



GLOVES OFF!

Clean hands.
Safe for all.

Prepared by:
Gloves Off Team
John Hunter Hospital
Hunter New England Local Health District



INTRODUCTION

John Hunter Hospital conducted a pilot “Gloves Off” project during 2023.

This quality project aimed to improve hand hygiene and reduce unnecessary non-sterile glove use.

The setting

- Trial site: two busy surgical wards at John Hunter Hospital.
- John Hunter is an 800 bed tertiary referral and teaching hospital in Newcastle (Awabakal and Worimi country) within the Hunter New England Local Health District, NSW, Australia.

[Click here to meet our project team](#)

SITUATION

This purpose of this document is to provide advice and resources for other health services who are considering implementing a Gloves Off project.

BACKGROUND

Evidence in the literature suggests:

- Non-sterile gloves are commonly misused and overused in clinical work
- Healthcare workers are less likely to adhere to hand hygiene practices when wearing non-sterile gloves, leading to potential transmission of infections.
- Glove overuse results in increased volumes of avoidable waste being sent to landfill.

[Click here for a summary of the literature](#)

[Click here for a useful reference list.](#)

ASSESSMENT

In our pilot project, custom hand hygiene audits found that 60% of non-sterile glove use was unnecessary for the clinical task (as judged by [CEC guidelines](#))

After an education program focussing on healthcare staff risk assessments for standard precautions infection control, unnecessary glove use was reduced to 31%.

RECOMMENDATION

This project is suitable to roll out to other areas.

[Click here for JHH project details](#)

[Click here for JHH project results](#)

[Click here for what to consider when planning a Gloves Off project](#)

[Click here for resources to help launch a Gloves Off project](#)

WANT TO DO A GLOVES OFF PROJECT? THINGS TO CONSIDER.

1. Assemble a Team.

Identify your key players. Infection Prevention Service (IPS) is essential.

Then consider hospital executive, senior nursing, medical and allied health staff.

At the ward level: Nurse Unit managers, ward Champions.

Involve Sustainability Unit if you have one.

Involve Communications team.

2. Decide the scope of the project

One ward? Whole hospital? Whole district?

Will the project include only clinical staff or extend to support staff?

3. Determine financial and staff resources

Do you have a project leader with time and enthusiasm to devote to the project?

Is there any funding available?

4. Plan project structure and timeline

A typical project structure would be

- (i) take baseline measures of glove use and / or staff knowledge
- (ii) conduct a staff education / awareness campaign
- (iii) repeat the measures after the education

Consider what timeline will be suitable, and how to measure whether changes are sustained over time.

5. What is the change?

Staff to appropriately risk assess when to use non-sterile gloves, according to the existing CEC guidelines.

6. How to make it engaging and fun?

Hospital staff can have information and change fatigue. Consider how to get the message across.

7. How to measure success?

Consider what resources you have available to gather information and what relevant data is already routinely collected.

Possible data type	Advantages	Disadvantages
Numbers of gloves purchased for the area being studied	Purchase data is routinely collected, and is likely to be fairly easy to obtain from your procurement team	Lots of factors apart from the Gloves Off intervention can influence glove purchase numbers, such as activity levels, patient casemix.
Observational audits of glove usage	Direct observational data of glove use gives a useful snapshot into current practice. If integrated into existing hand hygiene audits, may be fairly time efficient and not require additional resources.	There will be some bias to the data due to the Hawthorne effect (people often change their behaviour when they are being observed). Can be time consuming to analyse results
Staff surveys	Insight into any knowledge gaps which may exist and may help identify attitudinal enablers and barriers to change.	May be time consuming to design, administer and analyse.
Infection rates	Being able to demonstrate that infection rates did not increase as a result of the Gloves Off education would be reassuring.	Likely difficult to attribute any change in infection rates to the Gloves Off intervention, given that so many factors can influence infection rates.








THE JHH PROJECT - DETAILS

JHH project aims

1. Improve hand hygiene compliance.
2. Improve healthcare staff risk assessments for standard precautions infection control.
3. Reduce unnecessary use of non-sterile gloves.
4. Design and deliver a quality improvement package which can be used by other services.

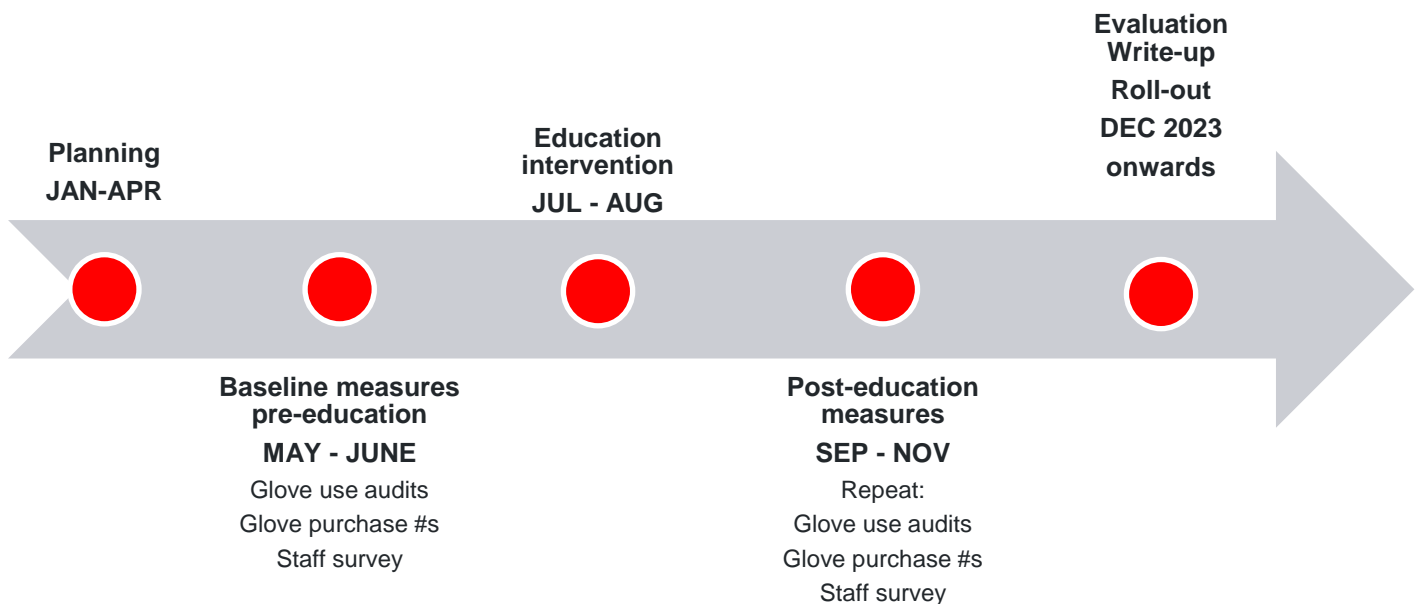
What is the size and impact of the glove problem?

Project baseline: approximate annual non-sterile glove use before project implementation.

	One hospital ward	John Hunter Hospital	Hunter New England Local Health District
Number of non-sterile gloves used 	360 000	11,000,000	28,300,000
Cost 5c per glove 	\$18,000	\$550,000	\$1,415,000
Carbon footprint Kg CO2e 0.034 kg Co2e / glove 	12,240	374,000	962,000
Carbon footprint equivalent: km driven in a car Euro 5 EF 0.366kg Co2 / km 	33,443	1,021,858	2,628,962
Carbon footprint equivalent: driving trips around Australia  	2	68	175
Waste (tonnes) 	1.24	38	97

[Click here for carbon footprint calculation notes](#)

JHH project design and implementation timeline 2023



Intervention: Education and communication strategies

Formal education sessions:

- Delivered by Infection Prevention Service educator
- Ward-based, ~20 minutes
- Attended by clinical staff (nursing, medical and allied health)
- Glove use risk assessment – when to use gloves and when not to use gloves
- Clinical Excellence Commission⁹ and NHMRC¹⁰ guidelines
- 5 Moments For Hand Hygiene
- Described the negative effect of inappropriate glove use on infection control, patient care, environment, cost

Informal education:

- Informal incidental education at point of care by ward NUMs and Champions
- Informal, brief education reinforcement sessions at staff safety huddles and clinical handovers
- Regular ward drop-ins by project leaders

Staff engagement & fun:

- Glove-themed baked goods encouraged staff to engage in staff survey and education sessions
- Theme song: the JHH “Gloves Off rap”

Communication interventions:

- Posters at the point of care outlining appropriate glove use
- Gloves Off banners at ward entry
- QR code on poster and banner links to campaign web page including detailed glove use guidelines document
- Gloves Off vests and badges for ward champions
- Recognisable “gloves off” graphic used on posters, vests, badges, emails
- Feedback to staff about project progress and results: staff newsletters and staff meetings

Posters next to glove dispensers



Banners at ward entry



Vests and badges for Champions



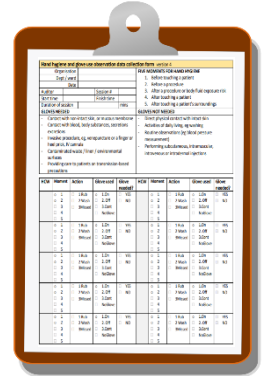
Baking / bribery



Key stakeholders

- Infection Prevention Service (IPS), ward NUMs, ward Champions, HNE Health Sustainability Unit, senior Nursing, Surgical and Allied Health staff, procurement officer, JHH Executive.
- Project support: Ministry of Health Climate Risk and Net Zero Unit (CRNZ), University of Sydney Wiser Healthcare Group
- Hybrid funding: CRNZ, HNELHD Sustainability Unit, Infection Prevention Service

JHH project results



1. Hand hygiene and glove use

Unnecessary glove use reduced from 60% to 31%

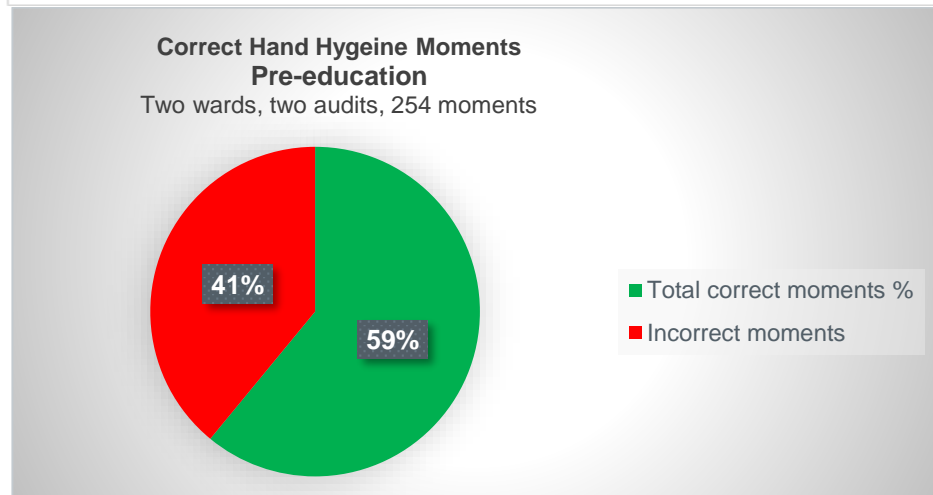
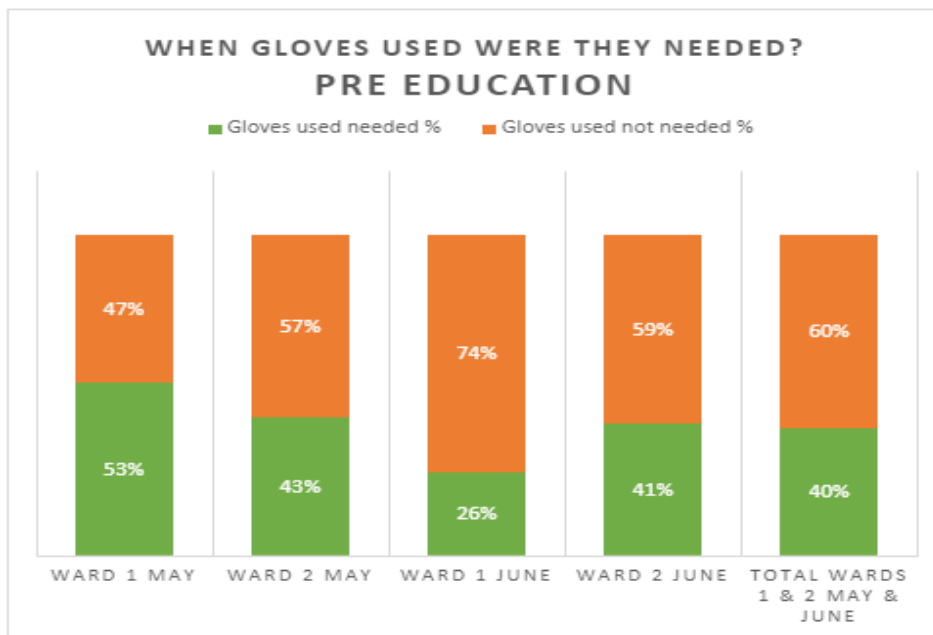
Pre-education custom hand hygiene and glove use audits

National Hand Hygiene Initiative hand hygiene audit form modified with permission to collect information on whether the gloves that were used were actually needed.

254 hand hygiene moments audited before education, two audits May and June 2023.

Overall 60% of observed glove use was not required.

70% of missed hand hygiene moments were associated with unnecessary glove use.



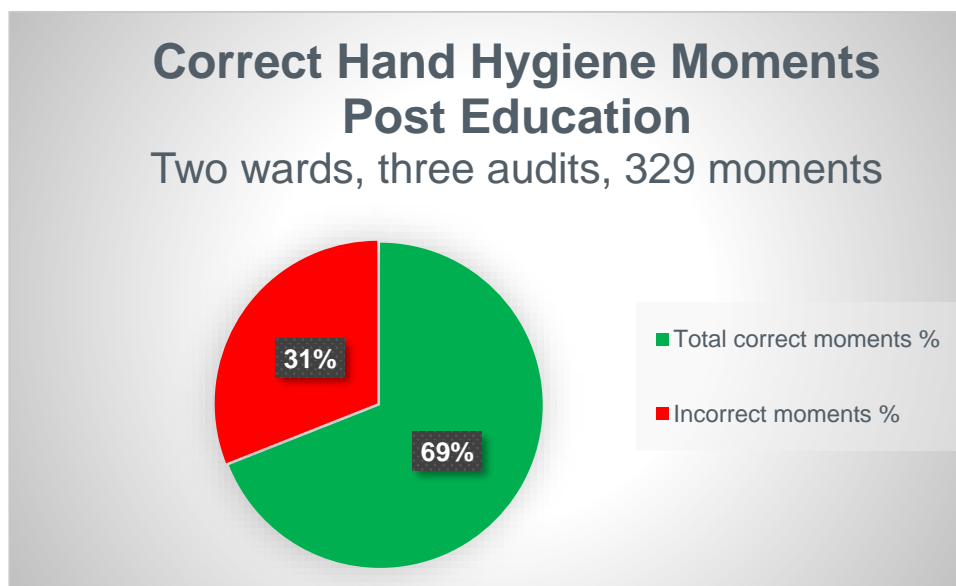
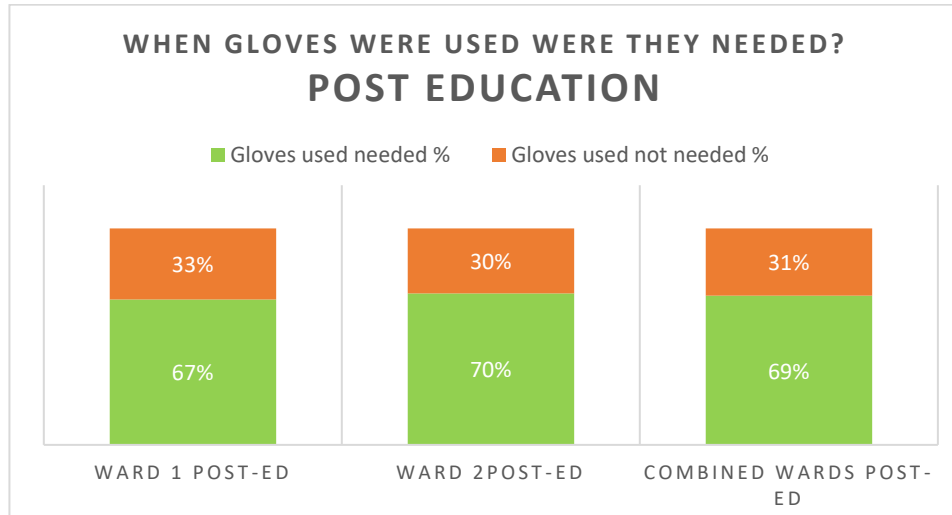
Post-education custom hand hygiene and glove use audits

329 hand hygiene moments audited after education, three audits September, October, November 2023.

Overall 31% of observed glove use was not required.






Hand hygiene compliance improved.

26% of missed hand hygiene moments were associated with unnecessary glove use.



2. Was alcohol based hand rub readily available?

Audits showed that hand gel was not always nearby at bedside. This could be a barrier to staff performing hand hygiene. It is a work in progress in busy surgical wards, where bed ends are often removed when patients come and go for surgery.

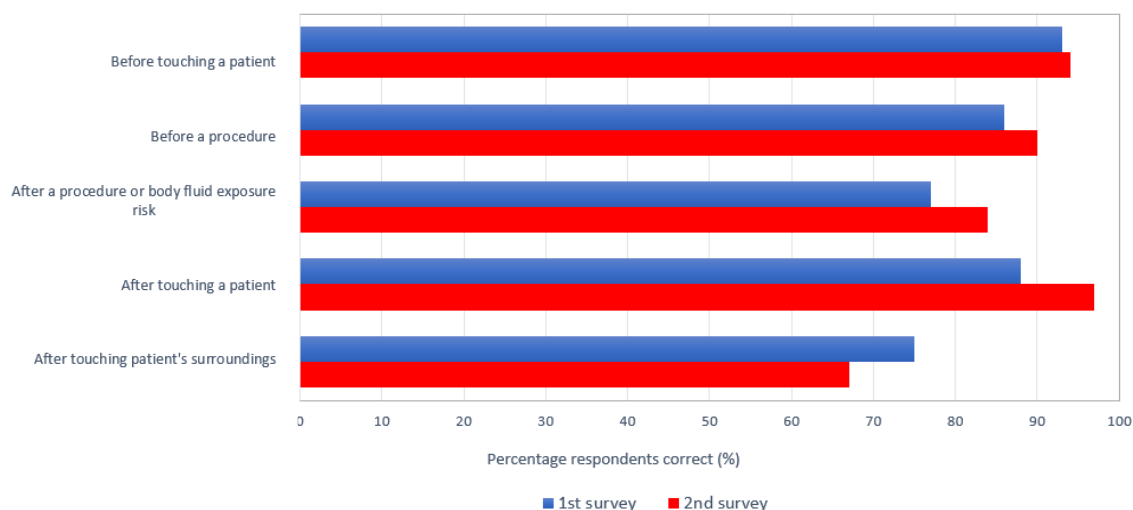
 Alcohol Based Hand Rub – how far?					
Ward	Date	 At the end of the bed	 Within reach: bed end OR pt zone (within curtains)	 Within the pt room (incl 4 bed room)	 Corridor close by outside the room
1	July	48%	59%	72%	100%
1	Sept	44%	66%	81%	100%
1	Oct	94%	94%	100%	100%
1	Nov	40%	73%	80%	100%
2	July	33%	48%	78%	100%
2	Sept	28%	59%	75%	100%
2	Oct	16%	38%	50%	88%
2	Nov	22%	44%	94%	100%

3. Staff survey

Pre-education survey June 2023, post-education survey October 2023.

Staff knowledge and confidence improved for hand hygiene and conducting risk assessments for non-sterile glove use.

FIVE MOMENTS OF HAND HYGIENE CHALLENGE
Pre and post education surveys



Scenario	Pre survey	Post survey	P value
Improved identification for when not to wear gloves (standard precautions, minimal risk body fluid exp	22.9%	55.9%	0.000
Improved knowledge: gel application to next task	74.8%	80.9%	0.41
Improved confidence: using ABHR to reduce infection risk to patient	24.6	60.9%	0.000
Improved confidence: using ABHR to reduce infection risk to staff member	24.6%	53.2%	0.0005

As a result of Gloves Off! have you changed the way you wear gloves for clinical practice?

Yes

84%

Effective education strategies

Our “Gloves Off” project employed a variety of education strategies.

In our survey we asked staff *“If you have changed the way you use gloves in the clinical environment, which education strategies worked best in informing you when to use gloves?”*

Responses suggested that different education strategies worked best for different staff groups.









	Nursing (N=17, %)	Medical (N=8, %)	Allied Health (N=11, %)
Formal education session	7 (41.2)	0 (0.0)	6 (54.6)
Availability of the Gloves off! ward champions	2 (11.8)	1 (12.5)	1 (9.1)
Discussion in safety huddles	10 (58.8)	1 (12.5)	0 (0.00)
Posters/banners	9 (52.9)	6 (75.0)	3 (27.3)
Informal chat with other staff	10 (58.8)	4 (50.0)	5 (45.5)
Informal reminders by NUMs	7 (41.2)	0 (0.0)	0 (0.0)
The Gloves Off! rap song	2 (11.7)	1 (12.5)	4 (36.4)

4. Glove use numbers

Glove use numbers show a trend of reduction whilst ward activity remains stable (as judged by occupied bed days).

Table 1		
Monthly average data over a 3 month period for both wards	# gloves purchased	Occupied bed days
BEFORE Intervention Sept, Oct, Nov 2022	62, 140	1, 425
AFTER Intervention Sept, Oct, Nov 2023	49, 560	1, 435
Percentage change	21% ↓	1% ↑

5. Projected carbon and financial savings

John Hunter Hospital – potential annual savings from reducing unnecessary glove use		
Number of (non-sterile) gloves approximate		11,000,000
Glove use reduced by 21%		2.3 million less gloves used
Cost saving – glove purchase 5c per glove		\$115, 000
Carbon footprint saving kg CO2e 0.034 kg Co2e / glove ¹¹		78 540
Carbon footprint equivalent: km driven saved Euro 5 EF 0.366kg Co2 / km ¹²		214, 590
Carbon footprint equivalent: driving trips around Australia saved		x 14
Waste reduction (tonnes)		8
Waste disposal savings (assume landfill)		>\$2, 000

Carbon footprint calculation notes

- Jamal et al 2021¹¹ conducted a full life cycle analysis for non-sterile and sterile gloves and determined the carbon footprint of a single glove to be 34g Co2e.
- The equivalent km driven in a car is calculated using the [Ecoinvent emissions factor database](#)¹², with the Euro 5 emission factor of 0.366 kg CO2 / km.

Project key learnings and recommendations from JHH

- JHH project results were consistent with the literature findings. Healthcare staff used gloves more than necessary and neglected hand hygiene when doing so.
- Project resourcing: a dedicated project officer one day per week made a significant difference getting the project off the ground and maintaining momentum.
- Project leadership: leadership from the Infection Prevention Service (IPS) was crucial. Staff and management trusted the message from IPS.
- Trial sites: inclusion in the trial was optional, and trial wards were really keen to be involved, which made implementation easier.
- Nurse Unit Manager active involvement seemed to be a strong influence on staff behaviour.
- Staff engagement: fun education elements increased staff engagement. Examples of engagement strategies included glove-shaped baked goods and staff writing and performing a “Gloves Off rap”.
- Executive leadership will be needed to roll out the project beyond the trial wards.
- With willingness and some training, our custom hand hygiene audits could have been incorporated into the standard ward hand hygiene audit schedule, and this would have saved needing additional staff resources.
- Developing a clear written protocol for the hand hygiene audits would have been helpful. Go to the resources tab of the [Gloves Off web page](#) for a suggested Custom Hand Hygiene Audit Protocol.
- Availability of alcohol-based hand rub at the point of care was a likely barrier for staff performing hand hygiene at appropriate moments.
- **This project would be suitable for wider roll-out.**

Project resources and expenditure JHH

Net Zero Lead position – 0.2 FTE. Worked predominantly as a project officer on the Gloves Off project during 2023.	0.2 FTE for 12 months
Additional staffing for custom hand hygiene audits 2 wards x 5 audits x 4-6 hours each	Approx 50 hours Approx. \$2 000
Clinical Nurse Educator staffing to develop and deliver education sessions (absorbed into existing FTE)	Approx 10-12 hours over a 2 week period for 2 wards
Graphic design and printing of education posters, banners, logotype <i>Note posters are shared on the Gloves Off webpage for other services to use</i>	Approx \$6 000

Project key contacts

- Project officer: Tina Wilkie - Ministry of Health Allied Health Net Zero Lead
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- Sustainability Project Officer: Amy Bernotas - HNELHD Sustainability Project Officer
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- Infection Prevention Service: Patricia Knight - Clinical Nurse Consultant and Educator
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Project Team

- Dr Sarah Browning, District Infection Prevention Service Director, Staff Specialist Infectious Diseases
- Dr Sally Munnoch, Epidemiologist, Infection Prevention Service
- Dr Stanley Chen, Senior Staff Specialist General Surgeon, HNELHD, & Ministry of Health Surgery Net Zero Lead
- Cath Kirkman, Nurse Unit Manager
- Emma Downey, Nurse Unit Manager
- Dr Rachel Ng, Anaesthetics Trainee, HNELHD
- Patricia Knight, Clinical Nurse Consultant and Educator, Infection Prevention Service
- Amy Bernotas, HNELHD Sustainability Project Officer
- Tina Wilkie, Allied Health Net Zero Lead, Climate Risk and Net Zero Unit, Ministry of Health

Resources

Access useful resources about the Gloves Off project at:

[Gloves Off Campaign webpage](#)

Including:

- Custom hand hygiene and glove use audit tool
- Suggested protocol for hand hygiene audits.
- Gloves Off educational posters
- Glove use guidelines document
- Staff survey
- Gloves Off rap

[MOH-NetZero \(sharepoint.com\)](#)

[Gloves Off in Critical Care Implementation Guide | Sustainable Healthcare Networks Hub](#)

Literature summary

- Health care infections are a significant concern¹
- Health services make concerted efforts in educating and auditing appropriate hand hygiene to limit healthcare associated infections¹
- Healthcare staff tend to wear non-sterile gloves during tasks when gloves are not required (i.e., when there is little or no likelihood of exposure to body substances)^{2, 3, 4, 5}
- Glove use is often associated with lower compliance with the 5 Moments For Hand Hygiene^{2, 3, 4, 5}
- The “Gloves are Off” Project was conducted in 2018 at the Great Ormond St Hospital (GOSH) in the United Kingdom^{2, 6, 7} A staff education program was implemented. The number gloves used was reduced by approximately 30% with associated cost and waste savings.
- There were demonstrated improvements in the ability of healthcare workers to make appropriate risk assessments with regards to glove use^{2, 6, 7}
- The “No Risk No Glove” project at the Mater Hospital group in Queensland in 2020, found that 62% of glove use was unnecessary, and they achieved a 9% reduction in unnecessary glove use⁸

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NSW Health

Gloves Off Project Team

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Ministry of Health Climate Risk Net Zero Unit

Gloves Off Campaign | HNE Health (nsw.gov.au)

