Grampians Health

Budget Constraints vs HAIs Costs: How Reduced Environmental Cleaning Drives Infections and Long-Term Healthcare Expenditure

IPC Tour: Infection Prevention & Control Seminar 21/04/26

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Acknowledgement of Country

I would like to acknowledge the Traditional Owners of the land we are gathered on today, and pay my respects to Elders past, present, and emerging. I acknowledge the ongoing connection to land, waterways and community.

Conflict of Interest

GAMA provided funding for accommodation related to attendance at this seminar. There is no influence on content.

Session Aims

By the end of this session, participants will be able to:

- Understand the financial burden of Hospital Acquired Infections (HAIs)
- Describe the role of environmental cleaning in HAI transmission
- Explain how budget cuts to cleaning create downstream costs
- Use evidence to advocate for sustained investment in environmental hygiene

Background

- It is estimated that 170,574 HAIs occur in adults admitted to public hospitals in Australia annually, resulting in 7583 deaths.(1)
- HAIs are one of the most common complications affecting hospital patients, and greatly increase morbidity and mortality, as well as the risk of readmission within 12 months.(2)
- NSQHS-Preventing and Controlling Infections Standard:
    - 3.13 The health service organisation has processes to maintain a clean, safe and hygienic environment – in line with the current edition of the Australian Guidelines for the Prevention and Control of infection in Healthcare (2)

- Ref: 1. Lydeamore et al., AMR & inf Con, 2022. 2. NSQHS.

How quickly things can go wrong, John's Story.

Stock photo

Current Reality in the Infection Prevention and Control Context

- Escalating healthcare cost pressures across all sectors
- Ongoing workforce shortages, particularly in cleaning services
- Increasing pressure to “find savings” in non-clinical areas
- A persistent burden of HAIs, even in organisations with mature IPC programs

Key message:

Environmental cleaning is frequently an early target for budget reduction — often without full consideration of downstream IPC and patient safety implications

From budget pressure to infection risk

- Healthcare pathogens survive for prolonged periods on environmental surfaces
- Patients inherit the microbial burden of the previous occupant
- Compliance with hand hygiene and PPE cannot compensate for a contaminated environment
- Environmental contamination is a well-established contributor to the transmission of HAIs

To understand the consequences of reduced cleaning investment, we need to revisit what the evidence tells us.

What the evidence consistently shows

- High-touch surfaces are frequently contaminated with healthcare-associated pathogens

Environmental reservoirs contribute to transmission of:

- Clostridioides difficile
- Staphylococcus aureus (including MRSA)
- Acinetobacter species
- Vancomycin-resistant enterococci (VRE)

Enhanced or effective environmental cleaning is associated with:

- Reduced surface contamination
- Lower HAI rates
- Reduced transmission to subsequent patients

Why VRE Responds to Cleaning Investment

VRE:

- Survives well in the environment
- Frequently transmitted via surfaces → hands

- Acts as an early warning indicator for environmental hygiene
- Reduction signals improved system performance
- Reinforces why cleaning quality is non-negotiable during and after outbreaks.

“This makes VRE a sensitive indicator of environmental cleaning system performance.”

VRE reduction predicts broader IPC benefit

Ref: Tan et al, 2022; Vaziri et al, 2023; Fukushige et al, 2022

Why environmental cleaning is undervalued

Cleaning is often perceived as:

- Non-clinical
- Low-skill
- Easily reduced or outsourced

Outcomes are:

- Preventive rather than visible
- Measured in events that do not occur

Cleaning services work is:

- Largely invisible to clinicians and executives
- Poorly understood in terms of complexity and risk

Environmental cleaning is not a support function — it is a core IPC control.

HAIs Are Not Just a Clinical Problem

HAIs increase:

- Length of stay
- Antimicrobial use
- ICU admissions
- Mortality risk

- HAIs directly drive healthcare expenditure
- Many HAIs are preventable

IPC success is inseparable from effective environmental hygiene.

Ref: Barnett et al. Clin Infect Dis 2013

The False Economy of Cutting Cleaning Budgets

Short-term “savings” from reduced cleaning can lead to:

- Increased HAIs
- Outbreak response costs
- Extended length of stay
- Antimicrobial resistance escalation
- Reputational damage
- Regulatory consequences

Result: Net increase in total healthcare expenditure

Why Should IPC Care About Cleaning Budgets?

Environmental cleaning directly impacts:

- IPC KPIs
- National surveillance outcomes
- Accreditation risk
- AMR control
- Staff safety
- Patient trust
- **Cleaning is an IPC intervention, not a support service**

Environmental cleaning as a safety-critical system

- Environmental cleaning is considered part of the organisation’s overall system resilience
- Cleaning standards are strengthened, not weakened, during:
    - Outbreaks
    - High occupancy
    - Workforce stress
- Decisions recognise that environmental contamination increases the risk of clinical deterioration, particularly in vulnerable patients

What Happens When Cleaning is Reduced?

Common budget-driven changes include:

- Reduced cleaning frequency
- Fewer cleaning staff per ward
- Less training and refresher education
- Removal of audit & feedback programs
- Increased reliance on passive “spot cleaning”

These changes are often invisible—until infections occur!

Evidence: Environmental Cleaning & HAIs

Key findings across studies:

Improved routine cleaning reduces:

- Environmental bioburden
- Transmission of MDROs
- Clinical infection rates (especially VRE)

- Audit + feedback improves sustained performance
- Multimodal bundles outperform single interventions

Ref: Carling et al. Crit Care Med 2010

Cost Comparison: Prevention vs Consequence

Investment	Cost	Outcome
EVS workforce & Training	Predictable	Reduce transmission
Cleaning audits	Low	Sustained improvement
HAI case (VRE/CDI/SAB)	High	↑LOS, ICU, antibiotics
Outbreaks	Very high	Ward closures, deep cleans

Prevention is consistently cheaper than response

Case Example: The REACH Trial

Multicentre Australian Randomised Controlled Trial

11 Australian acute hospitals | 2016–2017

Intervention:

- Implementation of a structured environmental cleaning bundle
- Focused on patient rooms (not shared medical equipment)

Key Outcomes

✅ Significant reduction in VRE infections➞ Demonstrates impact on environmentally mediated pathogens

⬇ Reduction in Staphylococcus aureus bacteraemia (SAB)➞ Consistent with improved environmental hygiene

✅ Large improvement in cleaning thoroughness➞ Objective audit measures confirmed sustained practice change

❌ No reduction in Clostridioides difficile infection (CDI)➞ Important limitation highlighting pathogen-specific transmission dynamics

Ref: Mitchell BG et al. Lancet Infectious Diseases, 2019;White N et al. Clinical Infectious Diseases, 2020

Case Example: Cleaning & Enhanced Disinfection Study (CLEEN).

Conducted 2023

First cluster-randomised controlled trial to evaluate the impact of improved cleaning and disinfection of shared medical equipment

Intervention: Cleaning Bundle

The intervention focused on strengthening routine cleaning of shared equipment through:

- Additional dedicated cleaning hours
- Ongoing staff education
- Regular audit of cleaning practices
- Structured feedback mechanisms

Key Outcome ✅ 34.5% reduction in HAIs

Ref: Brain et al., JAMA Network, 2025

Case Example: Efficacy & Cost Benefit Analysis of a Global Environmental Cleaning Algorithm on HAI Rates

Study Focus:

- Evaluated the impact of implementing a standardised, hospital-wide environmental cleaning algorithm

Assessed both:

- Clinical outcomes (HAI rates)
- Economic outcomes (costs versus savings)

Key Findings:

✅ Reduction in hospital-acquired infection rates following implementation of a systematic cleaning approach

✅ Improved consistency and reliability of environmental cleaning practices across clinical areas

✅ Demonstrated cost-benefit, with savings from avoided infections outweighing the costs of enhanced cleaning processes

Ref: Everett, B, 2017: Journal of Patient Safety

What Successful Systems Do Differently

High-performing organisations:

- Protect environmental hygiene funding
- Integrate Cleaning Services into IPC governance
- Use objective audit tools
- Provide regular feedback and recognition
- Treat cleaning as a skilled role

How IPC Can Advocate Effectively

Frame cleaning as:

- A risk mitigation strategy
- A cost-avoidance intervention

Use data:

- Infection trends
- Audit results
- Outbreak costs

Align with:

- AMR strategies
- Patient safety priorities
- Accreditation standards

A call to action for IPC leaders and health executives

IPC leaders must:

- Explicitly position environmental cleaning as a patient safety intervention
- Use data to demonstrate the risk consequences of reduced cleaning
- Partner with environmental services as IPC colleagues, not support staff
- Advocate for risk-informed decisions, not cost-driven reductions

Executives and decision-makers must:

Recognise environmental cleaning as a risk control, not a discretionary cost

Ensure savings strategies consider downstream clinical and financial impacts

Invest in:

- Workforce capability
- Standardisation
- Monitoring and assurance

Key Messages for Decision Makers

- Cutting cleaning budgets does not remove risk — it shifts it
- Environmental hygiene failures surface as HAIs
- HAIs are more expensive than prevention
- Sustained investment in environmental cleaning is financially responsible healthcare

Summary

- Environmental cleaning is a core IPC control measure
- Budget cuts can create long-term financial harm
- Evidence supports investment, not reduction
- IPC leadership is essential to protect this space

Reflection

I would like to leave you with a reflective question:

How would you feel if one of your family members or close friends was admitted to a hospital ward where cleaning services had been reduced due to budget constraints?

Grampians Health

"Clean environments don't make headlines, but infections do — the difference is decided long before the patient becomes unwell."

Thank you

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References

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