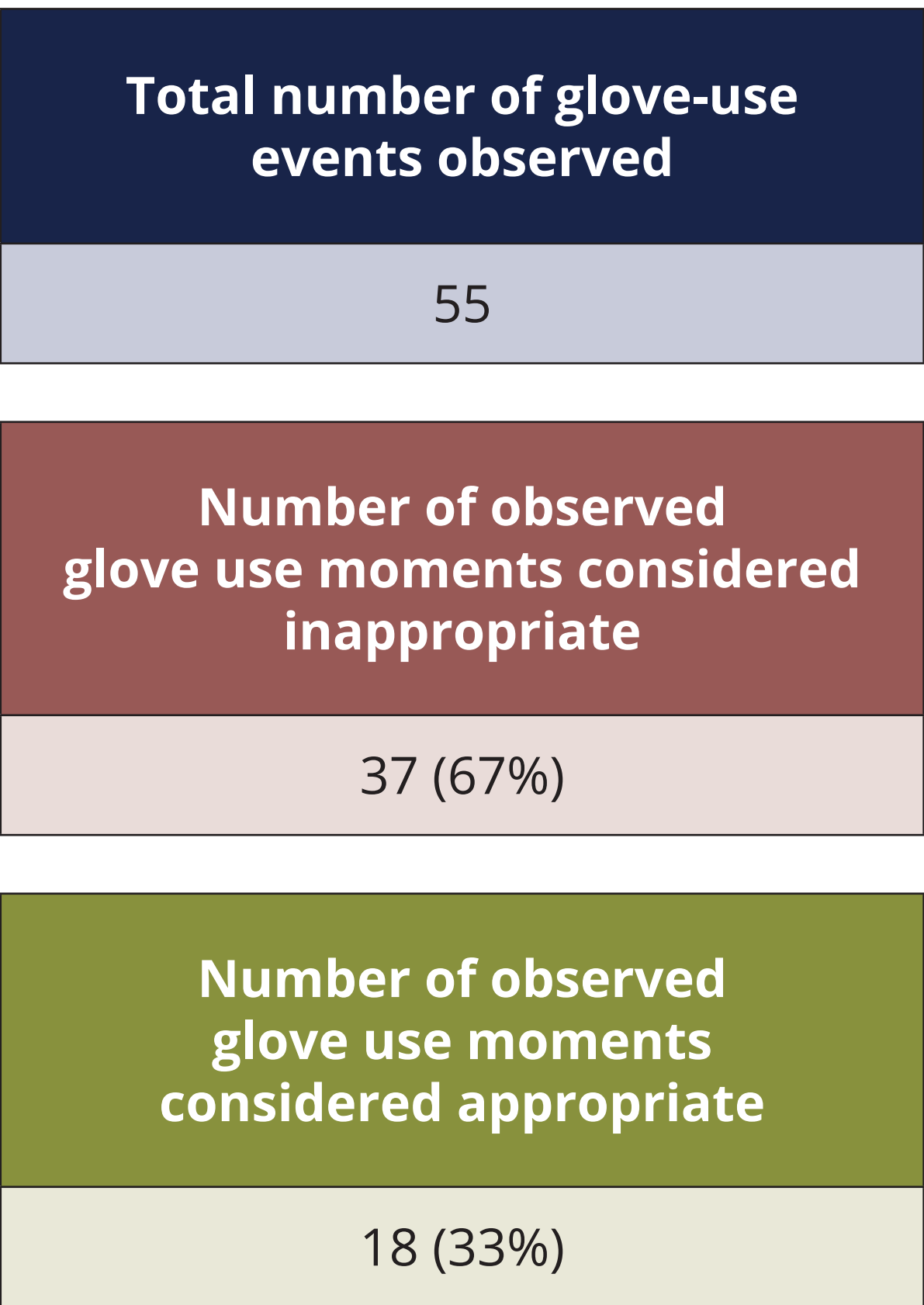


Figure 2: Results of glove use audit.

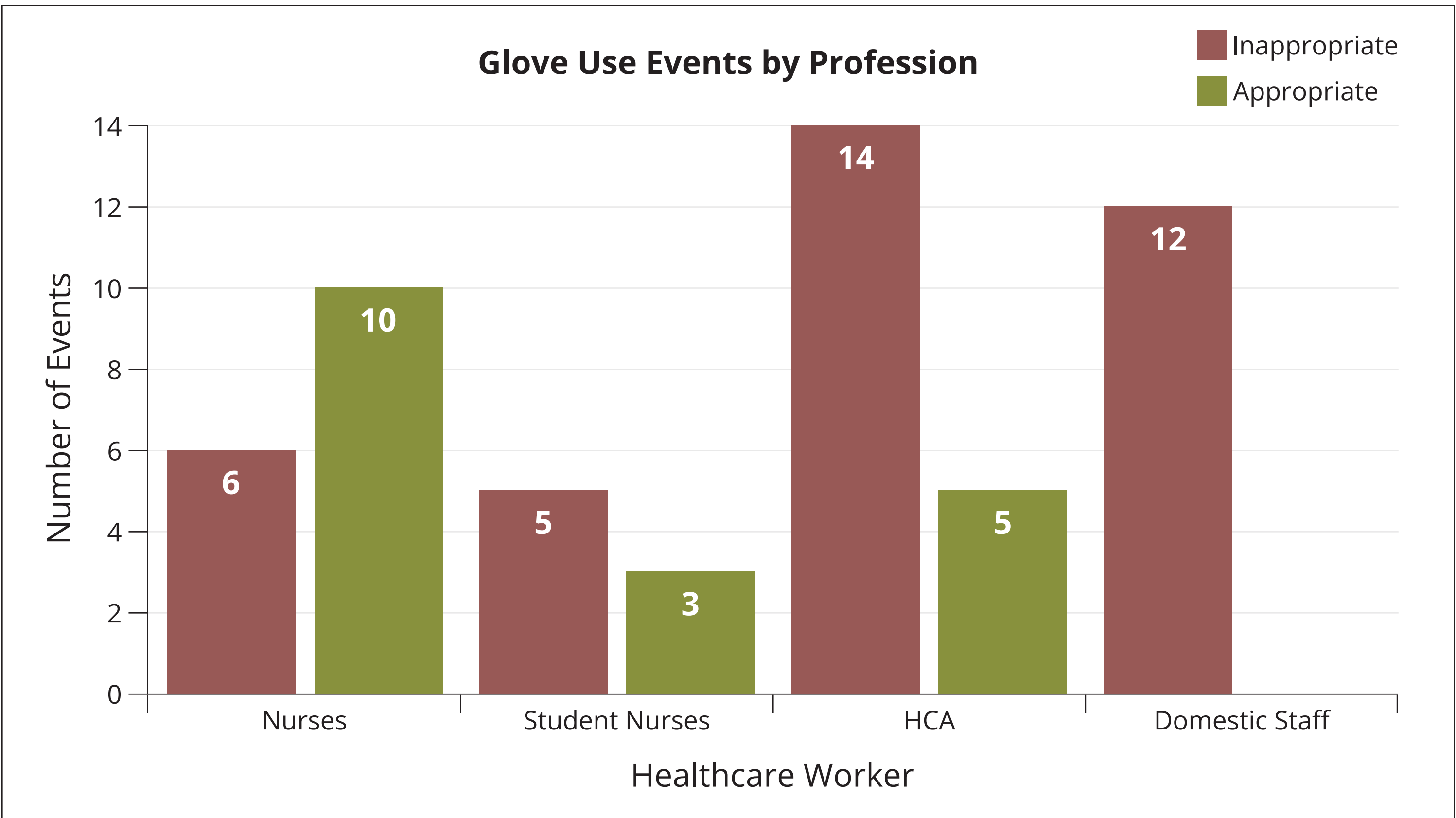


Figure 3: Glove use by profession.

Discussion

The collection of 55 moments creates a significant dataset when compared to some other, previously published audits [1] [2], although the results of this audit showed a higher percentage of inappropriate glove use. 67% of observed glove use events provided a quality improvement opportunity. Kotter’s 8-Step model of change [3] was used to guide the development of this project from the beginning so follow up actions following this audit were contextualised as steps on this process (see **Table 1**).

Table 1: Kotter: 8-Step Change Model (2006)		
Steps	Reducing inappropriate non-sterile glove use plan	Timeline
Step 1: Establishing a sense of urgency	Communicate drivers for change - Pilot audit results of 67% of non-sterile glove use being inappropriate - Impact of inappropriate non-sterile glove use communicated. Not a replacement for hand hygiene. - Pilot audit tool in smaller scale audits to see if data is consistent across OPH&R.	August 2025
Step 2: Creating the guiding coalition	Assemble a group of key stakeholders on campus - Create a glove use taskforce of key stakeholders. - Create and cultivate collaborative relationships.	August/September 2025
Step 3: Developing a change vision	Create a change vision (where we want to evolve to) - The vision: Incorporating the fundamentals of care to drive quality improvement in reduction of inappropriate non-sterile glove use to ensure patient safety. Strategies for achieving vision - Ensuring interprofessional key stakeholders are engaged.	September 2025
Step 4: Communicating the vision for buy-in	Gain acceptance of vision and strategy - Change leaders implementing broad-based communication strategies: via personal interactions, team meetings, workplace presentations, email and intranet. - Education to multi-disciplinary staff members regarding appropriate non-sterile glove use. - Communicate both patient impact and environmental impact as change driver.	October 2025
Step 5: Empowering broad-based action	Push an action-based approach by disseminating information on best practice - Change leaders acting as role models and champions for reducing inappropriate non-sterile glove use events. - Seeking pragmatic solutions to logistical barriers; being willing to compromise.	October – November 2025
Step 6: Generating short-term wins	Make small steps visible and give rewards - Follow up audits in previously audited areas to show improvement. Communicate results. - Recognizing and rewarding “change participants” i.e. staff engaged in promoting best practice.	October - December 2025
Step 7: Never letting up	Reinvigorate progress with new ideas and team members Engagement with district Antimicrobial Stewardship pharmacist and Infection Management Service.	2026
Step 8: Incorporating changes into the culture	Embed change: “This is the way we do things around here” - Bringing about evidenced-based change in clinical practice. - Potential to spread beyond OP&R into other campuses and beyond district with digital auditing tools.	2026

Conclusion

With NSGs being a widely available form of PPE, there is both an acknowledged potential and now audit evidence that NSGs are being used inappropriately. This audit sought to establish a baseline of what percentage of NSG use events were considered inappropriate.

This established key action points including stakeholder engagement, resource creation, and further auditing to verify these results across other clinical areas.

References

- Wilson, J., Prieto, J., Singleton, J., O’Connor, V., Lynam, S., & Loveday, H. (2015). The misuse and overuse of non-sterile gloves: application of an audit tool to define the problem. *Journal of infection prevention*, 16(1), 24-31.
- Loveday, H. P., Lynam, S., Singleton, J., & Wilson, J. (2014). Clinical glove use: healthcare workers’ actions and perceptions. *Journal of Hospital Infection*, 86(2), 110-116.
- Kotter, J. (2006). *Leading Change*. Boston: Harvard Business School Press.

Acknowledgements

We would like to acknowledge MEG | Healthcare Quality, Patient Safety & Compliance, who offered a free trial of their auditing software to enable us to complete our follow up audits.