A Multimodal Intervention To Improve Hand Hygiene Compliance Among Healthcare Workers In National Cancer Institute, Sri Lanka; A Quality Improvement Initiative

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Background

- **The Global Burden:** Healthcare-associated infections (HAIs) are the most common adverse events during patient care. The burden is disproportionately higher in low- and middle-income countries (LMICs).
- **The Impact:** HAIs significantly increase in-hospital mortality, prolong hospital stays, cause long-term disability, accelerate antimicrobial resistance, and drive up medical costs.
- **The Solution:** The World Health Organization (WHO) advocates for multifaceted, multimodal strategies as the most effective means to improve hand hygiene and overcome compliance barriers.

Objectives

01. Evaluate and audit the maintenance of essential hand hygiene tools and infrastructure across 28 wards/units.

02. Assess the knowledge and execution skills of diverse healthcare cadres (doctors, nurses, and healthcare assistants).

03. Foster an institutional culture of safety and individual accountability through active clinical engagement and creative competitions.

Methods and results

A comprehensive multimodal campaign was launched one month prior to Global Hand Hygiene Day (May 5th). The strategy combined structural audits, skill assessments, continuous training, and creative engagement:

- **The Hand Hygiene Championship:** A structured contest evaluating infrastructure availability and staff execution.
- **Targeted Education:** "Pocket meetings" and bedside clinical technique demonstrations across wards.
- **Creative Competitions:** Hospital-wide poster and poetry contests to build emotional engagement and reinforce best practices.

Figure 01. Pocket meetings in the wards.

Figure 02. Demonstration of technique

Results: Infrastructure & Resource Audit

A total of 28 wards and units were audited against 10 critical parameters.

Table 01. Maintainance of tools and infrastructure for hand hygiene in the 28 wards/units at NCIM.

Infrastructure Audit Criteria	Compliance rate % (n=28)
Clean and unblocked basin	92.8% (26/28)
Availability of unleaking tap	92.8% (26/28)
Soap case fixed and dry soap	50% (14/28)
Displaying notice of hand hygiene procedure	53.5% (15/28)
Availability of single using hand towel	60.7% (17/28)
Hand towel kept in easily accessible place	78.5% (22/28)
Availability of used hand towel disposable bin	78.5% (22/28)
Availability of hand rub on ward round trolly,IV trolly and in all wall brackets	57.1% (16/28)
Availability of extra hand rub bottle	92.8% (26/28)
Cleanliness of hand rub bottles	100% (28/28)

Key Infrastructure Insight: While hand rub availability and basic plumbing structures were highly maintained, fixed soap cases and dry soap availability represented the most poorly maintained aspects, identifying a clear target for administrative improvement.

Results: Technique Assessment Using Alcohol Hand Rub

We evaluated **79 healthcare workers** (24 Doctors, 28 Nursing Officers, 27 Healthcare Assistants) during clinical practice.

Table 02. Hand hygiene technique assessment using alcohol hand rub.

Steps of using Hand rub	Doctors(24)	Nurses(28)	Healthcare assistants (27)	Total (79)
Apply a palm full of products in a cupped hand covering all surfaces	88% (21/24)	89.2%(25/28)	92.5%(25/28)	89.8%(71/79)
Rub hands palm to palm	100%(24/24)	100% (28/28)	96.4%(26/27)	98.7%(78/79)
Right palm over left dorsal with interlace fingers with vice versa	58.3%(14/24)	89.2%(25/28)	55.5%(15/27)	68.3% (54/79)
Palm to palm with fingers interlaced	58.3%(14/24)	60.7%(17/28)	44.4%(12/27)	54.4 %(43/79)
Back of the fingers to opposing palms with fingers interlocked	41.6%(10/24)	75%(21/28)	33.3%(9/27)	50.6% (40/79)
Rotational rubbing of left thumb clasped in right palm and vice Versa	70%(17/24)	85.7%(24/28)	81.4%(22/27)	79.7%(63/79)
Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa	70%(17/24)	78.5%(22/28)	51.8%(14/27)	67%(53/79)

Figure 03. hand hygiene skill assessment

Figure 04. Practice sessions at wards

Key Technique Insight : Rubbing hands palm-to-palm showed excellent adherence across all groups (98.7%). However, interlocking fingers to clean the back of the fingers was the most frequently missed step (overall compliance of only 50.6%), highlighting a clear gap for future training focus, particularly among healthcare assistants and doctors.

Discussion

Qualitative Impact & Feedback

Post-intervention feedback highlighted a major shift in institutional culture:

- Staff reported a significant increase in baseline knowledge and clinical confidence.
- Attitudes toward infection prevention and control (IPC) changed positively.
- Creative items (the top-rated poster and hand-written Sinhala poetry) successfully increased emotional connection and ownership toward patient safety targets.

Sustainability Plan

To avoid an "intervention dip" and maintain high compliance:

- The Infection Control Unit has established quarterly point-prevalence audits utilizing this exact standardized assessment tool.
- Continuous feedback loops will target underperforming wards and specific technical errors (such as missing step 5).

Figure 05. The best poster on hand hygiene

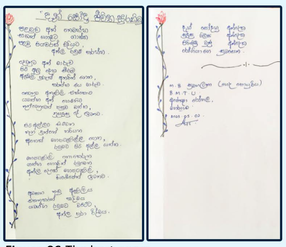

Figure 06. The best poem

Figure 07. The posters

Conclusion

The multimodal Global Hand Hygiene campaign at NCIM demonstrated that merging structural audits with active,creative employee engagement effectively bridges the gap between hygiene knowledge and actual clinical behavior. Cultivating a proactive culture of safety is essential for lowering HAI rates and optimizing oncology patient care.

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