The Centers for Disease Control and Prevention (CDC) has encouraged hospitals to develop an environmental cleaning and monitoring program to optimize the cleaning of high touch surfaces at terminal cleaning, as well as ensure quality control and improvement.[1, 2, 3]

How to go from standards and guidelines to implementation of a routine quality control program?

There are five key components that go into the successful design and implementation of a routine cleaning monitoring program for environmental surfaces using the Clean-Trace ATP Monitoring System:

1. Design a test plan and determine test points.

2. Identify Pass/Fail thresholds.

3. Determine frequency of testing.

4. Establish meaningful metrics.

5. Track, trend and regularly review test result data.

1. Design a Test Plan and Determine Test Points

Test Points are identified as the specific item(s) to be tested. The list of test points make up the *Test Plan*.

Environmental monitoring test plans fall into three general categories:

- Routine audit of terminally cleaned patient rooms
- Operating rooms and high-risk areas
- Mobile patient care equipment

Neogen Test Plan Recommendations:

- Focus on those surfaces and equipment most at risk for cross-contamination.
- Take into consideration high-risk patient populations who are more susceptible to risk of infection.

Additional test point recommendations are listed in the Appendix.

Routine Audit of Terminally Cleaned Patient Rooms

A minimum of five (5) test points should be audited. Additional test points may be added based on facility considerations.

- Tray table
- Call box/button
- Room inner door knob
- Toilet flush handle
- Bed rails/controls

Routine Audit of Operating Room

A minimum of ten (10) test points should be audited. Additional test points may be added based on facility considerations.

- Telephone
- Overhead light
- Main OR light switch
- Main OR door push plate
- OR table surface
- Bed control
- Nurse computer keyboard
- Storage cabinet handles/knobs
- Anesthesia cart O_2/suction knobs
- IV pump control

Environmental Surfaces Implementation Guide for Routine Cleaning Monitoring

Neogen® Clean-Trace® ATP Monitoring System

High Risk Areas and Equipment

A minimum of ten (10) test points should be audited. Additional test points may be added based on facility considerations.

- Tray table
- Bed rails/controls
- Call box/button
- Room inner door knob
- Telephone
- Toilet flush handle
- Bathroom handrails by toilet
- Toilet seat
- IV pump control
- Mobile blood pressure cuff

2. Pass/Fail Threshold

Neogen recommends the following Pass/Fail thresholds for all test points. Threshold levels are supported in peer-reviewed clinical literature.[4,5] These thresholds have been shown to be effective in reducing the risk associated with transmission of environmental pathogens (e.g. *Clostridium difficile*).[6]

Pass ≤ 250 RLU
Fail ≥ 251 RLU

3. Frequency of Testing

In order to obtain statistically valid feedback, sufficient data must be collected on a routine basis. Areas chosen for audit should represent day-to-day variation in cleaning procedures as well as include the cleaning efforts of all Environmental Services (EVS) staff members.

Routine Audit of Terminally Cleaned Patient Rooms and Operating Rooms

Every day, monitor 5% of terminally cleaned rooms (1 per every 20 discharges). Although some facilities do not consider the OR a high-risk area, it is recommended that each OR be monitored after every terminal cleaning.

Routine Audit of High Risk Areas and Mobile Equipment

Because of the high risk of pathogen transmission, every high-risk area, room and designated mobile equipment and mobile patient care equipment should be monitored after each terminal cleaning.

4. Establishing Metrics

The target metrics for the facility should reflect the cleaning monitoring program objectives and may evolve and change over time.

- % Pass/Fail of combined data for an overall view of cleaning effectiveness.
- % Pass/Fail by room number provides a means to target problem areas and surfaces.
- % Pass/Fail of high-risk areas, rooms and mobile equipment allows early identification of developing problems.
- % Pass/Fail by staff highlights training successes as well as identifies those needing to increase competency levels.

5. Track and Trend Test Result Data

To obtain actionable feedback, sufficient data sets must be collected if a true understanding of cleaning efficacy is to be achieved. The Neogen® Quality Control Data Manager provides an intuitive dashboard for quick, visual snapshots of cleaning performance and powerful reporting options to manage and communicate results.

Environmental surfaces should be monitored at the recommended frequency of testing so that any adverse trends can be detected in a timely manner. Neogen recommends that data be reviewed, at a minimum, once per week and preferably each day the system is used.

Using Monitoring Data to Improve Routine Cleaning of Environmental Surfaces

Monitoring data is typically used in two ways:

Quality Control: Monitoring results provide real-time feedback on cleaning efficacy. For areas undergoing routine audits, Neogen recommends 80% of the test points should show passing results. If greater than 20% of the test points fail, then the entire room should be re-cleaned and re-tested. For those high-risk areas, rooms and mobile equipment, all failing test points should be re-cleaned and re-tested until passing values are achieved.

Process Improvement: The collection of monitoring results over time offers the opportunity to gather statistically-valid data sets that can be used to improve environmental cleaning practices.

- Identify aging, damaged surfaces or equipment that are difficult to clean.
- Identify when cleaning processes are not being performed according to established procedures.
- Assess effectiveness of training and competency protocols by highlighting both successes and improvement opportunities.

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Appendix: Test Point, Mobile Equipment and High-Risk Area Recommendations

These are not exhaustive lists, but serve as a starting point for developing sample plans.

Test Points: Direct or close points of patient contact	
☐	Bed rails/controls*
☐	Call box/button*
☐	Tray table*
☐	Bedside table handle*
☐	Telephone*
☐	Patient T.V. remote
☐	Patient hoists
☐	IV pole (grab area)*
☐	Bedside chair
☐	Bedside cabinet/locker
☐	Room sink*
☐	Room light switch*
☐	Room inner door knob*
☐	Bathroom inner door knob/ plate*
☐	Bathroom light switch*
☐	Bathroom handrails by toilet*
☐	Bathroom sink*
☐	Toilet seat*
☐	Toilet flush handle*
☐	Toilet top surface
☐	Toilet underside surface
☐	Toilet bedpan cleaner*
☐	Mattresses

* Test point recommendations from the *CDC Environmental Checklist for Monitoring Terminal Cleaning*, a part of the CDC Options for Evaluating Environmental Cleaning Toolkit.

Test Points: Equipment	
☐	IV pump control*
☐	IV drip stand shafts
☐	On-Off buttons syringe drivers
☐	On-Off buttons feed pumps
☐	On-Off buttons infusion pumps
☐	On-Off buttons suction pumps
☐	Multi-module monitor controls*
☐	Multi-module monitor touch screen*
☐	Multi-module monitor cabinets*
☐	PC keyboard
☐	Ventilator control panel*
☐	Ventilator mute buttons
☐	Blood pressure cuffs
☐	Pulse oxymeter
☐	Procedural equipment trays

Test Points: General Environmental	
☐	Patient and bathroom door knobs
☐	Bathroom floors
☐	Trash lids
☐	Drug fridge handles
☐	Floor areas near patient bed
☐	Floor areas under furniture
☐	Floor areas under patient bed
☐	Flush handle staff toilets
☐	Internal and external door handles to side wards
☐	Internal and external door handles to staff rooms
☐	Internal and external door plates to side wards
☐	Patient bed curtains — must be non-porous material
☐	Nurses station work surface
☐	Staff tap handles wash basins
☐	Storage cupboards handles
☐	Kitchen refrigerator handle
☐	Kitchen work surface

High Risk Areas	
☐	Intensive care units
☐	Transplant units
☐	Contact isolation rooms
☐	Hemodialysis

Mobile Equipment	
☐	Mobile IV stands
☐	Mobile blood pressure units
☐	Cardiac arrest/crash carts
☐	Mobile medical imaging
☐	Drug cart
☐	Warming cabinets
☐	Anesthesia cart
☐	Case carts
☐	MRI equipment
☐	Medication carts
☐	Isolation carts
☐	Medical computer carts

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