THE USE OF UV-C ENVIRONMENTAL CLEANING AS AN ADJUNCT TO HYDROGEN PEROXIDE VAPOUR TO AID PATIENT FLOW

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QUESTION?

PRESENTATION OBJECTIVES

- Understand adjunct UV-C use
- Review potential workflow
- Discuss impact on patient flow
- Consider IPC implementation factors

WHY THIS MATTERS

- Increasing patient demand
- Pressure on bed availability
- Need for effective terminal cleaning
- Balancing safety with throughout

THE SETTING

- Waitematā District North Shore hospital main tower block
- Out-dated design
- Multi-speciality
- Limited number of single rooms per floor

THE PROBLEM

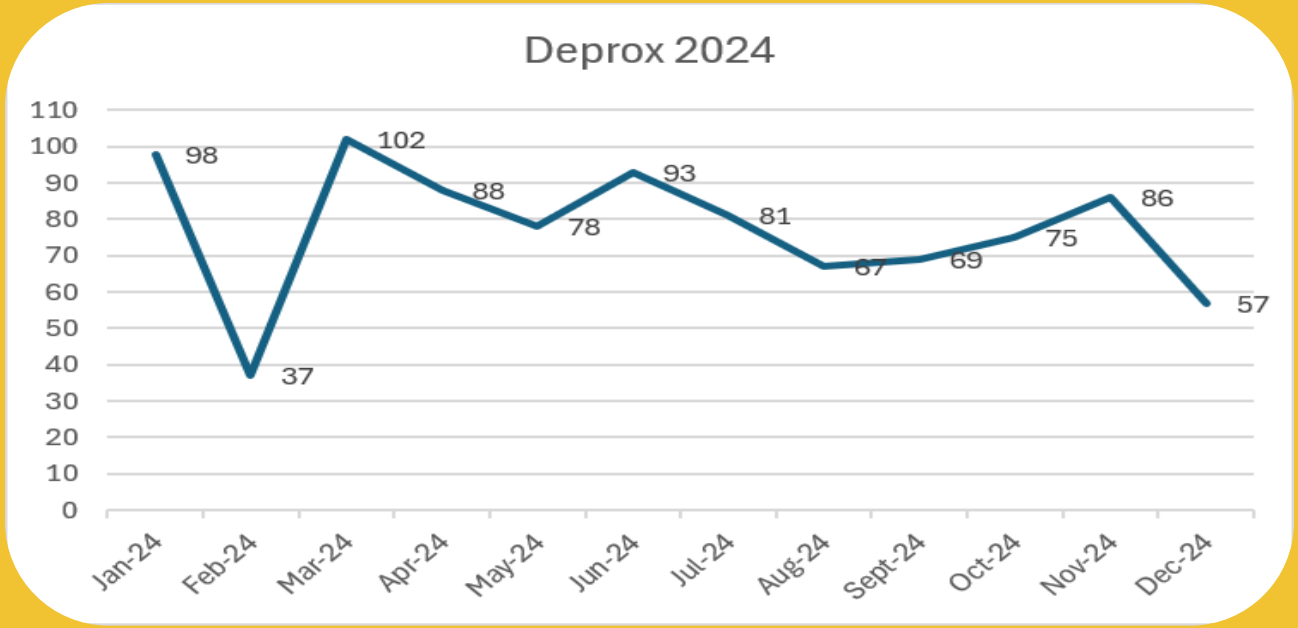
- Old design
- History of outbreaks

=

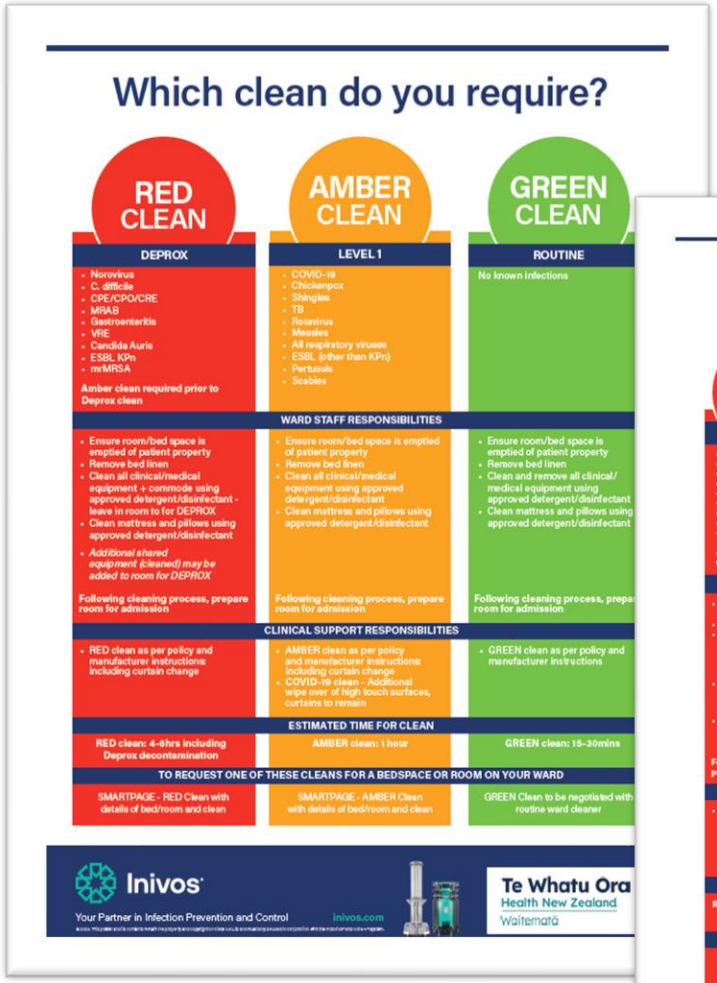
- 2 stage clean
- Hydrogen peroxide vapour
- Long process time

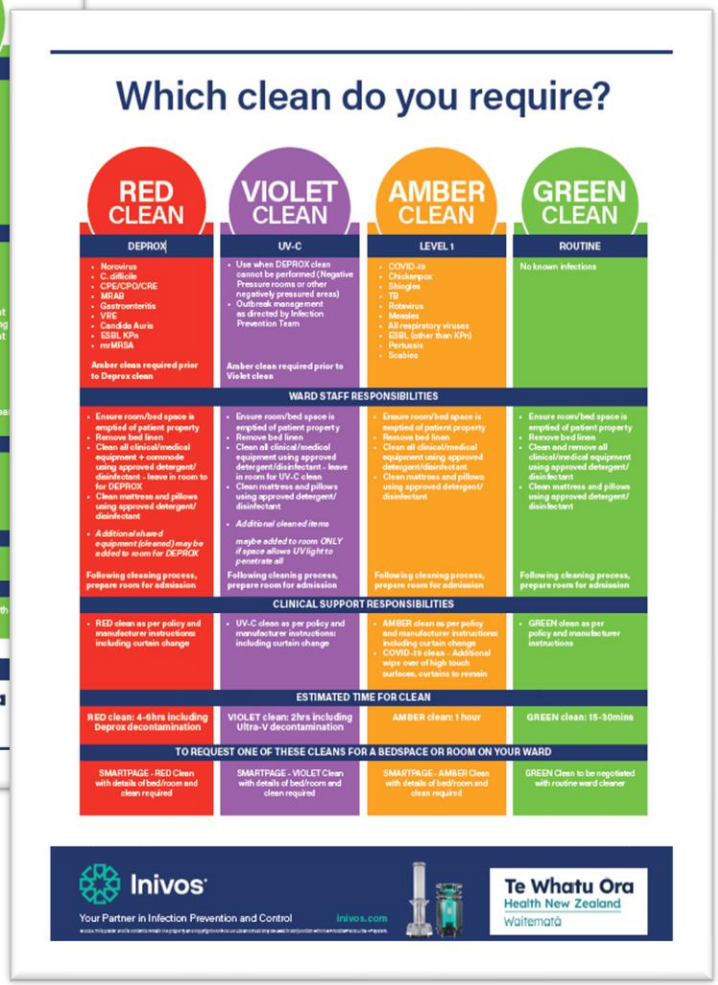
THE HIDDEN COST

- Manual cleans
- Hydrogen peroxide vapour
- Room downtime 4-5 hours
- Patient placement delayed until release by supervisor



EXISTING CLEANING PATHWAY





BACKGROUND

- Environmental contamination contributes to transmission risk
- Hydrogen peroxide vapour is well established
- UV-C provides additional no-touch disinfection
- Potential to reduce room turnaround times

THE QUESTIONS WE NEEDED TO ANSWER

Is UV-C effective?

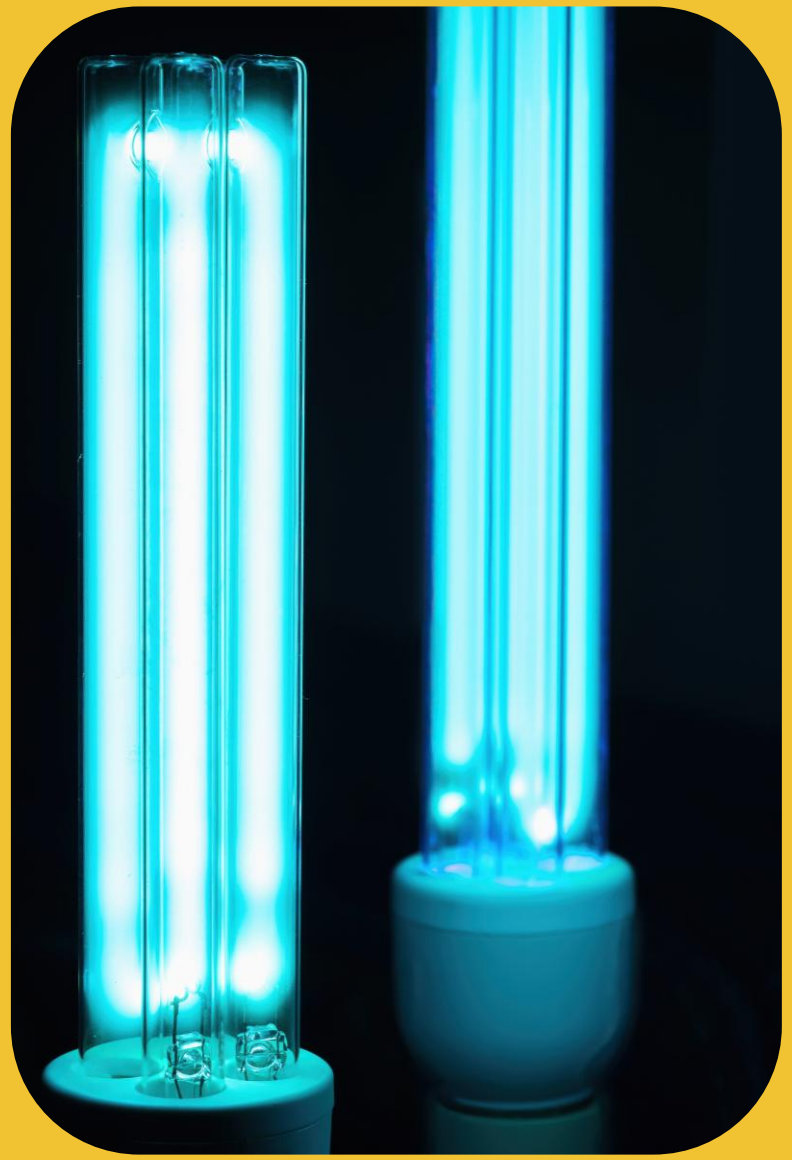
Is it safe?

Is it practical?

Would it improve patient flow?

Published Evidence Supporting UV-C Decontamination

- BETR Disinfection Trial (Anderson et al., 2018)
  - Reduced transmission risk
  - Environmental contamination matters
  - UV-C works best as an adjunct



SYSTEMATIC REVIEWS AND CURRENT EVIDENCE

What Does the Wider Literature Show?

Systematic Review and Meta-analysis (2023)

- UV-C disinfection was associated with a reduction in Gram-negative rod infections in healthcare settings.

Systematic Review (2025)

- UV technologies demonstrated potential to reduce healthcare-associated infections in high-risk settings
- Benefits were greatest when incorporated into broader infection prevention programmes with multi-factoral cleaning strategies

Consistent Findings Across Reviews

- Effective reduction of environmental bioburden on hospital surfaces.
- Most effective when used alongside manual cleaning and chemical disinfection.
- Operational factors such as shadowing, room layout and workflow influence effectiveness.

WHAT WE LEARNT

UV-C works!

Best used alongside cleaning

Not a replacement

Operational benefits may be as important as clinical benefits

HOW ULTRA-V UV-C WORKS

- 254 nm UV-C
- Damages microbial DNA
- Automated
- No-touch process

HOW UV-C ADDS VALUE

- Consistent no-touch disinfection
- Reaches frequently touched surfaces
- Reduces variation in practice
- Supports multimodal IPC strategies

PROPOSED ADJUNCT UV-C WORKFLOW

- Manual clean completed
- Targeted UV-C cycle undertaken
- Room released following established protocol

A TYPICAL WINTER DAY...

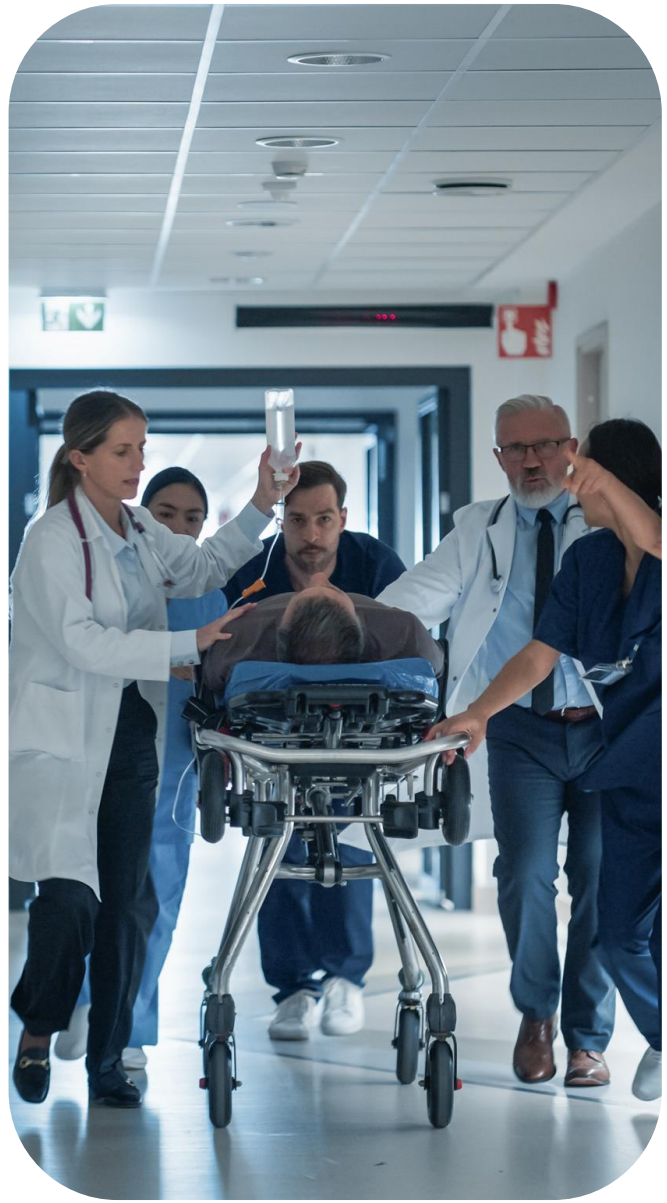
Patient flow was identified as a key national priority in the HNZ winter plan 2026

QUESTION

If I could give your bed manager one room back
2 hours earlier… would they be interested?

POTENTIAL IMPACT ON PATIENT FLOW

- Faster room availability
- Reduced bed waiting times
- Improved admission flow
- Enhanced operational efficiency



KEY OUTCOMES TO MEASURE

- Room turnaround time
- Bed occupancy delays
- Healthcare-associated infection rates
- Staff acceptance and compliance

Which clean do you require?

RED CLEAN	VIOLET CLEAN	AMBER CLEAN	GREEN CLEAN
DEPROX	**UV-C**	**LEVEL 1**	**ROUTINE**
• Norovirus • C. difficile • CPE/CPO/CRE • MRAB • Gastroenteritis • VRE • Candida Auris • ESBL KPn • mrMRSA **Amber clean required prior to Deprox clean**	• Use when DEPROX clean cannot be performed (Negative Pressure rooms or other negatively pressured areas) • Outbreak management as directed by Infection Prevention Team **Amber clean required prior to Violet clean**	• COVID-19 • Chickenpox • Shingles • TB • Rotavirus • Measles • All respiratory viruses • ESBL (other than KPn) • Pertussis • Scabies	No known infections
WARD STAFF RESPONSIBILITIES			
• Ensure room/bed space is emptied of patient property • Remove bed linen • Clean all clinical/medical equipment + commode using approved detergent/ disinfectant - leave in room to for DEPROX • Clean mattress and pillows using approved detergent/ disinfectant • *Additional shared equipment (cleaned) may be added to room for DEPROX* **Following cleaning process, prepare room for admission**	• Ensure room/bed space is emptied of patient property • Remove bed linen • Clean all clinical/medical equipment using approved detergent/disinfectant - leave in room for UV-C clean • Clean mattress and pillows using approved detergent/ disinfectant • *Additional cleaned items maybe added to room ONLY if space allows UV light to penetrate all* **Following cleaning process, prepare room for admission**	• Ensure room/bed space is emptied of patient property • Remove bed linen • Clean all clinical/medical equipment using approved detergent/disinfectant • Clean mattress and pillows using approved detergent/ disinfectant **Following cleaning process, prepare room for admission**	• Ensure room/bed space is emptied of patient property • Remove bed linen • Clean and remove all clinical/medical equipment using approved detergent/ disinfectant • Clean mattress and pillows using approved detergent/ disinfectant **Following cleaning process, prepare room for admission**
CLINICAL SUPPORT RESPONSIBILITIES			
• RED clean as per policy and manufacturer instructions: including curtain change	• UV-C clean as per policy and manufacturer instructions: including curtain change	• AMBER clean as per policy and manufacturer instructions: including curtain change • COVID-19 clean - Additional wipe over of high touch surfaces, curtains to remain	• GREEN clean as per policy and manufacturer instructions
ESTIMATED TIME FOR CLEAN			
RED clean: 4-6hrs including Deprox decontamination	**VIOLET clean: 2hrs including Ultra-V decontamination**	**AMBER clean: 1 hour**	**GREEN clean: 15-30mins**
TO REQUEST ONE OF THESE CLEANS FOR A BEDSPACE OR ROOM ON YOUR WARD			
SMARTPAGE - RED Clean with details of bed/room and clean required	SMARTPAGE - VIOLET Clean with details of bed/room and clean required	SMARTPAGE - AMBER Clean with details of bed/room and clean required	GREEN Clean to be negotiated with routine ward cleaner

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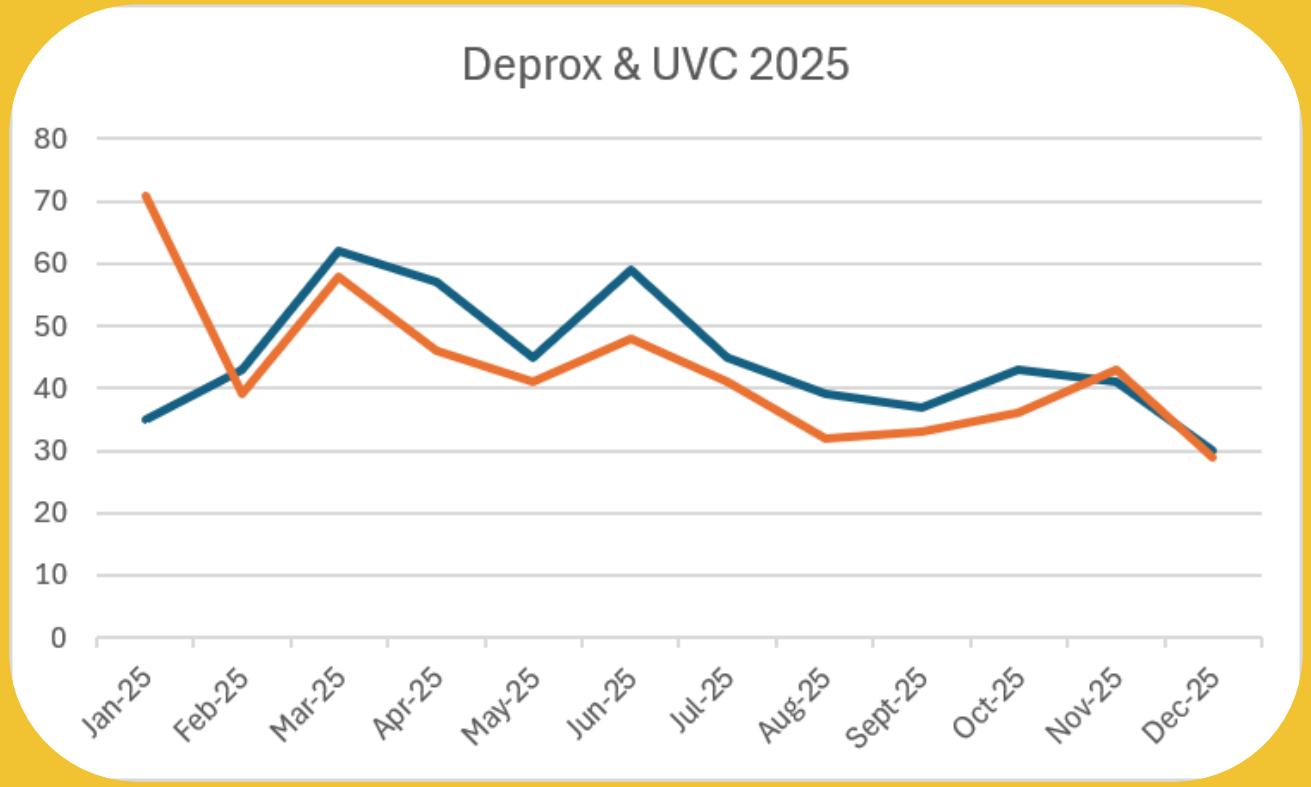
TWO TECHNOLOGIES WORKING IN TANDEM

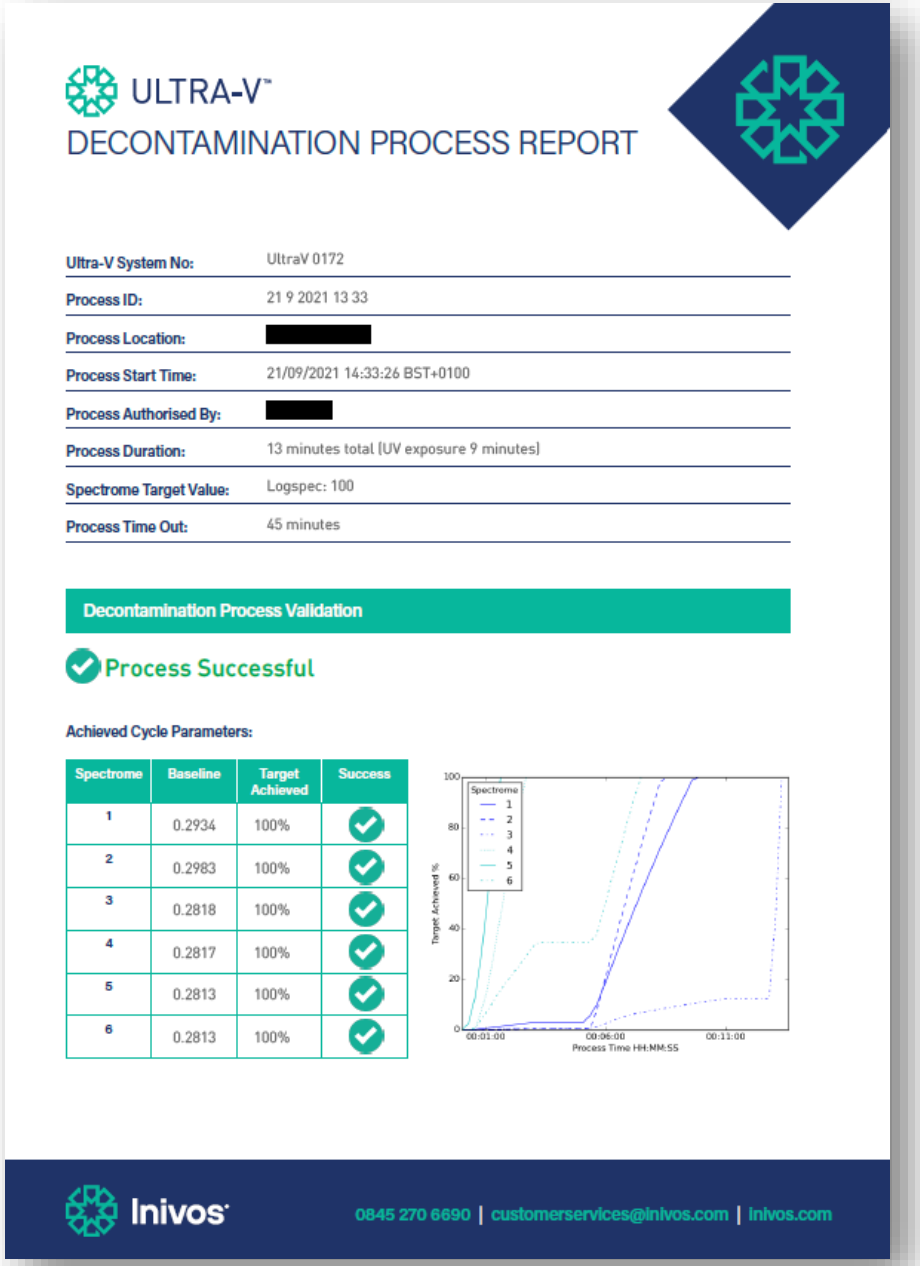


IMPLEMENTATION CONSIDERATIONS

- Training and competency
- Equipment availability
- Safety controls
- Cost-benefit evaluation

LIMITATIONS AND RISKS

- Shadowing – it doesn't go around corners
- Room clutter
- Poor machine positioning
- Inconsistent use
- UV light intensity decreases as you move away from the source



ULTRA-V™

DECONTAMINATION PROCESS REPORT

Ultra-V System No:	UltraV 0172
Process ID:	21 9 2021 13 33
Process Location:	[redacted]
Process Start Time:	21/09/2021 14:33:26 BST+0100
Process Authorised By:	[redacted]
Process Duration:	13 minutes total (UV exposure 9 minutes)
Spectrome Target Value:	Logspec: 100
Process Time Out:	45 minutes

Decontamination Process Validation

Process Successful

Achieved Cycle Parameters:

Spectrome	Baseline	Target Achieved	Success
1	0.2934	100%	✓
2	0.2983	100%	✓
3	0.2818	100%	✓
4	0.2817	100%	✓
5	0.2813	100%	✓
6	0.2813	100%	✓

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TAKE-HOME MESSAGES

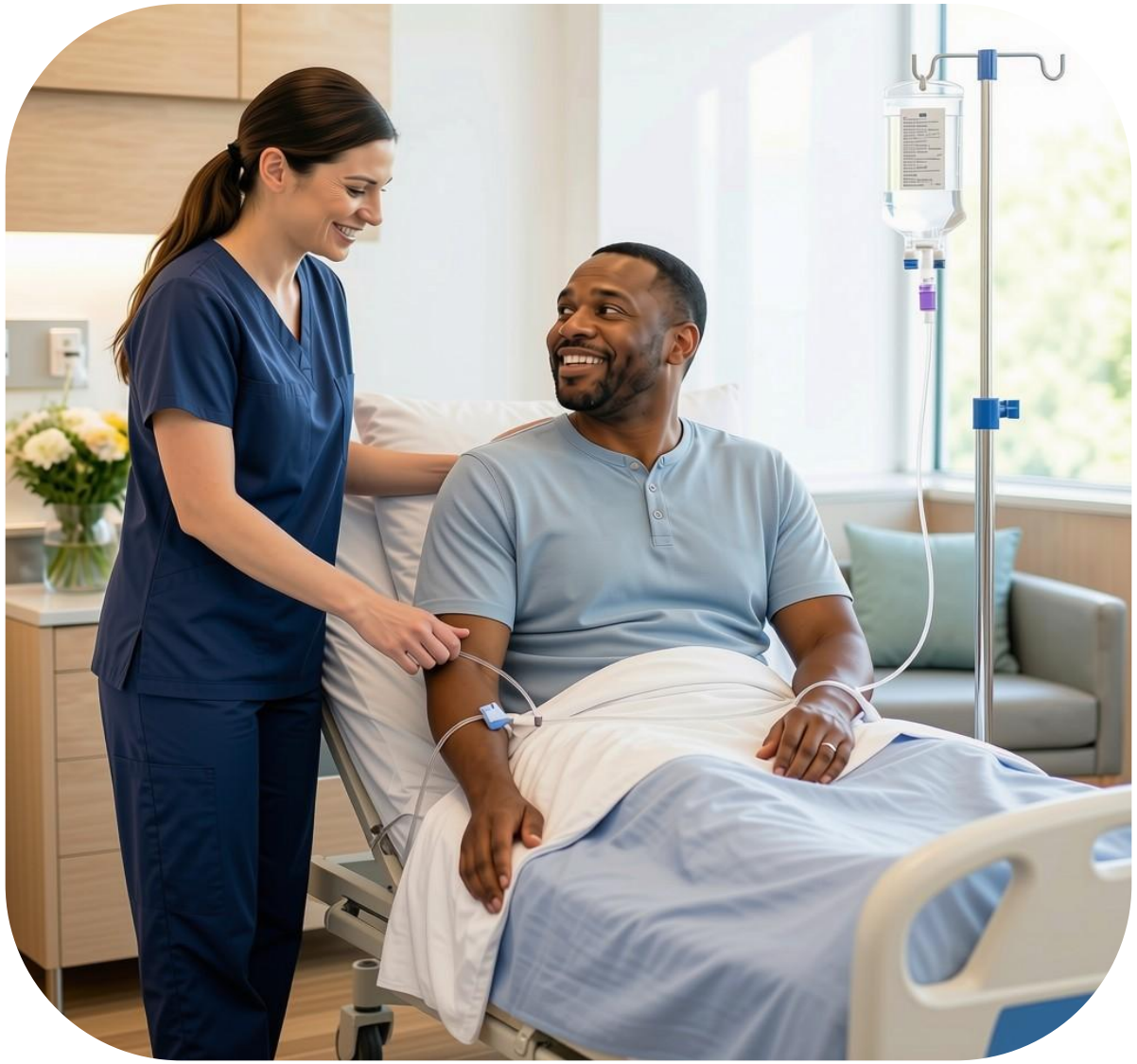
The question isn't whether UV-C works.

The question is whether we can use environmental technologies to improve patient flow while maintaining infection prevention standards.

TAKE-HOME MESSAGES

Infection Prevention should not be seen as a barrier to patient flow.

We are a part of the solution.



THANK YOU!