THE SPARK

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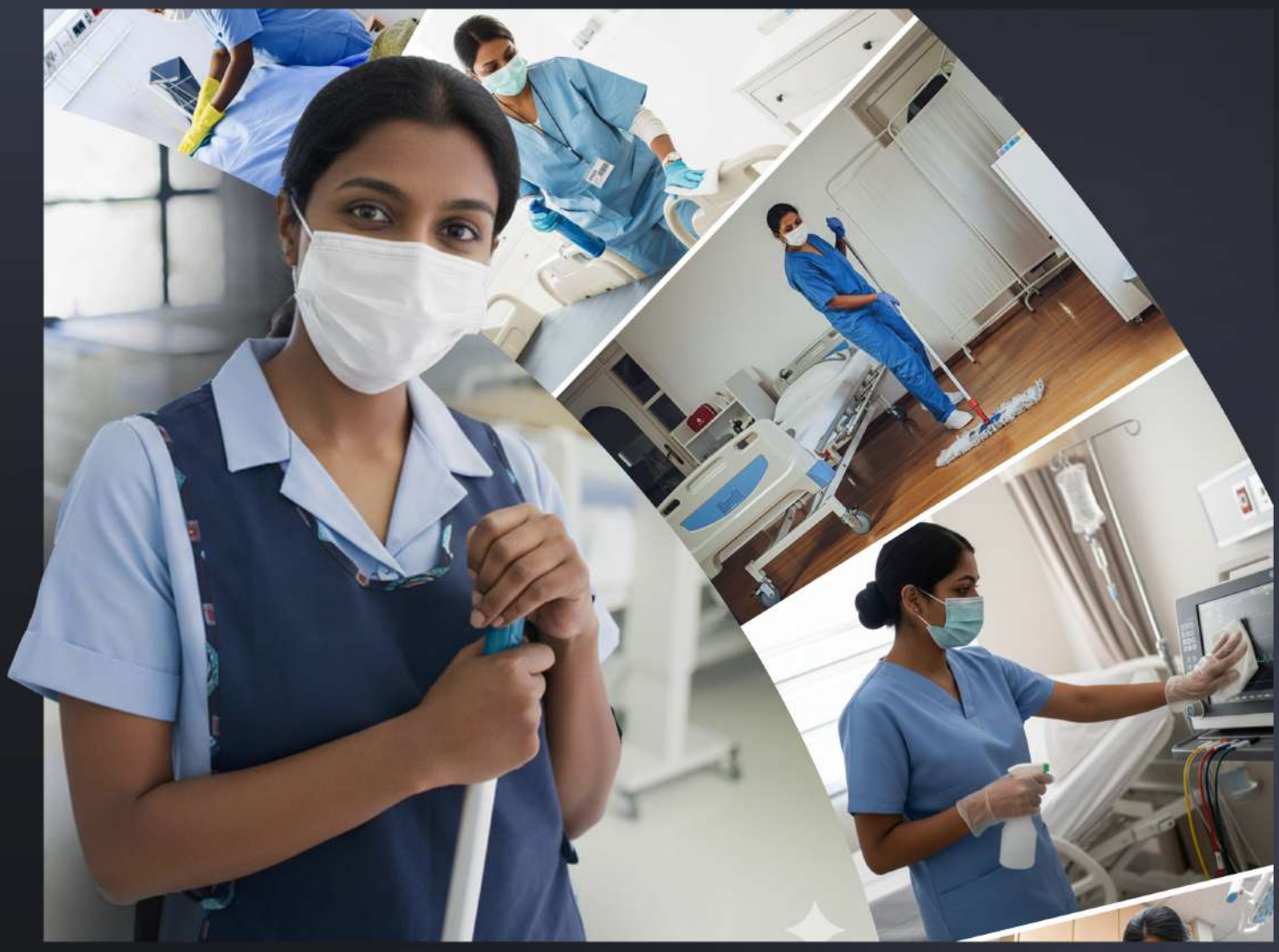
THE VOICE OF CAHO

From Hygiene to Healing: The Unsung Role of Housekeeping in Healthcare



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THE SPARK

VOICE OF CAHO

Welcome to the October issue of **THE SPARK**, CAHO's latest endeavour to enlighten the way towards excellence in quality healthcare and patient safety. True to its name, **The SPARK** represents our unwavering commitment to inspire and empower every healthcare stakeholder with the tools, insights and innovations needed to ignite transformation across the industry.

Why THE SPARK?

The name **SPARK** is more than just a title—it is an acronym that embodies the core pillars of our mission:

- **Safety:** Advocating for uncompromising patient safety standards across all healthcare practices.
- **Partnership:** Fostering collaboration and unity among healthcare providers, policymakers and patients.
- **Accreditation:** Highlighting the significance of achieving and maintaining the highest standards through accreditation.
- **Reliability:** Ensuring trust and dependability in healthcare delivery systems.
- **Knowledge Sharing:** Promoting the continuous exchange of ideas, experiences and innovations to advance in the field.

Through this dynamic monthly publication, we aim to illuminate every facet of quality healthcare and patient safety, equipping you with thought-provoking articles, expert interviews, case studies and actionable solutions.

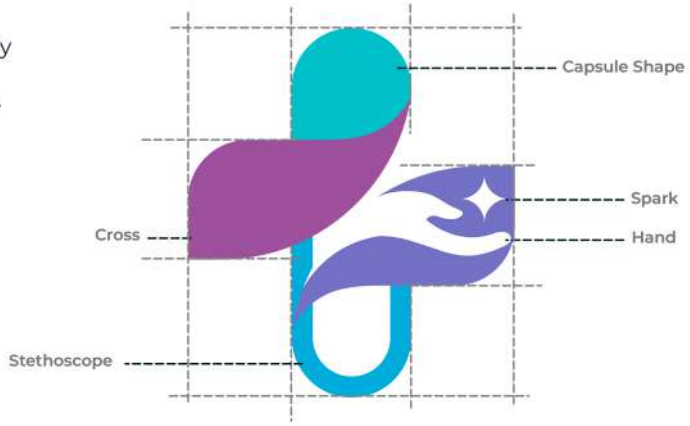
Breaking Down the Logo

"**THE SPARK**" - Logo Breakdown

"**THE SPARK**" - CAHO's dynamic new monthly magazine that promises to illuminate every facet of healthcare quality and patient safety.

This collaborative platform embodies our core values:

Safety
Partnership
Accreditation
Reliability
Knowledge Sharing



The logo of THE SPARK is a harmonious representation of our vision, meticulously designed to resonate with the core elements of healthcare. Each component of the logo has been thoughtfully chosen to convey a deeper meaning:

- **The Cross:** A timeless symbol of healthcare and healing, the cross in our logo represents the foundational values of compassion, care and dedication to saving lives. It serves as a reminder of the sacred responsibility borne by every healthcare professional.
- **The Capsule:** The capsule signifies medical innovation, treatment and the role of modern medicine in improving patient outcomes. It underscores the importance of evidence-based practices and the continual evolution of medical science.
- **The Stethoscope:** An emblem of diagnosis and patient interaction, the stethoscope reflects the critical role of frontline healthcare professionals. It emphasizes the human connection and trust that lie at the heart of effective care delivery.
- **The Spark:** Central to the logo, the spark symbolizes inspiration, innovation and the ignition of ideas that drive progress. It represents our goal to spark meaningful conversations and catalyse positive change in the healthcare landscape.
- **The Hand:** The hand signifies empathy, empowerment, care and the patient-centric approach that is integral to our mission. It is a powerful reminder that every initiative, every policy and every innovation must ultimately serve the needs and well-being of patients.

Our Vision for THE SPARK

At CAHO, we believe that knowledge is power and THE SPARK is our platform to share that power. Through this magazine, we aim to:

- Shine a spotlight on best practices in quality healthcare and patient safety.
- Provide a platform for collaboration and dialogue among healthcare stakeholders.
- Drive awareness and action on pressing healthcare challenges and opportunities.
- Celebrate the achievements and innovations of healthcare leaders and institutions.

Each issue will feature a blend of articles, success stories, research findings and expert insights designed to inform, inspire and challenge readers to strive for excellence.

Join Us on This Journey

As we embark on this exciting journey, we invite you to be an active part of THE SPARK community. Share your stories, your challenges and your triumphs. Together, let us create a ripple effect that transforms healthcare for the better.

Thank you for being a part of this movement. Let’s ignite THE SPARK of excellence in healthcare, one story at a time.

VOICE OF CAHO

Dr. VIJAY AGARWAL
President, CAHO

Dr. LALLU JOSEPH
Secretary General, CAHO

At CAHO, the firm belief is that patient safety is the basis on which healthcare is measured. One of the important aspects of Clinical Excellence is attributed to Infection Prevention, which is directly linked to good housekeeping practices. A crucial truth being highlighted in this edition of the magazine: a clean hospital is a safe hospital indeed.

The unsung heroes safeguarding patient safety are our housekeeping staff. Their vigilance in cleaning, disinfecting, and waste disposal breaks the chain of hospital-acquired infections, ensuring a safe environment in every ward, ICU, and OT. Valuing their well-being, providing them with training, and acknowledging their work will not only strengthen infection prevention systems but also lay the foundation for quality healthcare.

Hospital-acquired infections continue to be a challenge for hospitals across the World. Beyond the clinical care extended in hospitals, the human element should also be considered: those hardworking housekeeping teams working behind the scenes. The health, motivation, and skills development of those workers are just as important as the disinfectants and technologies at their disposal.

The present volume speaks with pride of the thoughtful insights, handy checklists, and motivating success stories that make it worth reading. Operation theatre protocols and green cleaning concepts are provided. Diversey is a global brand in the field of infection prevention and cleaning solutions, and we are happy to have such a partner on this journey. They bring a new touch and an interesting perspective when it comes to sustainable hygienic practices, newer disinfecting technologies, and approaches that give power to housekeeping groups to ensure cleaner and safer environments. We work together to bring light to how global best practices can be adapted to further strengthen India's infection-prevention ecosystem.

The primary responsibility of a leader is to ensure strict adherence to protocols, for investing in new technologies, carrying out audits from time to time, and recognising our housekeeping champions at the frontlines. CAHO continues to develop infection prevention frameworks while also managing hospitals towards the adoption of best practices.

Remember: Infection control is not a department; it is a culture. Housekeeping, in that culture, is one of the best pillars.

CURATOR'S MESSAGE

FROM HYGIENE TO HEALING: THE UNSUNG ROLE OF HOUSEKEEPING IN HEALTHCARE

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Infection prevention is one of the cornerstones of safe, quality healthcare and at the heart of it lies hospital housekeeping. While clinical interventions often take the spotlight, the silent, consistent efforts of our housekeeping teams are what keep the environment safe for patients, staff, and visitors. This issue of our magazine is dedicated to acknowledging their indispensable role and exploring the science, systems, and human effort that drive hospital cleanliness.

Starting with zones of cleanliness in hospital settings, checklists can be drawn up daily for wards and ICUs to ensure that high-touch surfaces and other critical areas receive due attention. Disinfection protocols, segregation of waste, and the choice of different disinfectants are a few topics that highlight the standards that govern all facilities. Simultaneously, we investigate emerging disinfecting technologies, together with the rising realisation of using green cleaning products, balancing effectiveness with sustainability.

This edition proudly marks the first joint publication with Diversey, the world leaders in infection prevention and cleaning solutions. Through this alliance, we give our readers on-the-ground best practice developments and hospital hygiene innovations from around the globe: new disinfecting technologies, sustainable cleaning chemicals, and data-driven monitoring systems that set higher standards for infection control. With Diversey aiming to create safer environments, its vision completely dovetails with that of CAHO, which focuses on empowering healthcare institutions. Their perspectives present a view of how science and technology come together with housekeeping staff on the front lines to minimise hazards, reduce infections acquired in hospitals, and foster a culture of safety. They provide the real-world application and forward-looking strategies to show that housekeeping is no longer secondary to patient safety and institutional excellence.

Housekeeping is not just an issue of tools and products—it is about people. The issue underlines ergonomics, injury prevention, vaccination, and health monitoring for staff; their own well-being is in infection control itself. Features about continuous training, audits, supervision, and recognition programs bring home the fact of empowered and motivated teams delivering excellence.

Much emphasis is laid on the cleaning protocols of the operating theatre and isolation ward, where lapses would be most detrimental. Shortages of disinfectants and Personal Protective Equipment (PPE) would also be discussed. The shared responsibility-that of the patients and their visitors in observing proper etiquette is also stressed upon in this edition.

To inspire, we share narratives of successful practices which have led to a decrease in hospital-acquired infections, interviews with housekeeping star, and insights from leaders throughout healthcare via Cognito Leges, Nurse Leader Unplugged, IPC Pillar Talks, Diagnostic Dialogues, and SHCO Insights.

These contributions together highlight one truth: hospital housekeeping is not an ancillary service but central to infection prevention and patient safety. By valuing, training, and supporting our housekeeping staff, we ensure protection for our institutions and communities. This issue needs to remind us that every clean surface, disinfected instrument, or safe space for patients is a win for public health.

"Housekeeping staff is the quiet guardian of patient safety—often unseen, but always indispensable."

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MS. INDRANI SANYAL
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The Silent Role of Hospital Housekeeping in Infection Prevention

Traditionally, housekeeping was never considered important in hospitals, and it was only after the 1850s that dedicated housekeeping staff was brought into hospitals. Previously, housekeeping was largely managed by the nurses who were trained to take on these responsibilities in addition to patient care. Subsequently, a revolution was witnessed in the hospital housekeeping sector and today the role of housekeeping simply cannot be undermined by any means.

Patients rate hospitals based not only on the quality of services but also on their hygiene quotient. Infection control, quality of care, and the confidence of the public in any healthcare organisation are influenced by its housekeeping and disinfection processes. Housekeeping is a crucial support service department in a hospital. The Hidden Battlefield.

Hospitals are paradoxical spaces: they are meant to be centres of healing, and at the same time, they can also harbour dangerous microorganisms. Multidrug-resistant bacteria, fast-spreading viruses are silent carriers lurking on bed rails, door handles, or elevator buttons, the risks are everywhere. If you carelessly touch these surfaces, you can initiate the chain of infection. This is where housekeeping becomes simply indispensable. With the right cleaning techniques, suitable tools, and well-timed interventions, housekeeping teams help to break infection chains and safeguard everyone in the hospital environment. Each step interrupts the chain of transmission, protecting patients, staff, and visitors alike.

Beyond Cleaning: Infection Control as a Science

Hospital housekeeping today is beyond just sweeping floors or cleaning surfaces. It is a science-oriented discipline with infection control and patient safety at its core. Every action from wiping high-touch surfaces to managing waste, handling linen, or responding to outbreaks is governed by strict protocols. Every single step in the cleaning process today is carefully planned as not merely a chore, but a deliberate intervention designed to break the infection chain. The professional housekeeper of today must be well-educated and trained in infection control protocols and safety standards, and not just understand the technical aspects of cleaning agents, disinfectants, and equipment.

The Five Critical Roles

1. Environmental Cleaning

Germs thrive on areas that have very frequent contact, like bed rails, door knobs, switches and monitors, which are classified as infection hot zones. Certain other areas, like floors, toilets, waiting areas, lifts, and even air vents, can harbor dangerous microbes. A routine of systematic cleaning and disinfection constitutes the first shield of defence. It is also necessary to know the use of the right disinfectant, the right contact time, and to follow correct cleaning methods. It is also very important to ensure consistency in the cleaning processes, as one step skipped can allow infections to spread silently across a ward. Hence, it is clear that environmental cleaning is not just cosmetic; it is the first line of defence in patient safety.

2. Waste Management

Hospitals produce all sorts of waste, soiled clothes, infectious agents, expired medicines, and general garbage. When mixed or handled incorrectly, the waste becomes a high risk. So, with Biomedical Waste Management Rules being followed widely, colour-coded segregation of waste, its safe storage, and disposal keep not only patients and staff but also the big community at large safe. That is how waste management is translated into daily infection control.

3. Linen and Laundry Handling

Hospital linen, be it sheets, gowns, blankets or curtains, could spawn pathogens. Housekeeping makes sure that the soiled items are collected safely in designated bags, transported without spilling and washed at controlled

high temperatures with disinfectants. Clean linen will then be placed separately to prevent cross-contamination. Thus, a fresh sheet on a hospital bed is like a shield against infection. Careful handling of the hospital laundry at every step contributes greatly to goof infection control practices in a hospital.

4. Deep Cleaning of Patient Areas

Deep cleaning is a thorough cleaning of a patient room before another patient is admitted to this room. Every surface, including floors, walls, windows, furniture, mattresses, all equipment, corners, as well as less obvious surfaces, is cleaned and disinfected to make sure no pathogen exists. This procedure is an important step in breaking the invisible link between one patient's illness and another's recovery.

5. Emergency Response to Outbreaks

Whether during times of COVID-19, norovirus, or seasonal flu outbreaks, hospital housekeeping acts as first responders. Rapid and targeted disinfection can help contain an outbreak from spreading further. Given the situation, housekeepers take on fire-fighting emergency action above and beyond their cleaning duties.

Housekeeping further supports accreditation efforts by maintaining records and documentation in line with NABH or JCI standards. These aren't just bureaucratic tasks but essential tools for accountability, monitoring, and continuous improvement.

Together, these functions portray hospital housekeeping as a silent infection-control agency.

Training, Trust, and Patient Experience

If there's one thread that ties everything together, it's training. Modern housekeeping staff must understand not just how to perform cleaning tasks, but why each procedure and product matters. Training has therefore become central to effective Housekeeping. A skilled, well-prepared team reduces accidents, prevents lapses in infection control, and transforms routine cleaning into a strong infection-prevention measure. Training builds confidence, enhances patient experience, and demonstrates the hospital's commitment to safety.

A Partnership with Clinical Teams

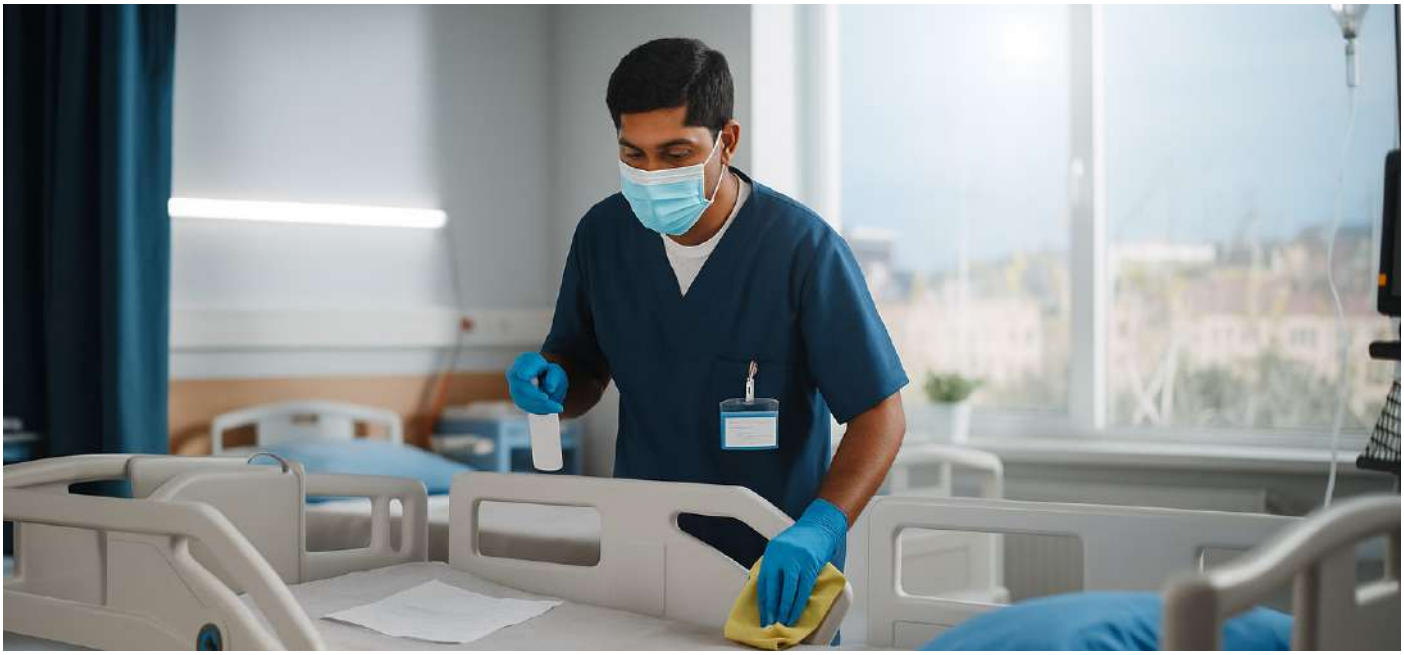
Prevention of infection can never be left to one department alone. The nurses, doctors, microbiologists, and housekeeping teams must unite in the endeavour. Nowadays, hospitals have involved housekeeping personnel in their infection control committees to tap into their invaluable experiences from the frontline. Institutions that uplift the housekeeping staff by providing training, respect, and adequate resources transform what they do from being just another cleaning chore to something oriented toward life-saving.

Looking Ahead: From Backstage to Centre Stage

To stay ahead in the race in healthcare, one must ensure that their housekeeping standards and processes with regards to infection control and prevention are modern, robust, regularly evaluated, and consistent. This means investing in continuous training, recognition programs, and the best tools for the job.

As healthcare changes, so must housekeeping. Imagine a perfect scenario where automation, sensors, and AI-based monitoring systems are assisting infection control, while, at the centre, there remains this human touch, disciplined, vigilant, and compassionate housekeeper.

Whenever you step into a hospital ward and fill your lungs with that assurance of sterility, remember it is not just hard work but also the expertise behind it. Hospital housekeeping does much more than the shining of floors, it averts infections, safeguards patients, and works silently in the background of infection prevention.



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Zones Of Cleanliness In Hospitals

Housekeeping practices in hospitals is not merely about aesthetics but is a crucial part of infection control, patient safety, and operational efficiency. All healthcare environments may pose minimal risk to patients, staff, and visitors. However, different functional areas represent different degrees of risk therefore require tailored cleaning frequencies, techniques, levels of monitoring and evaluation. Consequently, all functional areas should be stratified into three risk categories:

- High risk areas
- Moderate risk areas
- Low risk areas

Key benefits of Zoning strategy

- Focused cleaning protocols
- Efficient use of disinfectants and manpower resources
- Targeted Infection control measures
- Reduced cross-contamination risk
- Easier and standardized monitoring and evaluation

Table 1: Housekeeping practices based on risk stratification

Zones	Examples	Housekeeping practices
High risk areas	• Operation theaters • Intensive care units • Transplant units • Postoperative units • High dependancy units • Emergency department • Labor room • Endoscopy units • Haemodialysis unit • Burns unit • CSSD	• Consistent high cleaning standards and frequent cleaning atleast thrice a day • Spot cleaning as required • Usage of High level disinfectants • Dedicated instruments/ equipments • Requires daily monitoring by Incharge staff/ Housekeeping Supervisor
Moderate risk areas	• General wards • Outpatient department • Laboratory areas • Blood bank • Pharmacy • Dietary and Laundry services • Mortuary • Rehabilitation centres	• Regular and frequent cleaning at least twice a day with spot cleaning as required with High level disinfectant • Requires weekly monitoring by Incharge staff/ Housekeeping Supervisor

Zones	Examples	Housekeeping practices
Low risk areas	• Administrative office areas • Seminar rooms • Library • Reception • Waiting areas • Medical records department • Store rooms	• Regular cleaning with detergents atleast twice a day • Requires fort-nightly monitoring by Incharge staff/ Housekeeping Supervisor
Bathrooms, toilets, staff lounges and other areas adjoining high risk fuctional areas should be treated as having the same risk category and receive same level of cleaning		

Ways to differentiate the Risk stratification zones in hospitals

Risk stratification of hospital areas plays a crucial role in guiding housekeeping teams to apply appropriate cleaning methods based on the level of contamination risk in different zones. Here are some innovative and practical ways to differentiate risk zones and ensure optimal hygiene and safety:

1. Surface Cleaning & Disinfection

One of the most effective and widely adopted methods involves using distinct colors or patterns on floors and walls to represent different risk zones. For instance:

Red indicates high-risk areas such as Intensive Care Units (ICU) and Operation Theaters.

Yellow indicates moderate-risk areas like general wards and isolation rooms.

Green indicates low-risk zones such as administrative offices and waiting areas.

This visual system enables healthcare and housekeeping staff to quickly recognize the risk level of an area and follow the correct cleaning protocols.

2. Informative Signage with Zone Details

Installing digital or static signs at the entrances of different zones provides staff with essential information such as the risk category, required Personal Protective Equipment (PPE), cleaning frequency, and appropriate disinfectants. This ensures that housekeeping personnel are always aware of the specific requirements of each area, reducing the chance of procedural errors.

3. Zone-Specific Cleaning Checklists

To standardize cleaning practices and improve accountability, hospitals implement digital or printed checklists tailored for each risk zone. After every cleaning shift, housekeeping staff document completed tasks, ensuring a systematic approach to infection control and facilitating easy monitoring by supervisors.

4. Dedicated Cleaning Equipment Per Zone

Cross-contamination is a serious concern in hospitals. Assigning color-coded and labeled mops, trolleys, and cleaning tools for each risk zone ensures that equipment used in high-risk areas is not accidentally used in low-risk zones, thereby minimizing the spread of pathogens.

5. Wearable Zone-Specific Tags

Housekeeping staff are equipped with color-coded badges or wearable devices that clearly indicate the risk zone they are assigned to. This simple yet effective strategy improves awareness and adherence to the correct cleaning protocols based on the assigned zone.

6. Zone-Specific Lighting Systems

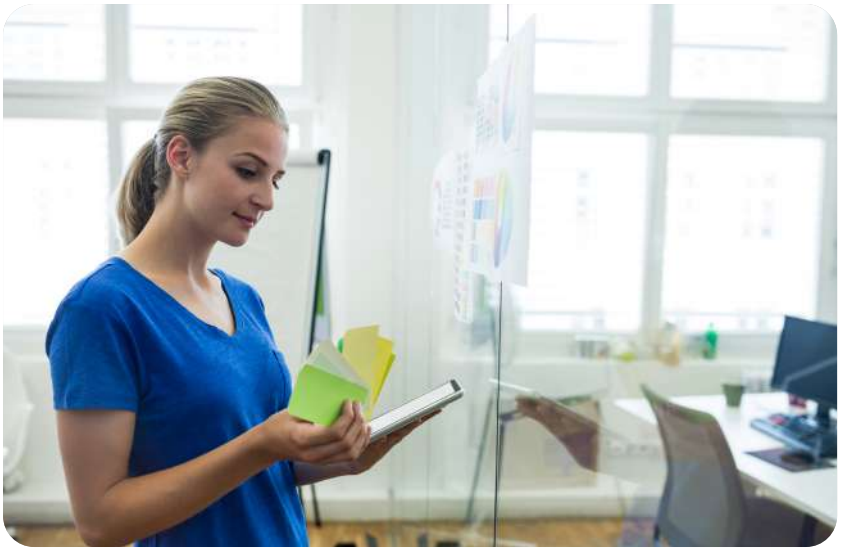
Innovative lighting solutions further help in visual differentiation. By using different colored lights at zone entrances such as red for high-risk zones, yellow for moderate-risk zones, and green for low-risk zones. Staff are immediately reminded of the level of caution required when entering each area.

7. Smart Monitoring Devices

The integration of sensors provides real-time monitoring of cleaning compliance. These devices track important activities such as door openings and disinfectant usage, automatically generating feedback and reports for housekeeping supervisors. This not only enhances accountability but also helps identify areas that need improvement.

Conclusion

Proper housekeeping in hospitals is not just about keeping the clinical areas tidy, it plays a vital role in ensuring a safe and efficient healthcare setting. By adopting a risk-based zoning strategy, hospitals can categorize areas according to their potential for contamination and apply appropriate cleaning measures. This helps in prioritizing cleaning efforts where they are most needed, improves the efficient use of staff and cleaning materials, and significantly reduces the chance of spreading infections. Ultimately, this systematic and targeted approach strengthens infection control practices, safeguards patients and healthcare workers, and supports the overall goal of delivering high-quality, safe healthcare services.



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Daily Cleaning Checklists in Wards & ICUs – Shift From Paper to Digital

At AVM Hospital, we realized that keeping wards and ICUs consistently clean and tidy was a great challenge, especially during the morning hours. Paper checklists were filled often incomplete and many times the checklists were used as checklists. This was a biggest problem in tracking the completion of cleaning activities in real time.

The Quality Department and the Housekeeping Supervisors had lots of brainstorming on improving the cleanliness aspect. Because our patients and family were unhappy about the cleaning of wards. We were getting lots of feedback on improving the timely cleanliness of our hospital. We started searching for alternatives. A simple checklist reminded staff what needs to be done, how often, and who is responsible, removing the chance of confusion. We wanted a way to make cleaning a real practice of infection prevention and control ensuring safe care. Then came the idea of digitalizing the checklists using digital tool "HUMBLX", came into practice which made our system easier.

Why Daily Cleaning Checklists are Important

Hospital is an environment with many high-touch points such as side rails, door knobs, IV stands, Nurse call bells etc. If cleaning is breached, it can quickly may become a transmitter of infection.

- In single patient rooms, the patient turnover was very high and too many visitors walk, the patient environment gets contaminated frequently.
- In critical care areas, the patients are been cared by nursing team very carefully the risk of infection due to housekeeping activity is minimal.

Daily cleaning checklist is a medium which acts like a reminder telling cleaning activity is yet to be done. It defines the housekeeping team and ward secretaries on:

- The activities to be carried out
- Frequency of cleaning
- Responsible person

This simple monitoring tool will improve the task and ensures that no steps are missed provided the steps are followed correctly.

What We Faced With Paper Based Checklists

Long time, like all other hospitals and industries, we were using paper checklists as tick list and one of the requirement by the accreditation bodies. The Ward Secretaries were filling it up to satisfy the quality team. The following problems were faced:

- Ward Secretaries ticked the columns without performing the activities.
- The Supervisory staff both inhouse and outsourced found it hard to trace missed activities until later.
- Loads of paper made the process difficult analyse trends towards accreditation journey.
- Required more storage space for loads of paper increasing the pest control cost.

This was the moment made us to think: Is there any other alternative to make this process more realistic and bringing transparency.

Our Journey with HUMBLX

In 2025, the implementation of **HUMBLX** digital checklists for wards and ICUs where a QR code shall be used using mobile technology capturing real time data stored in cloud storage. This initiative produced drastic improvement in the daily cleaning aiding in cleanliness of the wards and ICUs.

HUMBLX started with the dream to ensure cleanliness in the hospital ensuring reducing the risk of infection for patients. This application software enhanced the

operations management of the hospitals with mobile technologies.

The mechanism how it works is as follows:

1. The in-patient care areas are mapped and interfaced into the app.
2. QR Board fixed at all areas.
3. Ward Secretaries on completion of the tasks they log on their mobile CUG devices.
4. Each digital entry in the digital checklist is time-stamped, so there is no chance of manipulation.
5. If an activity is not completed, an alert notification will be sent and can be viewed in the dashboard.
6. Dashboards give the complete picture of the task completions.
7. Digital reports with trends can be downloaded for analysis.
8. The reports can be pulled out anytime.

What Changed After HUMBLX Implementation

The change was noticeable within weeks of implementation.

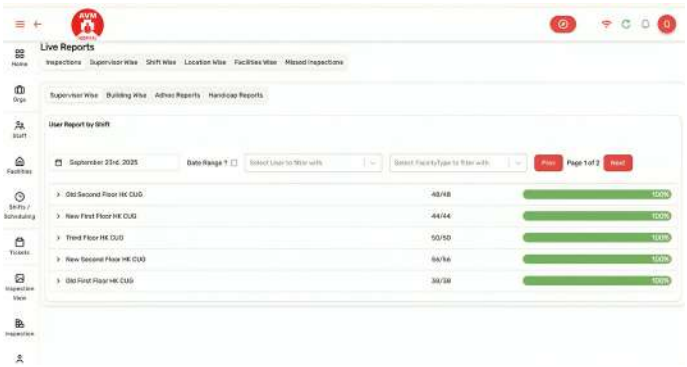
Real Time Completion of Tasks: The tasks were completed on time and digital checklists were timely filled and updated.

Accountability: The Wards Secretaries were more accountable and consistent towards the completion of tasks and filling the checklists.

Supervisor's Role: Replaced the practice of checking piles of papers with quick digital spot checks without manipulation in data.

Accreditation Readiness: The Auditors were impressed by seeing our digital reports.

Staff Satisfaction: Housekeeping team felt so proud on seeing their work displayed in an image format in the digital dashboard.



Challenges in the Beginning

Change process is not a smooth transition. As a Head of Quality, initially I had challenges towards transformation process. Ward Secretaries worried regarding handling of the digital checklists using digital tool. Many feared that their mistakes shall be highlighted. A few areas had connectivity and technical glitches.

We overcame these challenges by:

- Conducting live and virtual training sessions by HUMBLX team.
- Developed confidence among the team that this implementation is towards process of improvement not punishment oriented.
- Recognising staff adapted well.

Slowly fear turned into confidence and consistency.

Paper vs Digital – Our View

Aspect	Earlier (Paper Based)	Present (Digital)
Task Completion	Tick Marks	Real Time Data-Time Stamped
Missed Activities	Identified late	Immediate Alert
Monitoring	After the Task	On Going Real Time
Accreditation Readiness	Piles of Paper Checklists Needs to be Pulled Out	Reports Available on One Click
Team Recognition	Restricted	More visible

Conclusion

Housekeeping may not wear a cap, but the housekeeping team protects patients everyday through their consistent cleaning activity. Daily cleaning checklists are simple and powerful tool in tracking the activities related to housekeeping. By digitalising using HUMBLX, we at AVM Hospital experienced tremendous improvement in daily operations ensuring stronger patient safety practices and reducing the risk of infection in wards and ICUs.

For me as a Quality Implementer this change reminded me one truth: when we respect and empower the personnel who clean, we protect the people who heal.

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Waste Segregation and Disposal Practices in Hospitals: Safeguarding Health and the Environment

The Silent Threat of Medical Waste

Hospitals produce several tons of waste every year, of which roughly 15% is hazardous waste (i.e., hospital waste that contains blood, chemicals, or infectious agents). Unless hazardous waste is properly disposed, it can spread infections, such as Hepatitis B, HIV, and antibiotic-resistant bacteria, contaminate soil and water, and also pose environmental risks. The remaining 85% is classified as general waste (i.e. paper, packaging, and food). Even though there are guidelines for the management of hazardous waste, it is crucial to understand that the 85% of general waste also requires plans for disposal. While it is expected that all facilities remain in compliance with the law on waste segregation for safety and legal reasons, it is also a moral obligation to protect patients, staff, and the environment.

The Foundation: Bio-Medical Waste Management Rules

India's Bio-Medical Waste Management Rules (2016) is supported by amendments from the Central Pollution Control Board (2025). It establishes a policy framework, and addresses the segregation, transport, treatment, and disposal of bio-medical waste for healthcare institutions from small nursing homes to larger hospitals and assigns responsibilities, enforces a barcode and GPS tracking system, and level of emission standards and performance standards. As a way to ensure safety and transparency in the accountability for carrying out the waste.

The Crucial First Step: Segregation at the Source

The first step is segregation at the source, and it is the most important step in managing biomedical waste. Once hazardous waste is mixed with general waste, the waste becomes a risk to health when it would otherwise not become one. There should be available means of segregation in each ward, lab and operating room in a hospital before waste is disposed of.

The segregation is done in the following way:

Color	Waste Type	Examples	Treatment Methods
Yellow	Human and animal anatomical waste, soiled waste, expired/discarded cytotoxic drugs	Dressings, plaster casts, body parts, expired medicinesw	Incineration, plasma pyrolysis, or deep burial (especially in rural areas)
Red	Contaminated recyclable waste	Tubing, catheters, IV sets, urine bags	Autoclaving, microwaving, or hydroclaving followed by shredding and recycling where authorized

Color	Waste Type	Examples	Treatment Methods
White (Translucent)	Sharps posing puncture risks	Needles, scalpels, blades, metal sharps	Stored in puncture-proof, leak-proof, and tamper-proof containers; sterilized before disposal
Blue	Contaminated glassware not containing cytotoxic drugs	Medicine vials, ampoules	Cleaned, disinfected, autoclaved or microwaved, and sent for recycling

Responsibilities in Waste Segregation: A Shared Commitment

Every hospital staff member plays a crucial role in ensuring safe waste handling.

- **Physicians:** Ensure that safe protocols are in place, observe individuals who are segregating waste throughout the procedure, ask for resources (bins, PPE, etc.) and assist with training.
- **Nursing staff:** Segregate waste at the bedside into the appropriate bins, use appropriate personal protective equipment, teach patients, and report any breaches or exposures.
- **Housekeeping staff:** Handle the waste and segregate it in appropriate bins, store it safely, transport waste in a GPS tracked vehicle and labeled as medical waste, track the total number of trash being disposed of, contain any spills, and be immunized (Hepatitis B and Tetanus).
- **Laboratory technicians/pharmacists:** Pre-treat all infectious solutions, return expired drugs/cytotoxic waste to be incinerated, and (to adhere to agency policy).

The Disposal Process: From Collection to Treatment

Collection & Storage

Wastes are put in different plastic color-coded, non-chlorinated bags/containers and are stored in a secured and ventilated area for no longer than 48 hours from the moment of collection, or extended with notice to authorities.

Transportation

- **Internal:** Move all waste into closed containers and away from public areas to central storage.
- **External:** Waste is transported by authorized handlers in vehicles that are labeled and tracked with GPS, in accordance with rules from the CPCB and the provisions of the Motor Vehicles Act.

Treatment & Disposal

- **Incineration:** Destruction by burning in a high temperature range of (800 - 1050 °C) where emissions are controlled.
- **Autoclaving/Microwaving:** Practice sterilization in accordance with defined and recognized autoclave settings (121 degrees Celsius, 15 psi, for 60 minutes), for recyclable waste and sharps.
- **Recycling:** Authorized recycling and repurposing of disinfected plastics/glass.
- **Secured Landfills:** Controlled disposal of treated waste and ash in landfills.

Importance of Training: Building a Culture of Safety

- Protects staff from injuries, needle-stick injuries, Hepatitis B, etc.
- Training records are mandatory; lapses risk penalties.
- Prevents unnecessary treatment of non-hazardous waste, reducing costs.
- Workers take ownership, report unsafe practices, and suggest improvements.
- Staff trained to manage surges in infectious waste.
- Embeds segregation as a continuous practice, not a one-time rule.

The Challenges and Solutions

Inadequate segregation

- Caused by a lack of awareness/training, resolved by annual mandatory training, procurement, and provision of PPE, and vaccination.
- Small or rural healthcare facilities do not have a treatment plant, mitigated by centralized CBWTF and partnerships with government and private facilities.
- Result of negligence or cost-cutting; addressed by audits, real-time tracking and monitoring of waste management, penalties for violators, and mandatory reporting.
- In response to COVID-19, identifying gaps in processing surges of infectious wastes; emergency waste processing plans, surge capacity protocols needed.

Conclusion: A Commitment to Safety and Sustainability

The management of biomedical waste involves all

parties, from doctors to regulators. Compliance with BMW Rules (2016) and CPCB (2025) guidelines is important and is also sustainable, cost-effective, and preserves health. Proper segregation, collection, treatment, and disposal of waste is not just regulatory, but a commitment to the safety of patients, staff, and the environment. Hospitals must continue to invest in education, infrastructure, and ongoing monitoring to protect patients, employees, people, and ecosystems.

References

1. **Bio-Medical Waste Management Rules, 2016 -** Ministry of Environment, Forest and Climate Change, Government of India.
2. **Schedule I of BMW Rules, 2016 –** Waste Categories and Segregation Methods.
3. **Schedule II of BMW Rules, 2016 –** Treatment Standards for Incineration, Autoclaving, and other methods.
4. **Rule 4, 5, 7, 8, 13 of BMW Rules, 2016 –** Duties of Occupiers and Operators, Storage, Transport, and Reporting Requirements.
5. **CPCB Guidelines, 2025 –** Updated procedures for tracking, transport, and emission standards.
6. **World Health Organization (WHO)** and **National AIDS Control Organisation (NACO) –** Guidelines for sterilization and handling of infectious waste.

Choosing the Right Disinfectant: Choosing The Silent Safety Armour For Our Patients And Us

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When I was first instructed by my professor during my MD days to prepare a Standard Operating Procedure (SOP) on working concentrations of sodium hypochlorite, I was too naïve to fathom the depth of her instructions: She wasn't merely assigning a task on the ubiquitous disinfectant, she was nudging me into understanding that the task also involved making evidence based choices, that would guide the quality processes in IPC, at a time, when IPC was still finding a strong ground in our curriculum.

I reminisce the assignment, each time that I have been summoned to address the disinfectant related issues like stubborn CHG marks on white aprons or the widespread metallic corrosion on equipment, due to persistent exposure to Hypochlorite during the COVID pandemic!!

Moral of the story: Infection control practitioners need to have a sound evidence based understanding of disinfectants: It is not just understanding the composition and chemistry, but about anticipating practical issues, ensuring safety, and balancing efficacy with sustainability.

So, how do we get to the task?

CDC has a crisp guidance on the properties of an ideal disinfectant. It should be:

- Broad spectrum
- Fast acting
- Should be active in the presence of organic matter
- Be compatible with soaps, detergents, and other chemicals encountered in use
- Nontoxic-to both the user and the patient
- Surface compatibility with metals and should not cause the deterioration of cloth, rubber, plastics, and other materials
- Should have a residual effect on treated surfaces
- Easy to use with clear directions
- Odorless or a pleasant odor
- Economical
- Soluble
- Stable
- Good cleaning properties
- Environmentally friendly

The following stepwise guidance has enormously helped our team:

1. Making that first choice: Choosing the appropriate disinfectant is to be guided first by an infection control risk assessment of the areas and a simultaneous knowledge about to composition, spectrum of action and the efficacy. The following table combines the assessment for use:

Level of Disinfection	Chemical composition	Microbiological spectrum	Areas of where they can be used in the Hospital
Low-level	• Quaternary ammonium compounds (Quats) • Phenolics • Dilute alcohols	• Kill most vegetative bacteria, some fungi, and enveloped viruses (not effective against spores or mycobacteria)	• Environmental cleaning (floors, walls, furniture) • Non-critical surfaces like bed rails, bedside tables, trolleys • General outpatient and ward areas

Level of Disinfection	Chemical composition	Microbiological spectrum	Areas of where they can be used in the Hospital
Intermediate-level	• Alcohols (70% ethanol/ isopropanol) • Chlorine compounds (100–1000 ppm sodium hypochlorite) • Iodophors	• Kill vegetative bacteria, most fungi, most viruses, and mycobacteria (not spores)	• High-touch surfaces (switches, handles, monitors) • Patient-care equipment such as stethoscopes, BP cuffs • Cleaning after spills of blood/body fluids • ICU and isolation room surfaces
High-level	• 2% Glutaraldehyde • Ortho-phthalaldehyde (OPA) • 6–25% Hydrogen peroxide or accelerated hydrogen peroxide • Peracetic acid	• Kill all microorganisms including mycobacteria, fungi, viruses, and with sufficient exposure - many endospores	• Semi-critical medical devices (endoscopes, respiratory therapy equipment) • Dialysis equipment • Disinfection of heat-sensitive instruments • OT and critical care equipment that cannot be autoclaved

Table No. 1

2. Aligning with the standards: Disinfectant choices must then align with standards set by various agencies: The healthcare organisation can choose from disinfectants approved by regulatory bodies (listed below). Not only is choosing an approved disinfectant vital, the regulatory approval already ensures it has been tested and proven effective under specified conditions, eliminating the need for laboratory validation at the level of end user.

- EPA, USA – Environmental Protection Agency : Ensures Antimicrobial "pesticides" are efficacious against bacteria, fungi, viruses. https://www.epa.gov/pesticide-registration/selected-epa-registered-disinfectants has the list of EPA approved disinfectants.
- FDA, USA - Food and drug administration: Approves of disinfectants used on devices and skin. https://www.fda.gov/medical-devices/reprocessing-reusable-medical-devices-information-manufacturers/fda-cleared-sterilants-and-high-level-disinfectants-general-claims-processing-reusable-medical-and has the list of FDA approved disinfectants.
- Europe: European Committee for Standardization Technical Committee 216 (CEN TC 216) outlines standards for disinfectant validation.
- India: In India, the approval of disinfectants, including hand sanitizers and surface disinfectants, is regulated by the Central Drugs Standard Control Organization (CDSCO) under the Drugs and Cosmetics Act and its associated rules, which treat them as drugs.

3. Balancing cost with value: The most trying challenge when choosing a disinfectant while budgets are important, the "cheapest" disinfectant is rarely the most cost-effective. One should look at the cost per area, factoring in dilution ratios, amount required for each area, daily consumption, supply consistency, and long-term value.
4. Consistent training and monitoring for Implementation: Ensure the instructions for use which include not just concentration but contact period as well. They should be easy to understand and communicated to the housekeeping staff in local language.

The following is an easy to understand excel list from our organization:

CLEANING AND DISINFECTION AGENTS AREA WISE

AREAS	MOPPING	Frequency of Mopping	ENVIRONMENTAL DISINFECTION/DU	Concentration	EQUIPMENT CLEANING	Frequency	Indent From	Indented By
CRITICAL AREAS								
MICU	0.1% FRESHLY PREPARED HYPOCHLORITE	5times in 24hrs	BACILLOCID EXTRA	1%	BACILLOL-25 SPRAY	3times in 24hrs /After Dirty	Pharmacy	Respective area supervisors
NICU	0.1% FRESHLY PREPARED HYPOCHLORITE	5times in 24hrs	BACILLOCID EXTRA	1%	BACILLOL-25 SPRAY	3times in 24hrs /After Dirty	Pharmacy	Respective area supervisors

CCU	0.1% FRESHLY PREPARED HYPOCHLORITE	5times in 24hrs	BACILLOCID EXTRA	1%	BACILLOL-25 SPRAY	3times in 24hrs /After Dirty	Pharmacy	Respective area supervisors
CTVS	0.1% FRESHLY PREPARED HYPOCHLORITE	5times in 24hrs	BACILLOCID EXTRA	1%	BACILLOL-25 SPRAY	3times in 24hrs /After Dirty	Pharmacy	Respective area supervisors
LTU	0.1% FRESHLY PREPARED HYPOCHLORITE	5times in 24hrs	BACILLOCID EXTRA	1%	BACILLOL-25 SPRAY	3times in 24hrs /After Dirty	Pharmacy	Respective area supervisors
OT	0.1% FRESHLY PREPARED HYPOCHLORITE	After every case	BACILLOCID EXTRA	1%	BACILLOL-25 SPRAY	3times in 24hrs /After Dirty	Pharmacy	Respective area supervisors
EMERGENCY	0.1% FRESHLY PREPARED HYPOCHLORITE	5times in 24hrs	BACILLOCID EXTRA	1%	BACILLOL-25 SPRAY	3times in 24hrs/After out Patient	Pharmacy	Respective area supervisors
ENDOSCOPY/ BRONCHOSC OPY	0.1% FRESHLY PREPARED HYPOCHLORITE	After every case	BACILLOCID EXTRA	1%	BACILLOL-25 SPRAY	1times in Mornong .After every case	Pharmacy	Respective area supervisors
LAB	0.1% FRESHLY PREPARED HYPOCHLORITE/LI ZOL	2times in 24hrs	BACILLOCID EXTRA	1%	BACILLOL-25 SPRAY	1times in 12hrs /After Dirty	Pharmacy	Respective area supervisors
NON-CRITICAL AREAS								
WARDS	0.1% FRESHLY PREPARED HYPOCHLORITE	5times in 24hrs	BACILLOCID EXTRA	0.50%	BACILLOL-25 SPRAY	3times in 24hrs /On call	Pharmacy	Respective area
PUBLIC AREAS	CAPTAIN CLEAN	01time in 24hrs	COLIN		70% ALCOHOL	1times in 12hrs /On call	STORE	Housekeeping
ADMIN BLOCK	LYSOL	2times in 24hrs	COLIN		70% ALCOHOL	3times in 24hrs /On call	STORE	Housekeeping
PATIENT WASHROOM	0.1% FRESHLY PREPARED HYPOCHLORITE OR CAPTAIN CLEAN	Once in every hr	COLIN		COLIN		STORE	Housekeeping

Table No. 2

5. Disinfectant stewardship: The danger of overuse and misuse!! It is the responsible and effective use of disinfectants, promoting the selection and application of the right disinfectant for the right purpose and patient, at the right time to prevent infections while minimizing the potential for antimicrobial resistance (AMR). In addition to the above mentioned criteria of choosing a disinfectantie: Appropriate selection, evidence-based guidelines, contextual application, safety profile (Data safety Sheets) - One should AVOID unnecessary use and ensure correct concentration and contact period: Suboptimal concentrations can induce resistance mechanisms in the bacteria. Hence, choosing the right disinfectant is all about making informed, evidence based context-specific decisions for the infection control practitioners. When hospitals choose wisely, disinfectants become more than just cleaning agents—They become our essential allies in the ongoing fight against healthcare-associated infections and antimicrobial resistance: A sturdy armour for patient safety!!

References

1. https://www.cdc.gov/infection-control/hcp/disinfection-and-sterilization/ideal-disinfectant.html
2. Artasensi,A.;Mazzotta,S.; Fumagalli, L. Back to Basics: Choosing the Appropriate Surface Disinfectant. Antibiotics 2021, 10, 613. https://doi.org/10.3390/antibiotics10060613
3. Rutala WA, Boyce JM, Weber DJ. Disinfection, sterilization and antisepsis: An overview. Am J Infect Control. 2023 Nov;51(11S):A3-A12. doi: 10.1016/j.ajic.2023.01.001. PMID: 37890951.

Diversey
A SOLENIS COMPANY

Disinfection Stewardship in Action: The Role of AHP based Oxivir TB Wipes in Protecting High-Touch Surfaces in Healthcare

High-touch surfaces can be hidden vectors of infection. With AHP-powered Oxivir TB wipes, hospitals can turn these weak links into strong defenders of patient safety

Healthcare environments demand uncompromising standards of hygiene. While hand hygiene and antimicrobial stewardship are well recognized, **environmental disinfection is equally critical**. High-touch surfaces and shared equipment — infusion pumps, bed rails, wheelchairs, monitors, USG/transducer probes can harbor pathogens that drive healthcare-associated infections (HAIs).

Accelerated Hydrogen Peroxide (AHP) technology, delivered through **Diversey's Oxivir TB wipes**, provides a superior, evidence-based solution that aligns disinfection with real-world needs of healthcare environments.

> ***Did you know?*** *Pathogens like MRSA and SARS-CoV-2 can survive on hospital surfaces for days, increasing cross-transmission risks*

Why High-Touch Surfaces Matter

- Surfaces act as reservoirs for Clostridium difficile, Staphylococcus aureus, and viruses.
- Shared equipment increases cross-contamination risks.
- Hospitals face **pressure for faster room turnover, stricter safety standards, and cost efficiency** — all requiring better tools.
- Traditional disinfectants can be **slow, corrosive, or impractical**.

Oxivir TB wipes, powered by AHP, are designed to address these challenges.

The Science of Accelerated Hydrogen Peroxide (AHP)

What makes AHP unique?

- **Fast Action:** Cleans & disinfects in just 1 minute; broad spectrum efficacy including tuberculocidal.
- **Safe Breakdown:** Decomposes into water and oxygen, leaving no harmful residue.
- **Surface Compatibility:** Safe for plastics, metals, and electronics.
- **Single-Use Safety:** Eliminates cross-contamination risks from reusable cloths (Sattar et al., 2015).

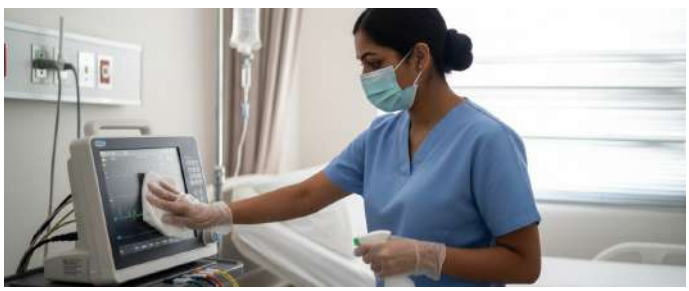
Oxivir TB kills SARS-CoV-2 in as little as 15 seconds.

Evidence Snapshot

- *NIH 2023 study:* Oxivir TB wipes highly effective against SARS-CoV-2 under real-world contamination conditions.
- *IJERPH 2018:* Pre-impregnated wipes significantly reduced microbial load on ICU high-touch surfaces.

Oxivir TB Wipes in Practice

- **Convenience:** Pre-saturated, ready-to-use wipes reduce dilution errors.
- **Boosts speed & efficiency:** Simplifies workflows, reduces cleaning time, and enables quicker patient room turnover.Study (Wiemken et al., 2014): Ready-to-use wipes improved compliance and saved $38.58 per EVS staff per day.
- **Enhances Safety:** Low-odor, non-corrosive, PPE-free. Suitable for sensitive areas like ICUs, pediatrics, oncology.
- **Supports Sustainability:** Wipes can outperform microfiber systems by reducing water and energy use.



Disinfection Stewardship: Beyond Compliance

Disinfection stewardship ensures:

- Right product
- Right surface
- Right frequency

How Oxivir TB supports stewardship:

- Simplifies protocols for frontline staff
- Drives consistency and compliance
- Demonstrates measurable reductions in HAIs

Stewardship in Action – *One hospital audit showed a 40% increase in compliance with high-touch cleaning after switching to pre-impregnated wipes*

Conclusion

High-touch surfaces must no longer be the weak link in infection prevention. **AHP-powered Oxivir TB wipes bring science, speed, and safety together**, enabling hospitals to protect patients, staff and visitors effectively.

References

1. Kampf G. J Hosp Infect. 2020.
2. Sattar SA et al. Am J Infect Control. 2006.
3. Wiemken TL et al. Am J Infect Control. 2016.
4. NIH/PMC. "Disinfection efficacy of Oxivir TB wiperesidue on SARS-CoV-2." 2023.
5. Weber DJ et al. Lancet Infect Dis. 2010.
6. IJERPH. "Improving Cleaning and Disinfection of High-Touch Surfaces in ICU." 2018.

Disinfection Stewardship: Case-Based Learning- Part 1

Every surface tells a story—sometimes of healing, sometimes of harm

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Disinfection is a crucial step in infection prevention. Unfortunately, gaps in the practice sometimes lead to outbreaks and cross-transmission of multidrug-resistant organisms. To address this issue, CAHO, along with Diversey, brought the IP Conclave 2025 – Boot Camp in Disinfection Stewardship to Aster Medcity, Kochi. The program aimed at creating a space for healthcare professionals from various disciplines to come together to hone skills by attending didactic lectures, engaging in case-based discussions, or participating in hands-on activities, compiling practical tools for the participants to carry back to their organisational settings to implement safe, effective, and sustainable disinfection practices.

Introduction

Disinfection ensures infection prevention in healthcare establishments. However, failure to adhere to standards or inappropriately using disinfectants or protocols jeopardises patient safety, increasing the risk of HAIs. The article uses case-based scenarios to understand common pitfalls, examines the scientific foundation of sterilisation and disinfection, and introduces the concept of a Disinfection Stewardship Program (DSP) to ensure that disinfection is carried out effectively, safely, and sustainably.

Learning Through Cases

Case 1: ICU Outbreak of *Acinetobacter Baumannii*

City Central Hospital has a 10-bed Intensive Care Unit (ICU). Over the past week, three patients developed bacteraemia caused by Acinetobacter baumannii, a known multidrug-resistant organism (MDRO).

The ICU consultant raised the concern about a possible **environmental source** of infection. The following were the observations of the infection control team.

- Bed rails and infusion pump keypads are not being disinfected between patients.
- Mops are reused across multiple rooms without changing the disinfectant solution.
- No terminal cleaning was done after patient transfers.

Why Did This Happen?

Poor compliance with cleaning protocols and reuse of contaminated equipment contributed to cross-transmission.

Corrective Action

Implement strict cleaning protocols, enforce a one-mop-per-room policy, ensure routine disinfection of high-touch surfaces, and mandate terminal cleaning after transfers.

Case 2: Terminal Cleaning Post *C. difficile*

Mr. X, a confirmed case of *C. difficile* infection, got discharged. The HK team used a QAC-based disinfectant for terminal cleaning.

What Went Wrong?

QACs are not effective against *C. difficile* spores.

Corrective Action

Use sporicidal disinfectants for patients with C. difficile. Train staff on pathogen-specific disinfectant selection.

Rationale: Behind Sterilization and Disinfection

Different microorganisms vary in their resistance to sterilisation and disinfection.

- **Highly resistant:** Prions, bacterial spores
- **Intermediate resistance:** Mycobacteria, nonlipid viruses, fungi
- **Low resistance:** Vegetative bacteria, lipid viruses

An ideal disinfectant:

- Must have high germicidal activity
- Rapidly kill a wide range of microorganisms, including spores
- It is compatible with the surface being disinfected
- Must be inexpensive and aesthetically acceptable
- Is chemically stable
- It is effective in the presence of organic compounds

Factors Affecting the Effectiveness Of Disinfection

1. Quantity of the microorganisms
2. Organic matter
3. Resistance of microorganisms to the agent
4. Concentration of the agents
5. Physical and chemical factors: Temperature and/or pH
6. Duration of exposure
7. Stability

Differences between Disinfection Levels and Sterilization (Levels by Type of Microorganism)

Disinfection levels	Bacterial spores	Mycobacteria	Fungi	Non-enveloped viruses	Vegetative Bacteria	Enveloped viruses
Sterilization	✓	✓	✓	✓	✓	✓
HLD	Some	✓	✓	✓	✓	✓
ILD	✗	✓	✓	Some	✓	✓
LLD	✗	✗	Some	Some	✓	✓

The requirements are the length of time a diluted product can remain active and effective. The stability of the chemical and the storage conditions (e.g., temperature and presence of air, light, organic matter, or metals).

Case 3: MDRO Cross-Transmission in a General Ward

A patient colonized with an MDRO was discharged, and within an hour, another patient was admitted to the same bed. The new patient later tested positive for the same MDRO.

What Went Wrong?

Skipping terminal cleaning between admissions allowed cross-transmission.

Corrective Action

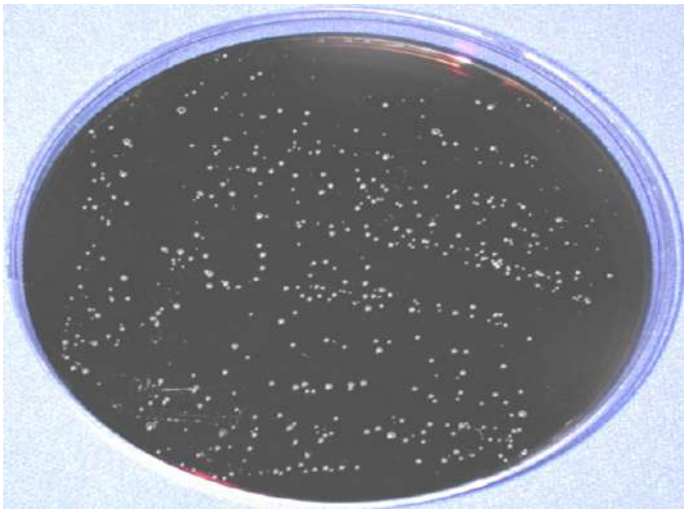
Mandatory terminal cleaning between patients, with special attention to high-touch surfaces such as bed rails, call buttons, infusion pumps, and overbed tables.

Studies (Carling et al., Eckstein et al.) reveal that:

- Only ~47% of target surfaces are adequately cleaned during terminal cleaning.
- High-touch surfaces like call buttons and tables often remain contaminated.

This highlights the urgent need for improved compliance, staff education, and standardized monitoring.

Overbed Table Before Cleaning **Overbed Table After Cleaning**



Vre On Call Button After Cleaning

Environmental hygiene stands as a crucial item in infection prevention. According to research published in PLOS Pathogens in 2020, when cleaning processes are done well and consistently, they keep the incidence of healthcare-associated infections (or HAIs) down and become even more necessary when patients under contact and enteric precautions are considered.

Key Strategies for Reinforcement of Environmental Hygiene are as follows:

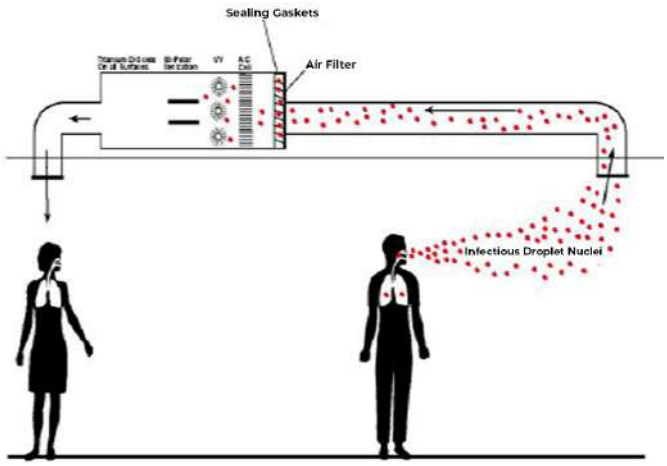
1. In-service training for cleaning personnel and, importantly, also for nursing staff and others involved with patient equipment.

2. Disinfection bundles, for example, the Havill bundle that follows a structured process for surface disinfection.
3. Policies and procedures-sharpened and standardized cleaning and disinfection protocols in all hospitals.
4. Product selection-disinfectants suited for particular pathogens and surfaces, referencing international guidelines (Rutala & Weber, 2021).

The Need for Air Disinfection

Environmental hygiene pertains not just to surface cleanliness but also to air quality. According to The Lancet Infectious Diseases, enhanced terminal room disinfection with UV light lowers the incidence of Clostridioides difficile and Vancomycin-Resistant Enterococci (VRE).

The best air-cleaning method would be germicidal UV (UVGI, 254 nm). The WHO Tuberculosis Infection Prevention Guidelines (2019) recommend upper-room GUV systems for use among health workers, patients and visitors in high-risk settings to reduce the transmission of Mycobacterium tuberculosis.



The % of Influenza captured sterilized or killed will depend upon the Air Filter's MERV rating, intensity of Ultraviolet Output, the total surface area coated with Titanium Dioxide and the Bi-Polar Ionization Output.

Why Standardized Evaluation Matters

Ensuring the effectiveness of hygiene interventions, hospitals need to evaluate environmental cleanliness in a standardized way to:

1. Measure the effectiveness of interventions.
2. Detect trends and emerging risks.
3. Provide a framework for performance management.
4. Generate reliable data to drive quality improvement activities.
5. Give staff information to act on to improve practices on a day-to-day basis.

The guidance of the Tasmanian Infection Prevention and Control Unit (TIPCU, 2012) stresses the importance of a structured approach toward the evaluation of infection control efforts, confirming that healthcare teams are equipped with clinically relevant, reliable, and practical information to direct their infection control efforts.

Conclusion

Disinfection stewardship is not just about cleaning; it is about making sure every surface, tool, and practice supports patient safety. Through structured programs, evidence-based practices, and the culture of accountability, hospitals can strengthen infection prevention and build safer environments for their patients and staff.

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Making Hospital Housekeeping Greener: Reducing Resource Intensity through Scientific Innovation

Hospital cleaning remains a key part of infection control and patient safety, but is arguably one of the most resource and emission-intensive activities in healthcare. Cleaning and disinfecting consume enormous volumes of water, chemicals, plastics for single use, and energy, thereby creating a multitude of environmental problems. Today, technical advancement, staff training, and best practices from other industries offer codes of conduct for sustainable transformation.

1. The Environmental Footprint of Hospital Housekeeping

Run-of-the-mill hospital cleaning and maintenance operations require a disproportionate amount of water and chemicals. US hospitals use approximately 570 gallons of water per bed per day, whereas Indian hospitals could be creating more than 400 litres of liquid waste per day, with healthcare operations taking up 7 per cent of commercial water use in the world. [1][2][3]

India's Water Risk Index and Urgent Need for Conservation

India faces one of the highest water risk profiles in the world, ranking 120 out of 122. 600 million Indians face water stress ranging from high to extreme. According to the Composite Water Management Index of NITI Aayog, the per capita water availability in India is just above the scarcity level, and by 2030, 21 major cities may have exhausted all groundwater. The World Economic Forum has ranked water shortage as the most important environmental risk in India in the coming years, and its effects on hospitals are very pronounced. Due to drought, local sources are drying out, and hospitals in various states, for example, in Bengaluru, are increasingly dependent on expensive tanker supplies. Conservation takes a front seat with recycling, leak detection, and greywater reuse, as demand in India is anticipated to cross supply by 70% in the next ten years. [4][5][6][7][8][9][10]

Most hospital disinfectants are synthetic, which can lead to the release of long-persistent chemicals and VOC emissions, environmental contamination, and occupational hazards. There are some from Critical Care and The Lancet publication on how cleaning methods and substances make enormous quantities of greenhouse gas emissions and chemical wastes in hospitals across the globe. [11][12][13][14]

In Asia, the implementation of intensive cleaning protocols is justified due to high rates of HAIs and rapid investments in this domain. The Indian cleaning chemicals market has crossed the ₹15,000 crore mark and continues to grow due to regulatory stipulations, expansion of urbanisation, and crisis-induced awareness about hygiene. Asian hospitals may have HAI rates at up to 25% of their patient population, which is ten times the rate of HAI incidence in Western Europe, according to the World Health Organisation and The Lancet. [15][16][17]

2. Innovations for Sustainable Housekeeping: Cross-Sectoral Learning: Automotive, Textile & Microfiber Technologies

Waterless cleaning stands as a proven changer. Dry wash methods at Maruti Suzuki, Hyundai, and TVS have witnessed a reduction in the water requirement for a car wash from 20 litres to 500 ml, saving a net of hundreds of millions of litres every year! Experts concur: These technologies that utilise minimal water, highly lubricated cleaning sprays, and highly evolved microfiber cloths could also be applied in hospitals. [18][19][20][21]

Microfiber cloths give a boost to water and chemical saving, requiring up to 90% less water and 50% less chemicals than their 100% cotton counterparts, while drawing dust and microbes by way of electrostatic attraction. With the possibility of being reused hundreds of times, costs and landfill waste are significantly lessened. [22]

DRDO has its hydrophobic microfiber textiles being used in medicine and industries as the truly cleaned family thereafter, thus pioneering the next generation of resource-conscious housekeeping. [23]

Certified Green Chemicals and Life Cycle Frameworks

In particular, Indian hospitals are increasingly equipping themselves with GreenPro-certified chemicals that, through a rigorous life cycle assessment, ensure minimum aquatic toxicity, emissions, packaging, and non-biodegradable waste. The GreenPro directory offers an easy-to-access resource to check ecological products and thereby ensures timely procurements. [24][25][26][27]. Numerous international studies do recognise LCA-based standards as one of the main means of sustainably lessening the ecological footprint of hospitals and ensuring better accountability. [28]

Modern Cleaning Equipment for Resource Efficiency

Advanced cleaning devices will considerably reduce water and chemical use by 50 per cent. Leading hospitals and research panels conclude up to 70 per cent resource savings, enhanced staff safety, and better cleaning results. [13][29][22]

3. Role of Housekeeping Staff Training

Education is paramount to a successful sustainability program. Green chemistry must be taught in certification, dilution practice, machine operation, and safety. Good training is vital to environmental safety, and reporting for audits and certifications. Continuous training and documentation maintain high standards, with frontline staff having the most direct impact on practical implementation. [5][25][29][4]

4. Research Areas for Students

Key domains for students and early-career researchers include:

- Life Cycle Assessment (LCA) modelling of cleaning agents and practices[28]
- Microbial comparisons of green vs. conventional methods[14]
- Staff training and behavioural compliance research[5]
- Techno-economic evaluation of new equipment and waterless technologies[18][22]
- Occupational health and ergonomic outcome studies[29][4]
- Waste management optimisation and circular hospital design
- Policy analysis and procurement effectiveness[24]
- Cross-sectoral innovation mapping (adapting textile/automotive lessons to healthcare)[21][23]

5. Integration and Future Directions

For a resilient healthcare operation, mainstreaming certified green products in hospitals, buying in advanced equipment, enhanced training of staff, and promotion of R&D are required. GreenPro Directory and LCA frameworks now allow for evidence-based decisions; in contrast, views from automotive, textile, and DRDO agencies thus trend for future innovation. With India's extreme water risk, conservation of resources is no longer an option- it stands for the survival of the health system and Sustainability. [26][23][28]

References

1. TechSci Research. "India Industrial and Institutional Cleaning Chemicals Market"
2. IMARC Group. "India Industrial Cleaning Chemicals Market Outlook"
3. Bates, I.R., et al. "Improving environmental sustainability of intensive care units." Critical Care 27, no. 1 (2023): 1-9. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10515098/
4. Bates, I.R., et al. "Healthcare waste management and sustainability." Critical Care (2023). https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10515098/
5. Allegranzi, B. et al. "Burden of endemic health-care-associated infection in developing countries: systematic review and meta-analysis." Lancet 377, no.9761 (2011): 228-241. https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(10)61458-4/fulltext
6. Clean India Journal, "Maruti Suzuki Dry Wash System"
7. DriveSpark, "Hyundai India's Dry Wash Service"
8. TVS Motor, "Clean Wash Product Info"
9. Chen, X. et al. "Waterless cleaning technology and sustainability in the global auto sector." Sustainability 14, no. 11 (2022): 11465. https://www.mdpi.com/2071-1050/14/11/11465
10. Microfiber Wholesale, "Microfiber Cloths Explained"
11. DRDO textile innovation: See press/industry reports, e.g., "DRDO microfiber cleaning textile pilot projects," Defence India Review and search "DRDO microfiber cleaning textile" in science databases.
12. GreenPro Product Directory PDF. https://ciigreenpro.com/uploads/newsletters/Directory%20on%20Green%20Products,%20Materials%20&%20Technology_2021.pdf
13. Chen, X. et al. "Sectoral sustainability: Lessons from global waterless cleaning." Sustainability (2022). https://www.mdpi.com/2071-1050/14/11/11465
14. GreenPro Ecolabel Category Overview. https://ciigreenpro.com/ecolabelled-products/categories
15. Fontana, F. et al. "An Evaluation of Hospital Cleaning Regimes—Microbiological and Life Cycle Assessment." Sustainability 14, no. 11465 (2022): 1–16. https://www.mdpi.com/2071-1050/14/11/11465
16. CII GreenPro Product Directory. https://ciigreenpro.com/uploads/newsletters/Directory%20on%20Green%20Products,%20Materials%20&%20Technology_2021.pdf
17. GreenPro Ecolabel Category Overview. https://ciigreenpro.com/ecolabelled-products/categories
18. Fontana, F. et al. "Hospital cleaning regimes and LCA." Sustainability 14, no. 11465 (2022): 1–16. https://www.mdpi.com/2071-1050/14/11/11465
19. Bates, I.R., et al. "Environmental sustainability of hospital operations." Critical Care (2023). https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10515098/
20. CareClean, "Training and Support"
21. Allegranzi, B. et al. "Infection prevention and staff training outcomes: Systematic review." Lancet (2011). https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(10)61458-4/fulltext
22. NITI Aayog, "Composite Water Management Index," (2019): https://www.niti.gov.in/sites/default/files/2023-03/CompositeWaterManagementIndex.pdf
23. 23. Drishti IAS, "Water Crisis in India: Policy Interventions and Ground Realities," (2024): https://www.drishtiias.com/blog/water-crisis-in-india-policy-interventions-and-ground-realities
24. Down To Earth, "Water shortage emerges as top environmental risk for India," (2025): https://www.downtoearth.org.in/water/water-shortage-emerges-as-top-environmental-risk-for-india-and-the-world-over-next-two-years-96333
25. Healthcare Executive, "Water Woes Unfold: Bengaluru's Hospitals Face the Brunt of Urban Thirst," (2024): https://www.healthcareexecutive.in/blog/water-woes-unfold
26. Vikaspedia, "Water Conservation in Hospitals," (2025): https://health.vikaspedia.in/viewcontent/health/sanitation-and-hygiene/swachhta_abhiyaan_guidelines/water-conservation?lgn=en
27. Simbo AI, "Practical Water Conservation Strategies in US Hospitals," (2025): https://www.simbo.ai/blog/exploring-effective-water-conservation-strategies-in-hospitals-to-enhance-environmental-sustainability-and-operational-efficiency-3089554/
28. IJCMPh, "A study on water management strategies in a selected hospital," (2020): https://www.ijcmph.com/index.php/ijcmph/article/view/7151

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Work Factors and Ergonomics in Hospital Cleaning

Environmental hygiene in hospitals is a key element of infection prevention and control which significantly affects patient safety, staff well-being and quality of care. But cleaning usually means heavy lifting, bending, pushing, pulling back and forth movements, standing for hours. These tasks also expose hospital housekeeping employees to the potential for work related musculoskeletal disorders (MSDs), slip and fall injuries, and other types of workplace injuries. Ergonomics is the discipline of arranging the environment, tools and tasks to match them to people. It is very important that we bring down these risks. Through ergonomic design, hospitals can improve safety and efficiency of cleaning methods and reduce work related injuries while increasing productivity. Preventive measures not only protect cleaners, but reduce absence from work, improve morale and save healthcare facilities time and money.

Hazards in Hospital Cleaning that Occur Regularly Include

- Monotonous scrubbing and mopping motions causing shoulder, back and wrist fatigue.
- Ability to lift and transport machinery, waste bins, or items equalling up to 25 Kgs.
- Awkward postures resulting from poorly designed tools.
- Slips and falls from wet floors or clutter.
- Being in contact with chemicals that can give you skin and breathing problems if not properly handled.

Based on these challenges, it is very important that the field of ergonomics and injury prevention should be incorporated into hospital cleaning programs. This involves choosing the suitable adjustable and lightweight devices, training staff to follow principles of correct body mechanics, rotating tasks to prevent repetitive strain, implementing sufficient time for rest pauses, and creating a safety culture in health institutes. Ergonomics and injury prevention not only protect cleaning workers, but also help to create a healthful and safe environment for patients, visitors, healthcare employees and others.

Risk Factors of Hospital Cleaning

Hospital cleaning comprises several high risk tasks:

- Cleaning Floors – Mopping, scrubbing, wet/slippery surfaces, bending over to clean under furniture.
- Height Cleaning – Leaning or standing unsafely on stools.
- Patient Room & Equipment Cleaning - Beds, cleaning around bed rails and handles biohazard waste.
- Bathroom/Toilet Cleaning - Repeated bending over and twisting in small spaces, wet floors.
- Waste Handling – Heavy lifting/garbage bags/linen, sharps & biohazards.
- Chemical Handling –Inhaling hazards, skin/eye contact irritation and accidental splashes.

Common Incidents and Injuries

1. Musculoskeletal Disorders (MSDs)

Housekeeping employees routinely suffer from clean-induced aches and injuries, especially to their back (mopping), shoulder (scrubbing) and joints (bending down a lot or lifting heavy stuff). Extended periods of awkward positions, pushing or pulling heavy carts can result in chronic musculoskeletal disorders, limited range of motion and worker absenteeism. Eventually, if precautions are not taken, these injuries can be debilitating.

2. Slips, Trips, and Falls

Slippery wet floors are the reality in any hospital nowadays which is why slips have become one of the most common accidents at work. Trips can be caused from being left out of place cleaning gear, poorly parked trolleys, or snags created by electrical flexes also connected to equipment. Falls can cause sprains, fractures or head injuries, which pose a serious health risk for workers and expensive time off.

3. Cuts and Needle-Stick Injuries

Sharps which are not discarded properly, including needles, blades and broken glass may lead to accidental cuts or punctures while cleaning patient rooms or handling refuse

containers. Not only do such injuries cause immediate damage, but there is a risk of transfer of bloodborne viruses (BBV) such as Hepatitis B (HBV), Hepatitis C (HCV), or HIV and this thus constitutes one of the major occupational dangers faced by the housekeeping staff.

4. Chemical Injuries

Individual while intoxicated can suffer skin burns, allergic rashes, itchy eyes or irritated lungs when the strong cleaning agent is inhaled. Poor ventilation, the absence of personal protective equipment (PPE), or a spill can heighten these risks. And prolonged exposure can cause chronic breathing problems, including asthma.

5. Impact and Crush Injuries

Thalassaemic patients, particularly when they are in beds with wheels and attend hospital for blood transfusion, may necessitate passage of a bed/trolley/cleaning machine through crowded wards where the corridor is narrow. Improper use or sudden movements are likely to cause crush injuries to the hands, feet and body. In more extreme events, heavy or unbalanced hardware will topple and crush you.

Figure 1: Summary of Injury Prevention Strategies

Summary

Hospital cleaning is mandatory as well as hazardous because of musculoskeletal injury, slips and falls, chemical exposure, and sharps injuries. Prevention involves a synergy between ergonomic equipment, safe work procedures, chemical safety programmes, training of staff and an organized surveillance system for the protection of both staff and patient.

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Health Monitoring And Vaccination For Housekeeping Staff

The importance of maintaining cleanliness or hygiene in hospitals cannot be overstated. With hundreds of sick and potentially contagious patients being treated daily, hospital can become breeding grounds for harmful bacteria and viruses. Proper sanitation practices are the first line of defence against these invisible threats. Housekeeping staffs plays an integral part in this essential process. They are custodians of the hospital environment, ensuring that the highest cleanliness, safety and hygiene standards are maintained. Their work directly contributes to patients and staffs health and safety. Hospitals are high-stress environment and the cleanliness and orderliness fostered by diligent housekeeping can provide a sense of calm and control.

The work of housekeepers often goes unnoticed or unappreciated but without the diligence and commitment of these professionals, hospital would be unable to provide the highest standard of care that we have come to expect. It is essential to appreciate the crucial role of housekeeping and understand that their work significantly impacts our healthcare experience.

Health Monitoring

Housekeeping staff are exposed to contaminated surfaces, biomedical waste and a number of chemical agents every day. Exposures include percutaneous injuries such as needle stick injuries, mucous membrane, or non-intact skin contact via splashes or sprays and inhalation of aerosols.

Appropriate management of potentially infectious exposures and illnesses among staffs can prevent the development and transmission of infections. Effective management means promptly assessing the exposures, diagnosing illness, monitoring signs and symptoms of disease and providing appropriate post exposure or illness management.

We can divide the health monitoring of staffs in three phases:

Pre Placement Assessment

1. Collect the health history of medical conditions and other factors that may affect the risk of acquiring or transmitting infections in health care settings.
2. Check for the evidence of immunity to vaccine-preventable diseases recommended for health care personnel by the Advisory Committee on Immunization Practices (ACIP).
3. Provide services that reduce risk of infectious disease transmission (e.g. immunization, medical clearance for respirator fit testing).
4. Train the staff for preventing and managing workplace exposures and illnesses.

Periodic Medical Assessment

These assessments done after job placement and address routine issues, such as follow up on issues identified during the pre placement assessment, routine screening and testing, immunization and other recurrent services.

Provide additional doses of vaccines recommended for health care worker by the Advisory Committee on immunization Practices (ACIP).

Episodic Medical Assessment

Conduct assessment of staff for medical evaluations on an as needed basis to evaluate and manage potentially infectious exposures and illnesses, including delivery of post exposure prophylaxis, care and monitoring.

Vaccination

As monitoring identifies risks, vaccination prevents them from these risks.

They are also at an increased risk of occupational

exposure to accidental needle stick injuries and blood borne pathogens.

So, all housekeeping staffs should be vaccinated to:

Hepatitis B: It may happened that while handling biomedical waste, the staff are suffered a needle stick injury. The risk was eliminated if the staffs are vaccinated.

Tetanus and Diphtheria (Td/Tdap): These give protection in accidental cuts or puncture.

Influenza: Annually vaccination reduces seasonal flu among staff and also prevents the transmission.

Covid-19: During pandemic vaccination protected staff physically and also gave them confidence to continue their works in high risk areas.

Responsibilities Of Hospitals

The responsibility of housekeeping is to keep the hospital clean; they are doing everything to protect patient, their families and health care workers. So it is the responsibility of the hospital, to protect their health by providing regular health monitoring and vaccination to them. Hospital should:

1. Develop policies and procedures for providing pre placement, periodic and episodic medical assessments that include health assessments, screening and diagnostic testing, immunization services, exposure and illness management, counseling and reporting of findings of medical evaluation.
2. Promote an organizational culture with a consistent focus on safety and occupational infection prevention and control.
3. Provide job descriptions with sufficient detail to assess job related infection risks to occupational health services staff before the pre placement medical assessment.
4. Provide free access (i.e. no out -of-pocket expense to staff) to vaccine.
5. Provide housekeeping staffs dedicated time during their normal work hours to complete occupational infection prevention and control education and training.
6. Provide incentives to encourage immunization, such as coupons for hospital cafeteria, gifts certificates etc.

Conclusion

As housekeeping staffs are the backbone of hospital hygiene, they are still least protected. We must protect them first who make healing environment possible- from hygiene to healing.

References

- National Accreditation Board for Hospitals and Healthcare providers. 6th Edition. 2025. Infection prevention and control standards for hospitals. Quality council of India.
- Gordon Reid. The Importance of Housekeeping. 2023 July.
- Centers for Diseases Control and prevention. Infection Control in Health care personnel. 2019 Oct.

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Operation Theatre Cleaning and Disinfection

Sterility is the silent guardian of every successful surgery

Cleaning and disinfection of the Operation Theatre (OT) play a vital role in infection prevention and require a multidisciplinary team approach. Standard Operating Procedures (SOPs) must be developed in every hospital to ensure adherence to established policies and protocols within the unit.

Cleaning: The physical removal of foreign material (e.g., dust, soil) and organic material (e.g., blood, secretions, excretions, microorganisms). Cleaning physically removes rather than kills microorganisms. It is accomplished with water, detergents, and mechanical action[1].

Disinfection: A thermal or chemical process for inactivating microorganisms on inanimate objects[1].

Basics/Fundamentals in Infection Prevention and Control

Hand hygiene and personal protective equipment are essential before and after performing any procedure in the hospital.

Cleaning and Disinfection Frequency in OT

The Operation Theatre (OT) is classified as a **highest-risk area** due to the increased potential for exposure to blood, body fluids, and pathogens.

The determination of environmental cleaning procedures for individual patient care areas, including frequency, method, and process, should be based on the risk of pathogen transmission.

This risk is a function of the:

- **Probability** of contamination.
- **Vulnerability** of the patients to infection.
- Potential for **exposure** (i.e., high-touch vs low-touch surfaces).

Risk determines cleaning frequency, method, and process in routine and contingency cleaning schedules for all patient care areas[1].

- Cleaning and disinfection should happen with appropriate contact time. Contact time is the **minimum amount of time a disinfectant must remain wet** on a surface to be effective.
- Use dedicated supplies/equipment for Operating room.
- Use fresh mops/floor cloths and mopping solutions for every cleaning session, including between procedures.
- Use fresh cleaning cloths for every cleaning session, regularly replacing them during cleaning and never double-dipping them into cleaning and disinfectant solutions.

Therefore, cleaning and disinfection must be carried out at multiple, clearly defined intervals to maintain asepsis and prevent surgical site infections.

1. Before starting the procedure

- Performed before the first surgical case of the day.
- Cleaning all surfaces, equipment, and floors.
- Disinfecting high-touch areas such as operating tables, light handles, monitor screens, anesthesia workstations, door handles, and switches etc.
- Checking and ensuring functionality and cleanliness of suction jars, tubing, and waste containers.

2. In between the cases

- Performed between surgical cases to prevent cross-contamination.

Focus areas:

- Operating table and mattress.
- Instrument trolleys, anaesthesia machine surfaces, and light handles.
- Any visible blood or body fluid spills.

- Remove waste, used linens, and replace consumables.
- Clean any used equipment or send it for reprocessing if required.

3. End of the day cleaning

- Performed after all surgeries are completed for the day.
- Cleaning and disinfecting **all surfaces, floors, walls (if soiled), and fixtures**.
- Disinfecting **reusable equipment** before storage.
- Emptying and disinfecting waste bins, suction jars, and linen hampers.
- Mopping the floor with **appropriate disinfectant**, using **wet mopping techniques** to avoid aerosolization.

Terminal Cleaning

- Terminal cleaning will be performed weekly.
- Cleaning and disinfection should be from the cleanest area outwards.

Disinfectant Properties

Quick turnaround cleaning using fast-acting disinfectants (e.g., alcohol-based or accelerated hydrogen peroxide) with short contact time.

Monitoring

- **Visual assessment** to be done by seeing the area whether removal of organic matter.
- **Physical verification** should be done with the help of tissue paper to check whether dirt has been removed.
- **Checklist** at each level of cleaning and disinfection, Before, in between and at the end of the day, make sure it should not be a tick list.
- **Surprise audits using GlowGerm** will be conducted by applying it to high-touch surfaces. Cleaning effectiveness will be verified under UV light, any glow indicates insufficient cleaning.
- Feedback from the peer groups/health care workers about the cleaning and disinfection process.
- Microbiological sampling though it is not mandatory requirement.
- Apart from this, ATP bioluminescence test can be performed for cleaning verification.

Disease Specific Cleaning and Disinfection Process

- Coordination between Infection control team and OT team is essential to ensure the appropriate selection and use of disinfectants based on the specific pathogen involved (for example: *Candida auris* – Due to its resistance to standard disinfectants, equipment and surfaces must be cleaned using **hydrogen peroxide-based wipes).**
- **In case of active tuberculosis**
  Following surgery on a patient with active tuberculosis, ensure sufficient air exchanges in the operating theatre to reduce airborne pathogen concentration. Cleaning and disinfection should commence only after a 30 to 60-minute interval, allowing adequate ventilation to effectively clear airborne Mycobacterium tuberculosis. Healthcare workers should wear appropriate PPE.

Engineering Parameters

In addition to routine cleaning performed by the housekeeping staff, the **engineering team** plays a crucial role in maintaining and cleaning the **Air Handling Unit (AHU) filters**, which are essential for ensuring proper air quality.

Cleaning of the AHU filters can be done weekly/monthly as per hospital protocol.

Team Involvement

- The **Biomedical Engineering Team** should be involved to ensure that all cleaning and disinfection solutions are compatible with medical equipment and machines, preventing any damage or malfunction.
- **Technicians and nurses** are responsible for the cleaning of medical equipment and surgical instruments, following proper protocols for reprocessing and disinfection.
- The **Procurement Department** must ensure the timely availability of cleaning and disinfection supplies, including appropriate disinfectants, PPE, and cleaning tools.
- **Management support** is essential to allocate adequate resources, training, and staffing.
- **The Infection Prevention and Control (IPC) team** is responsible for monitoring compliance, evaluating the effectiveness of cleaning and disinfection protocols, and delivering continuous training to staff to uphold operating theatre hygiene standards.

Availability of Resources

- Adequate resources must be ensured at all times to effectively carry out cleaning and disinfection procedures in the Operation Theatre. This includes the availability of appropriate disinfectants, PPE, cleaning tools, and trained personnel.
- The use of colour-coded mops and cleaning equipment is recommended to clearly distinguish between different zones within the OT (e.g., sterile areas, non-sterile areas, and dirty zones).
- This practice helps to prevent cross-contamination.

Spill Management

Blood and body fluid spill is expected in operation theatres staff should know how to clean them with appropriate disinfectants and contact time. Disinfectants used can be in the form of liquid or tablet.

Training

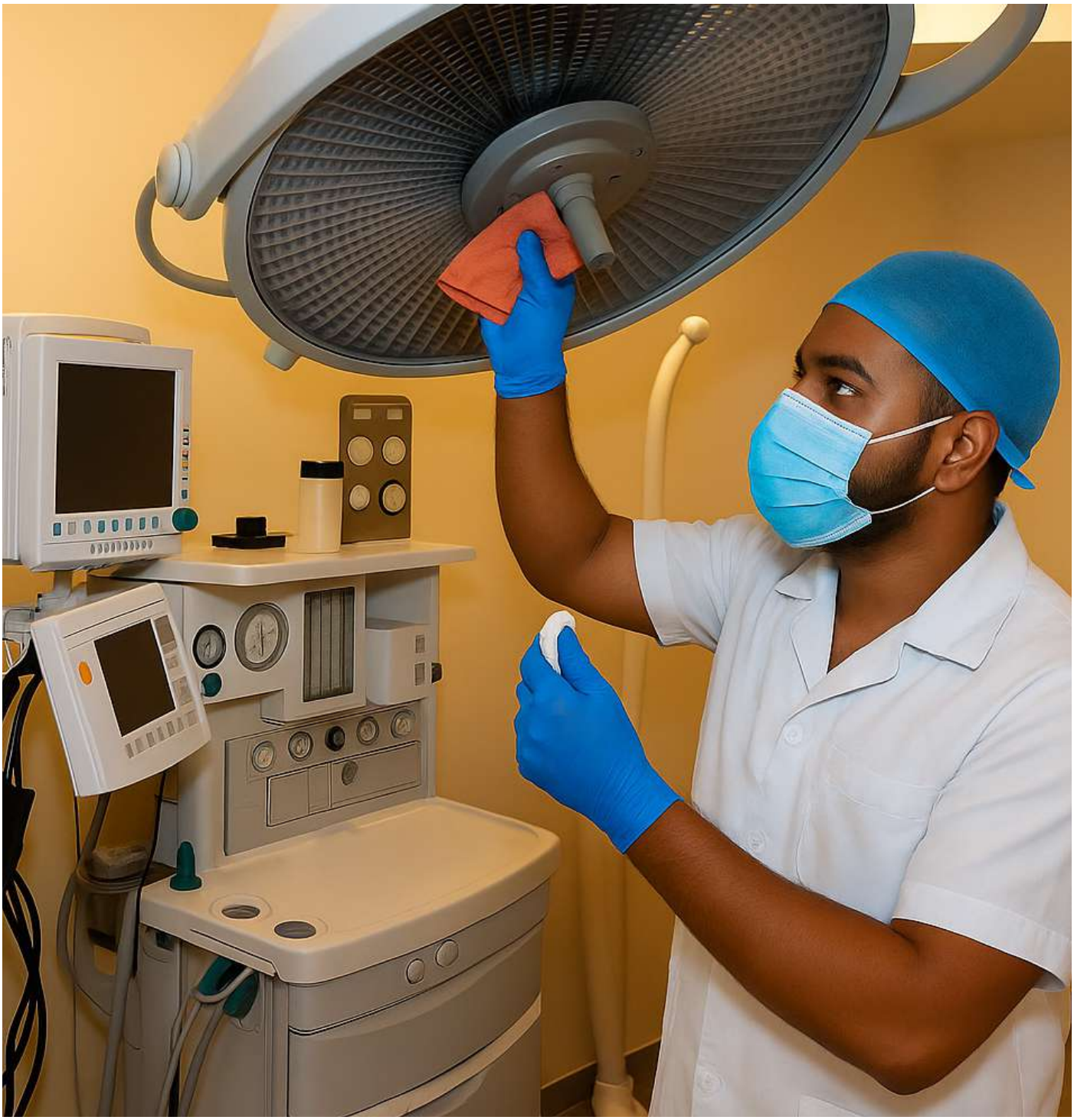
- Training **healthcare workers** involved in cleaning

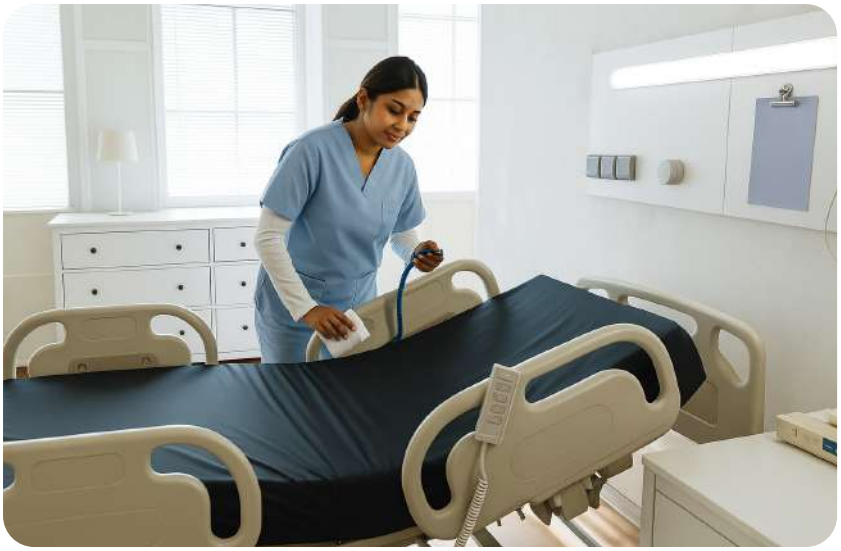
and disinfection is essential to ensure they follow the correct policies and protocols.

- Staff must be trained on the **proper dilution of disinfectants** and the **required contact time** for effective action.
- **Multilingual posters** with pictorial representation should be displayed in relevant areas to help staff from different language backgrounds understand and follow cleaning procedures.
- Motivational strategies, such as **awards, recognition programs and badges,** can encourage staff to maintain high standards in infection control practices.

References

1. Best Practices for Environmental Cleaning in Healthcare Facilities: in Resource-Limited Settings, Version 2, CDC.





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Isolation Ward Protocols: Safeguarding Hospitals from Hidden Threats

Isolation Ward Protocols

Step into an isolation ward and you are entering the safest cocoon of a hospital — silent, controlled, and as aseptic as possible. These are not rooms simply; they are containment spaces where a line must be drawn: infection stops right here. Digging beneath the surface, other than medicine these days, who silently gives equal tireless work to sick people and the nurses and doctors tending them? This is housekeeping. From without, it might seem an automatic thing to do; but inside isolated wards, each step of ours takes care and every move keeps a whole hospital safe. The devotion of these men continually sets the tone for safety. A single fault by them may put others in peril. Hence hygiene to them is not simply a matter of duty, it embodies for them to practice care and consider it responsibility.

Housekeeping Roles and Responsibilities

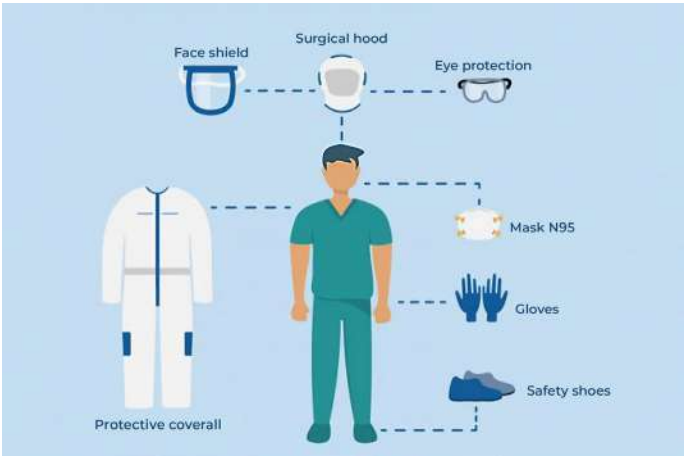
- Monitor strict well-defined cleaning schedules in isolation wards.
- Clean from top-down, clean-to-dirty finish line to avoid missing any spots.
- Use color-coded mops for each zone.
- Floors must be mopped down at least twice a day using hospital-grade solutions.
- To control break-out, disinfect high-touch surfaces (bed rails, IV stands, door handles) done every few hours.
- Protect oneself in full PPE of gloves, mask, gown, and eyeglasses.
- After a patient has been discharged, perform terminal cleaning:

  1. Disinfect all surfaces
  2. Change curtains
  3. Let air circulation happen

- Ready room for the next patient to start from the ground up with hygiene itself.

Cleaning and Disinfection Protocols

- Use 0.5% of sodium hypochlorite, an approved disinfectant, for cleaning surfaces.
- High-touch areas like switches, rails, and door handles clean every 2-3 hours.
- Colour code bio-medical waste containers and seal them, moving through designated routes only.
- Chemical or thermal methods to disinfect (buckets, mop handles) tools to be reused.



Take action immediately if there are spills

- The area should be cordoned off.
- All members must wear full PPE.
- Take up the spill carefully.
- Then scrub the surface until it is done.
- Contaminated materials are to be put into waste containers and then sent for proper destruction in accord with state regulations on handling medical waste.

- Use real-time digital checklists to log your cleaning work and keep track of its completion.

Infection Prevention and Safety Precautions

The first shield is clean hands at all times. The staff has always tightly observed the World Health Organization's '5 Moments for Hand Hygiene': before touching a patient, before clean/aseptic procedures, after body fluid exposure, after touching a patient, and after touching the surroundings. This rhythm of hand hygiene is integrated into their daily habits. Emergency deep cleaning is also done the moment a highly infectious patient is discharged from the hospital.

Isolation Ward Daily Housekeeping Checklist

Task	Frequency	Completed
Wear PPE before entering	Every entry	
Mop floors with disinfectant	2–3 times/day	
Clean high-touch surfaces	Every 2–3 hrs	
Replace cleaning cloths/mops	Every round	
Collect & segregate biomedical waste	Every shift	
Disinfect cleaning equipment	After every use	
Perform hand hygiene after exit	Every exit	

Training, Proficiency Tests, and Checks

Training is the foundation of safely carrying out cleaning work and special attention is given to it. Regular workshops and training sessions ensure that the staff keep up to date with the latest infection control techniques. Supervisors perform regular inspections and unannounced checks to ensure that all cleaning routines are correct. Information from the infection control nurse is taken seriously .Any problem identified in a cleaning mission is put right at once through retraining.

Small Innovations in Cleaning Work Corresponding to the Changes in Modern Ward Nursing

- Use colour-marked cleaning supplies so medical waste cannot be mixed up and reported as unfilled bins.
- UV disinfection lamps were used daily in isolation areas.
- Attendance registers were QR-based and digital for task-tracking of actual cleaning in real-time.
- Regular ATP (adenosine triphosphate) tests were scheduled as verification checks for cleanliness of individual surfaces.
- High-touch areas had antimicrobial surface coatings.
- For floors, AI-based cleaning robots were used for disinfection.
- Refresher training sessions take place regularly with virtual reality simulation modules.
- Cleaners free of noise also help to maintain a peaceful healing environment.
- Each week, a recognition board now encourages stars from the housekeeping team.

During COVID-19: Strengthening Housekeeping Under Crisis Conditions

Lessons from COVID-19: Evolving Hygiene Practices

Then	Now
• Increased cleaning frequency	• Enhanced disinfection protocols
• Reactive inventory management	• Real-time digital cleaning logs
• Limited use of specialized cleaning tools	• Adoption of UV disinfection robots
• Static staffing levels	• Flexible staffing with cross-training

Conclusion

A ward's isolation level depends on how clean it is. Doctors can remove disease, but housekeeping ensures that recovery begins safely. They stop epidemics, protect medical staff, and provide patients with a clean space

for rehabilitation. In each shining floor and disinfected surface, their unseen work speaks its own message:

> ***"Cleanliness is the first dose of healing"***

References

- World Health Organization, Environmental Cleaning in Health Care Centres. [Link](https://www.who.int/publications/i/item/9789241516750)
- CDC – Guidelines for Environmental Infection Control in Health-Care Facilities [Link](https://www.cdc.gov/infection-control/guidelines/environmental/index.html)
- NABH - Hospital Standards of Accreditation [Link] (https://www.nabh.co)
- JCI – International Patient Safety Goals [Link](https://www.jointcommissioninternational.org)
- Tata Memorial Center – Infection Control & Housekeeping Quality Initiatives [Link](https://tmc.gov.in)
- Apollo Hospitals – Quality and Infection Control Programs [Link](https://www.apollohospitals.com)
- Fortis Healthcare – Housekeeping and Facility Management Practices [Link](https://www.fortishealthcare.com)
- AIIMS - Environmental Hygiene SOPs [Link](https://www.aiims.edu)

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The Supervision and Audit Role in Hospital Housekeeping

In Sher-i-Kashmir Institute of Medical Sciences (SKIMS) Srinagar, where I am working at present, one thing is certain: patient safety is not merely a medical treatment. It also relies on the way we clean the hospital environment. Housekeeping experts are responsible for this, although their efforts are so commonly taken for granted. I have witnessed how a properly disinfected ICU may assure families and how a small decrease in disinfection may lead to infection. To preserve standards of cleaning, two things are required by hospitals: proper audits and proper supervision.

Why Audits Matter

An audit is really a method of verifying whether or not the work we want is indeed being accomplished. For housekeeping, it may be reviewing daily cleaning records, conducting ward walks with a checklist, or even sampling off high-risk area surfaces. Without audits, errors are unknown. These errors can end up contributing to hospital-acquired infections (HAIs), which are hard and expensive to treat.

From my teaching practice and hospital visits, I realised that audits are most effective when they are straightforward and practicable. A straightforward list of major areas to clean is preferable to a cumbersome guide nobody bothers to read. Feedback to staff members is also essential. In one of the hospitals I had been to, they put ward-wise audit scores on a board. Initially, the employees were apprehensive, but subsequently, it was used as a badge of pride by those who repeatedly delivered. It provided them with a feeling of ownership and accountability.

Supervision: Guide the Process

If there is a gap in the auditing, supervisors plug it in. My best supervisors were not inspectors per se. They were trainers, they were motivators, and even occasional counsellors to their workers. A good supervisor gets around on the floor, fixes techniques on the spot, and reminds employees why and what they do; really matters.

I remember one of our senior supervisors telling me once, "If I do not explain patiently day after day, I cannot expect employees to remember during a crisis." That sentence summarises supervision. It is not finger-pointing, but people leading towards improvement. For instance, in our ICUs, supervisors will even double-check if terminal cleaning has been properly done before a new patient is admitted. This additional caution makes a visible difference.

The Effect on Patient Safety

There is a causality line between supervision, audits, and outcomes for the patient. Hospitals that take them seriously are likely to have fewer infections and better staff compliance. In one of the hospitals, infection rates decreased over a period of several months after instituting regular audits and more serious supervisory rounds. Families also started giving more cleanliness ratings in follow-up questionnaires. These are small but important indicators that the system is operating.

I also visited a pediatric hospital in the southern parts of our country and observed new housekeeping staff paired with senior staff for the first month. The buddy system cut training time in half and ensured quality cleaning standards were upheld. Staff were less anxious, and managers could focus on mentoring instead of continually correcting. These are simple to do practices that can make a big impact.

Challenges and the Way Forward

Certainly, there are obstacles. Many hospitals are understaffed, so supervisors are thinly spread. Audits are fault-finding missions in the eyes of some employees, and they become defensive. Small facilities don't even have standardised equipment to speak of. These are real obstacles, but they can be circumvented.

In my experience, the most important thing is to establish a culture of positive encouragement rather than criticism in audits. The staff should feel that the goal is to create a better organisation, not to criticise. Little things such as post-audit open forums, reminder training, and reward for good work minimise resistance. I witnessed how a small housekeeping staff appreciation ceremony improved morale much more than an official memo possibly could.

Technology is also starting to assist. Some hospitals are reporting in real-time through mobile apps. Big ones are even exploring sensor-based systems to ensure that surfaces are cleaned. The equipment is beneficial, but can't take the place of the human touch of a supervisor who personally knows the workers and knows the stress of the job.

Future Outlook

In the future, monitoring and audit will be more formally integrated into hospital quality and accreditation programs. Rather than being addressed as straightforward "housekeeping issues," they will be included in larger patient safety programs. Predictive methods can also be employed by hospitals to spot high-risk sites before accidents occur. Training will also shift, with simulation and web-based delivery allowing rapid staff training.

But though new tools arrive, the fundamentals won't change. We'll still have to do audits to verify the work and supervisors to prepare the people performing it. Both are necessary to safeguard patients.

Conclusion

Housekeeping is behind the scenes, but it is central to safe care. I've witnessed firsthand the power of well-organised audits and supportive supervision to improve patients' and staff's lives. These practices not only prevent infection, but they also inject respect and dignity who work behind the scenes without any publicity. It is high time we consider them not as support staff but as essential care buddies in patient care. By repeating audits and surveillance, we strengthen the pillars of hospital safety.

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Housekeeping Staff as Infection Prevention Partners

Infection Prevention is one of the core principles of safety measures in a hospital. While infection prevention is taken care of by direct patient care providers like the clinicians, nurses and paramedics, the important role of the housekeeping staff in the same cannot be ignored. While the housekeeping team is involved with cleaning and disinfecting the environment, their role in healthcare as Infection prevention is not merely a superficial role played, but one that is imperative.

The work of the housekeeping staff forms the basis of infection prevention, reducing the risk of healthcare-associated infections and safeguarding patients, healthcare workers and visitors in the healthcare landscape.

Overview

Millions of patients are affected by Healthcare-Associated Infections (HAI), resulting in prolonged length of stay, increased treatment cost and in some cases loss of life. The harmful pathogens persist on surfaces for longer periods when surface disinfection is not effectively carried out. While the source for HAI can be multiple reasons, such as improper hand hygiene, unsterile techniques or equipment used for procedures, improper personnel protective equipment usage, etc., the role of a clean environment contributes significantly to it. When a targeted approach towards infection prevention is being drafted, the role of the housekeeping staff in ensuring appropriate environmental cleaning cannot be ignored. Hence, the aesthetic part or upkeep of the hospital is not the only aspect taken care of by the housekeeping staff; they do play an important role in infection prevention.

Housekeeping Staff - And the Difference They Make

The housekeeping staff play a vital role in the upkeep of the hospital facility, but their role goes beyond simple cleaning. There are several activities that they perform, which make all the difference in Infection Prevention. The following are some of the broader categories of activities that the housekeeping team carries out, which impact the spread of infection:

Surface Cleaning & Disinfection

The Centres for Disease Control (CDC) has listed environmental cleaning and disinfection as one of the Core Infection Prevention and Control Practices for Safe Healthcare Delivery in all Settings. And the housekeeping staff are the ones who are mainly involved in ensuring the cleanliness of the environment. The housekeeping team shall consider routine cleaning and specific cleaning of surfaces as indicated by the level of patient contact and degree of soiling while they are cleaning or disinfecting. While cleaning and disinfecting, they ensure an appropriate and effective process by ensuring the surfaces in the hospitals are categorised based on the contact of patients. The frequency of cleaning and the choice of disinfectant shall be defined in consultation with the Infection Control Committee based on the kind of surfaces or areas to clean or disinfect, and the housekeeping Team are the one to ensure the same are effectively executed in the field.

Patient Assistance

While bedside care is being rendered by nurses and other paramedical staff, the housekeeping team are also critical in assisting the patients' needs while they receive care in the hospital. Many of the patients are being assisted with bathing, assistance to use the restrooms, and personal hygiene. These are some of the important ways of ensuring the patients feel better and cleanliness is enhanced during their stay in the hospital. When the assistance or services are being rendered to patients, the compliance of housekeeping staff with PPE usage and hand hygiene practices ensures important aspects of infection prevention.

Linen & Waste Management

One of the important sources of infection in a hospital could be the waste generated in the hospital. Hospitals must have an appropriate system of segregation and disposal of wastes (both biomedical and general wastes). The housekeeping team plays an important role in the transfer and disposal of the segregated wastes. Their routine tasks of ensuring timely removal of the wastes from the departments to the common waste segregation areas, and ensuring no overflowing and safe transport are some of the important ways of an effective waste management system.

Linen management in hospitals could be an effective way of preventing infections in hospitals, and housekeeping teams are usually responsible for ensuring the periodic change of linen, monitoring the effective washing process and condemnation of linen which are beyond its life. Having a systematic mechanism of monitoring the inventory and ensuring clean linen is being used for patient care are important roles played by the housekeeping staff.

Pest Control Measures

In many organisations, pest control measures are managed by external vendors, but housekeeping staff are involved in identifying active sources for pest infestation and ensuring appropriate mechanisms to prevent the same are implemented. The teams are involved in pest control efforts by identifying potential breeding sites and ensuring that the same is prevented in the hospital.

Training & Supervision

While housekeeping staff act as one of the important links in the Infection prevention program, there is a constant need for them to be updated with the protocol for surface cleaning and disinfection. The housekeeping staff shall be trained on some of the important aspects related to dilution of cleaning agents, spillage management, frequency of cleaning of surfaces, appropriate PPE usage, and waste disposal methods. The training aspects to be effectively implemented at the ground level have to be ensured by effective supervision.

Conclusion

Although direct patient care intervention is not carried out by the housekeeping staff, they play a vital role in making all the differences in patients' experience and healing process. The level of involvement of the housekeeping staff in everyday healthcare service delivery is as important as the role of clinicians, nursing or other paramedical staff. Be it ensuring cleanliness or upkeep of the facility, or maintaining the restrooms clean or timely bed making for the patient, all of these are basic steps of infection prevention. The fact that rendering the routine tasks effectively impacts the overall infection rates in the hospital makes the housekeeping staff a valuable partner in infection prevention.

While there might be challenges in the provision of adequate resources and housekeeping manpower, hospitals must ensure they are recognised and are heard, since they are the unsung heroes who selflessly care and make a difference in infection prevention.

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Managing Shortages of Disinfectants and Personal Protective Equipment: Lessons for Resilient Health Systems

Infection prevention is essential to protect patients, healthcare workers, and family members of patients visiting them from preventable infections, adverse events, lower costs, and prevent the spread of diseases and antimicrobial resistance. Infection prevention in hospitals rests on two basics: clean surroundings and protective gear. While disinfectants keep surfaces safe, Personal Protective Equipment (PPE) protects staff. In fact patients safety can only be ensured if healthcare workers are safe and protected from hospital acquired. Infections among health care workers can lead to a lower number of staff at a time when they are most needed (5).

Disinfectants differ in chemistry and in context of their use. Alcohol-based agents remain the workhorse for hand hygiene and small surfaces, chlorine is indispensable during outbreaks, and hydrogen peroxide vapour systems offer powerful decontamination where infrastructure allows (Rutala & Weber, 2019).

PPE is equally stratified: gloves and masks for routine care, N95 respirators and full coveralls for aerosol-generating procedures, and face shields or goggles where splashes are expected. Their protective value hinges less on their theoretical properties than on the discipline of consistent use. Systematic reviews (Liao et al., 2020; Gertsman et al., 2020) underline a common theme: a respirator with poor fit, or a gown removed carelessly, is little more than a placebo.

Obviously non availability of sufficient PPE and disinfectants will compromise the quality and safety of care in a healthcare setting. This article describes the experience in the management of PPE and disinfectants in a hospital while maintaining necessary medical care.

Burden and Causes for Shortages

COVID-19 created shortages everywhere. In Europe and the US, staff reused disposable respirators for days. In Africa, hospitals went weeks without chlorine. Surveys showed healthcare workers reusing masks, stitching makeshift gowns, and worrying about safety (Tabah et al., 2020).

The causes for shortage of disinfectants and PPE can be traced to many factors: sudden rise in demand due to epidemic episodes such as COVID or sudden rise of cases of cases in a facility, production limited to a few countries, Supply chain disruption such as export bans (Sharma et al., 2021) or poor inventory management practices are the main causes of acute shortage. In India, shortage of melt-blown polypropylene—the key filter in N95 masks—hit local production during Covid. Hospitals without stockpiles suffered most during COVID(Ranney et al., 2020).

For smaller facilities, shortages are more routine. They buy in small lots, so prices are higher and stockpiling is not possible. They often depend on one or two local suppliers. Any delay means disruption. Storage is often poor—heat and humidity reduce shelf life. Many do not keep proper registers, so shortages are noticed only when shelves are empty. Overuse or careless use of PPE and disinfectants adds to the problem.

Operational Solutions for Disinfectants

Evidence suggests that shortages are not only about supply but also about how resources are used. Standardising protocols for the preparation and application of disinfectants can significantly reduce wastage. The World Health Organization provides detailed recommendations on effective concentrations of chlorine, alcohol, and hydrogen peroxide; yet in many small facilities, cleaning staff continue to rely on informal practices, often using excessive amounts without added benefit.

Local procurement pooling, in which nursing homes collaborate to place bulk orders, has proven effective in reducing costs and ensuring availability. Even simple tools such as paperbased registers or basic spreadsheets for logging daily use can act as early warning systems, prompting timely reordering before critical depletion occurs.

Operational Solutions for PPE

For PPE, rational allocation remains the cornerstone of effective use. Reserving respirators for aerosol-generating procedures while employing surgical masks for routine care prevents both shortages and unnecessary costs. Reusable options, such as washable gowns and cloth masks with filter inserts, can be safely adopted when validated against local infection control standards. In

several rural hospitals, low-cost heat cabinets have been used to safely decontaminate masks, extending their usability without compromising safety.

Equally important is the creation of small buffer stocks, refreshed regularly, to prevent operational collapse during supply delays. Partnerships with local industries such as textile manufacturers for gowns or community workshops producing face shields have demonstrated both feasibility and sustainability in tier-3 settings.

The other important points are given below:

1. Assessment and Inventory Management

- Regularly check and monitor stock, predicting usage and communicating needs to the procurement team.
- Prioritize distribution based on exposure risk; high-risk departments (ICU, fever clinic, emergency) get priority.

2. Strict Guidelines and Risk-Based Usage

- Develop clear protection-level guidelines (Level I–III) for different hospital areas and tasks.
- Avoid unnecessary or excessive use of PPE and disinfectant in low-risk areas.

3. Training and Supervision

- Provide repeated training for healthcare personnel (HCP) on proper PPE use.
- Evaluate and supervise PPE and disinfectants usage to ensure compliance and safety.

4. Rescheduling Medical Procedures

- Postpone elective or non-urgent procedures to reduce PPE consumption.
- Ensure urgent care continues safely with proper PPE allocation.

5. Donation and Alternative Resources

- Accept PPE donations but evaluate for quality and suitability.
- Reuse some items like goggles after strict disinfection when safe.

6. Coordination and Planning

- Multi-department coordination is essential for effective PPE allocation.
- Use tools like the CDC PPE Burn Rate Calculator for planning consumption.

Best Practices and Pitfalls to Avoid

Some lessons are clear. Hospitals with emergency reserves and multiple suppliers did better. Validated decontamination methods like UV or heat worked without reducing safety (CDC, 2020). Training in how to wear and remove PPE was as important as supply.

But mistakes were common. Spraying alcohol or bleach on N95 masks damaged them (Liao et al., 2020). Fake products entered the market where procurement was weak. Strict rationing without transparency reduced staff trust. Stockpiling without rotation led to expired supplies. Some improvised with kerosene or undiluted bleach, which harmed both staff and equipment. Unequal distribution of PPE inside facilities also created mistrust.

The simplest measures often worked best. Posters with clear pictures on how to mix disinfectants or use PPE helped. Regular refresher training reinforced good habits. Borrowing arrangements between nearby hospitals gave short-term relief during crises.

Building Long-Term Resilience

Scarcity keeps coming back. The answer cannot only be short-term fixes. For long term resilience, Governments must invest in local and regional manufacturing. Strategic stockpiles should be maintained and refreshed. At the global level, fair-sharing systems are needed so that export bans in one country do not create crises elsewhere (Evenett, 2020). Research must focus on reusable PPE, biodegradable products, cheap decontamination tools, and better forecasting systems.

For small and rural facilities, resilience is not just about procurement. It is about rational use, simple stock tracking, and joint purchasing. District-level pooling or shared buffer stocks can reduce risk. Policymakers must include small providers in emergency plans and regular supply chains. Leaving them to manage alone only increases risk.

If these practices are embedded, shortages of disinfectants and PPE will not lead to unsafe care. Patient safety will be protected in every setting, from large tertiary hospitals to small 10-bed nursing homes.

Conclusion

The conversation on patient safety must include small facilities. Their shortages are predictable, but also preventable. With context-based solutions rational use, pooling of orders, local innovations, and simple inventory systems they can build resilience. By doing so, they protect patients and safeguard staff, who are the backbone of healthcare.

References

- CDC (2020). *Strategies for Optimizing the Supply of PPE*. U.S. Centers for Disease Control and Prevention.
- Evenett, S. (2020). Tackling COVID-19 together: The trade policy dimension. *Global Trade Alert*, University of St. Gallen.
- Fischer, R. et al. (2020). Assessment of N95 respirator decontamination and re-use for SARS-CoV-2. *Emerging Infectious Diseases*, 26(9), 2253–2255.
- Gertsman, S. et al. (2020). Decontamination of N95 respirators: a systematic review. *Journal of Hospital Infection*, 106(3), 536–553.
- Khadivi, R. et al. (2024). Disinfectants efficacy in reducing pathogens in hospitals, North Iran. *BMC Infectious Diseases*, 24(1):134.
- Liao, L. et al. (2020). Can N95 respirators be reused after disinfection? How many times? *ACS Nano*, 14(5), 6348–6356.
- Ranney, M. L. et al. (2020). Critical supply shortages — The need for ventilators and PPE during the COVID-19 pandemic. *New England Journal of Medicine*, 382(18), e41.
- Rutala, W. A., & Weber, D. J. (2019). Best practices for disinfection of noncritical environmental surfaces. *American Journal of Infection Control*, 47, A96–A105.
- Sharma, A., Adhikari, A., & Rho, Y. (2021). Global supply chain contagion and the COVID-19 pandemic. *Nature Human Behaviour*, 5, 730–738.
- Tabah, A. et al. (2020). PPE and healthcare worker safety during COVID-19: An international survey. *Journal of Emergency Medicine*, 59(2), 157–168.
- Viswanathan, A. et al. (2020). Heat-based N95 mask decontamination and reuse in a large hospital setting. *medRxiv* preprint.
- WHO(2020). *Shortage of personal protective equipment endangering health workers worldwide*. World Health Organization.

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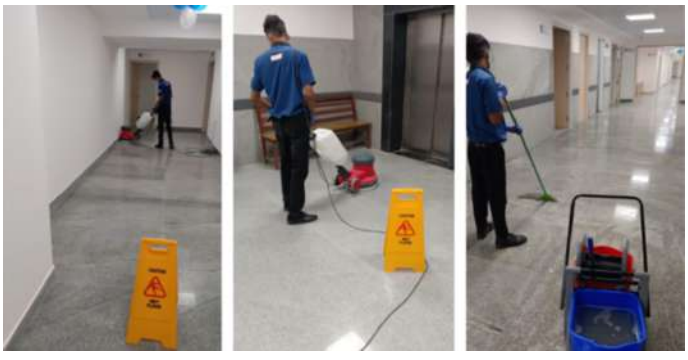
The Role of Housekeeping Staff in Supporting Cleanliness in Patient Care

Cleanliness and sanitation are utmost priority in any healthcare facility. This is critical for patient safety and help providing safe environment thus preventing the spread of infections.

Though the clinical staff the doctors, the nursing staff and other allied healthcare assistants play a significant role in this. The significant role of the housekeeping staff cannot be ignored since they are in the forefront in supporting the overall cleanliness of the hospital environment both inside and outside. Their role adds to the operational efficiency of hospital and effectiveness in infection prevention.

Their role in routine hospital and ICU environment is well known but in special their role in radiation facilities is crucial and needs an incredibly special mention.

We shall mainly highlight the role of the housekeeping staff in special medical facility setting like Nuclear Medicine which caters to both specialised diagnostic and therapies services especially for those diagnosed with cancer majority of the times, but also other specialities like neurology, cardiology and infections.



Specialized Role in Nuclear Medicine and Radiation Safety

Housekeeping staff in these areas must also coordinate closely with nuclear medicine professionals to determine **safe timeframes** for cleaning (i.e., once the radioactive decay has sufficiently reduced risk), and to ensure that their tasks do not interfere with sensitive procedures or compromise patient or staff safety.

Reasons	Radiation Safety
Principles	**1. Justification:** Any decision that alters the radiation exposure situation should do more good than harm. **2. Optimization:** The purpose is to reduce the magnitude of individual doses to patients **3. Dose limit:** The total dose to any individual from regulated sources in planned exposure situations should not exceed the appropriate limits recommended by the Commission.
The do FIVES	1. **Hands:** Wear gloves and always wash 2. **Elbow:** Use elbow operated taps 3. **Face:** Don't touch with contaminated hands 4. **Feet:** Stay more the 3 ft (1m) apart and use foot operated dust bins 5. **Feel:** Rule out pregnancy/breast feeding
Zones All radioactive areas are covered with linoleum flooring and smooth and washable paints on walls. All surface are smooth to facilitate easy cleaning.	**Green Zone:** Authorised persons only, Access restricted to essential individuals. Access controlled, secure zone around the inner cordoned area. Ambient dose rates in this area need to be at levels very close to background levels. Initial decontamination of first responders should occur near the outer boundary of this area.

	Amber/Orange Zone: Patient and authorised persons only. Area around dangerous radioactive source where precautions should be taken to protect the responders and the public from potential external exposure and contamination. **RedZone:** Patient and authorised persons only. Actions taken in this area should be restricted to time sensitive, mission critical activities such as lifesaving. **Cordoned Zone:** Area around dangerous radioactive source where precautions should be taken to protect the responders and the public from potential external exposure and contamination. **Perimeter Zone:** Access controlled, secure zone around the inner cordoned area. Ambient dose rates in this area need to be at levels very close to background levels. **Single entry and single exit always**
Disposal of Radioactive waste	• All radioactive waste are collected in appropriate lead bins unsegregated and kept for delay and decay. • After survey when the radiation levels are below background they are segregated and disposed as per Biomedical waste guidelines of segregation and disposal. • Housekeeping staff are key actors in managing this process responsibly.
Access control and communications	• All entry and exit in controlled areas are with access control • Wearing of gloves and lab coat is mandatory • Electronic communication system to avoid radiation contamination between supervised and controlled areas • Controlled areas under CCTV monitoring
Patient	**Time:** • Use shortest possible time to reduce the dose. • Make the scan faster to reduce exposure to staff. • Post radiopharmaceutical injection into the patient spend as little time as possible for achievement of ALARA.

	Distance: • Use remote reviewing or screen sharing wherever possible and/ or telephone discussions. **Shielding:** • Given the risk of radioactive contamination in the laboratory all should wear gloves at all times. • All surfaces to be covered with absorbent paper and all surfaces to be smooth for cleaning in case of spillage. • Lead shields and lead barriers and PPE wherever applicable and indicated for ALARA.
Post scan	• Signages of radiation safety and emergency contact numbers in case of spillages.
Control(Spillage in radiophar-maceuticals)	**Equipment:** All housekeeping staff who clean all departmental areas during and out of work hours are trained for professional cleaning of potentially radioactive contaminated surfaces in case any spillages or otherwise under supervision of RSO. **Regular changing of patient linen after each scan.**
Myths & Fears	**1. I don't understand how radiation works??** IAEA, ICRP, NCRP and AERB websites have defined effects of radiation. **2. Radiation is invisible and so you can't control the damage it will do to me.** Radiation is invisible: it's also painless, odourless and silent, other than the sounds of the machinery used to deliver it. And there are certainly dangers to radiation if placed in the wrong or inexperienced hands. But radiation measuring instruments are so sensitive and evolved to detect the least possible contamination and aid immediate precautionary measures to be implemented.
Lessons learnt	**Being caught unaware: Very unlikely** we have area monitors, personal dosimeters and contamination monitors with various check points which beeps and send warnings. **Housekeeping:** Needless to say, policies, codes and safety guidelines are all in place.

	Recognising work stress: Seeking help early and creating awareness about radiation is important. Unwanted rumours and misuse of radioactive material leading to dangerous levels of exposure and death has been reported worldwide.
Emergency Code	**Why Not CODE MAGENTA for RADIATION? Radiation emergency activation through hospital addressal system.**

Supporting Patient Dignity and Comfort

Cleanliness is not only a matter of physical health—it also deeply affects **patient comfort, dignity, and mental well-being.** Patients in hospitals or long-term care facilities often experience feelings of vulnerability and loss of control. A clean, well-maintained environment contributes to a sense of normalcy, privacy, and respect.

Training, Professionalism, & Recognition

Modern housekeeping in healthcare is a **skilled profession**. Staff are trained in infection control, chemical handling, waste management, and cross-contamination prevention. In specialized units such as nuclear medicine, additional **radiation safety training** is required to ensure compliance with institutional and national guidelines.

Conclusion: The Unsung Heroes of Healthcare

In conclusion, the role of housekeeping staff in supporting cleanliness in patient care is both essential and multidimensional. From infection prevention to emotional support, from collaboration with medical teams to environmental stewardship—and especially in specialized departments like nuclear medicine, where radiation safety adds another layer of complexity—housekeeping staff uphold the standards of hygiene and safety that are fundamental to healthcare.

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Making Hospital Visitors Partners in Care to Balance Compassion and Safety

Families provide something to a hospital that no medicine can replace: comfort, reassurance, and a sense of normalcy for the patient. A person's mood may be greatly lifted by seeing a familiar face or hearing a few encouraging words from loved ones, especially if they are staying for an extended period of time. However, there is a delicate truth to this friendliness: if visitors are not handled with care, they might potentially pose risks.

In regular wards, problems like too many patients, too much noise, or small mistakes in treatment can happen. But in places like ICUs, cancer wards, or transplant units where patients have weak immunity or very low white blood cells even a small slip by a visitor can cause a serious infection. That's why, these days, one of the biggest challenges is finding the right balance between keeping patients safe and still allowing them to have close personal connections.

Limiting Time, Numbers, and Noise

Overcrowding is one of the most common problems that hospitals face. Families frequently think that longer visits mean more help, but for patients, extended or crowded visiting hours may be tiring. Short, staggered visits not only save patients from becoming sick, but they also provide them the quiet time they need to relax.

Respecting the privacy and dignity of others is another critical aspect of etiquette. Individuals should minimize their phone use, speak quietly, and refrain from recording or taking photos until instructed to do so.

The First Barrier Entry and Screening

Proper behavior for visitors starts before they ever enter the ward. Clear rules on who may enter and when protect patients from unnecessary exposure. The principle is simple, only essential visitors should be allowed, and they should be free of any symptoms of illness. Even a mild cough or fever in a visitor can have devastating consequences for a patient with weakened immunity. Hospitals that succeed in this area often make screening an everyday ritual checking for signs of illness, limiting the number of visitors, and restricting children, who are often carriers of infections despite appearing healthy.

Food, Gifts, and Emotional Gestures

People who care about you frequently give you your favorite snacks or home cooked meals to make you feel stronger. These gestures are well meaning, but they might be bad in situations where rigorous dietary laws are in place. Food borne diseases and allergies are significant threats, particularly for those who are undergoing chemotherapy or transplant treatment. Flowers, fruits, or beautiful objects that do not look dangerous may also include germs or fungus that sick people cannot fight off. In this scenario, instructing is more essential than enforcing. When families know that the rules are not meant to make them uncomfortable but to help them get well, they are more inclined to obey them.

Hand Hygiene is Non Negotiable

The most effective, yet often overlooked, step in visitor etiquette is hand hygiene. It should be convenient for visitors to wash their hands before and after seeing patients in every ward. With alcohol based hand sanitizers placed at the entrances, regular reminders from staff, and clear signboards, hand hygiene can become a natural habit.

The Special Case of High Risk Units

In transplant wards and isolation rooms, visitor rules are the strictest. Usually, only one caregiver is allowed, and they must follow daily safety measures such as health screening, wearing protective equipment, and learning infection control practices. To ensure patients still receive emotional support, virtual visits, video calls, and supervised in person interactions are often encouraged.

Intensive Care Units (ICUs) also require strict guidelines. Visiting hours are limited, protective gear is mandatory, and visitors are not allowed to move around freely, so that patient safety is maintained and staff can work without unnecessary interruptions.

The Human Side of Enforcement

Enforcing guest etiquette isn't only about regulations and limits. It also has to do with talking to each other, understanding, and being consistent. People who work with you who nicely explain why certain steps are necessary get far greater cooperation than those who just say "no." Signages, flyers, and awareness campaigns are all helpful, but the true change happens when families feel like they are part of the healing process instead of being left out of it.

The strategy to Turn Visitors into Partners

When the hospitals consistently promote visitors etiquette families gradually begin to see them as a part of the effort to prevent infection. People who come to visit encourage one other to wash their hands, wear masks appropriately, or keep their voices down. Etiquette changes from being something that is enforced from the outside to a culture of safety that everyone shares.

Visitor rules in hospital wards don't mean you can't love someone or keep families apart. It's about keeping that love safe and making sure it helps you recover instead of hurting you. There is purpose in every handshake, hug, and time spent with a patient, but there is also danger. Families may really help with rehabilitation by following basic, consistent rules including hand cleanliness, regulated access, limited visits, and ward specific measures.

Ultimately, etiquette is not about rules that are written down. It's about creating a space where patients feel comfortable, supported, and cared for in a way that cures both their bodies and their minds.

Incidental Unmasking Of Lapses In Bronchoscope Re-Processing By Nested Tb Pcr In A Tertiary Care Hospital In Kolkata, India

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Tuberculosis (TB) remains a major health problem in India, with ~2.2 million new cases and 20,000 deaths annually. MDR-TB is an increasing concern, seen in 3% of new cases and 12-17% of retreatment cases. Resistance usually develops in patients when treatment is not followed properly, although it can also be acquired through direct infection with MDR strains.

Bronchoscopes and other invasive devices may be responsible for healthcare-associated infections. Such infections occur either from endogenous respiratory flora (like streptococci, staphylococci, and moraxella) or from exogenous pathogens, including mycobacteria and pseudomonas, which can survive reprocessing. Considering the narrow lumens and complexity of channels, flexible bronchoscopes are hardly sterilised, favouring biofilm formation of different MDR organisms such as Mycobacterium, Pseudomonas, and Acinetobacter. Inadequate drying after use and during storage further elevates infection risks.

It is difficult to evaluate MDR-TB by bronchoscopy when the bacterial load is low. Molecular diagnostics, notably nested TB PCR on bronchoalveolar lavage fluid, can detect TB and resistance to rifampicin and isoniazid very rapidly. The real-time PCR is highly sensitive (86–100% for rifampicin; 76–94% for isoniazid) and specific (95–100%), with results obtained in less than two hours.

On the other hand, DST or culture and sensitivity remains the ideal gold standard. The MGIT 960 liquid culture system offers over 95% accuracy and a much faster turnaround time than that achieved with solid media.

Methods

Standard departmental protocol specifies that seven lavage samples from patients undergoing bronchoscopy should be submitted for microbiological evaluation of re-processing efficacy. The first was that of a 17-year-old patient of MDR-TB under therapy. The next six patients did not have clinical and radiological suspicion of TB (indications being bronchiectasis, SOL, COPD, pneumonitis) and went on for bronchoscopy with the same instrument after its re-processing. All BAL samples underwent routine culture, rapid TB culture (MGIT 960), Nested TB PCR (GeneXpert), and Gram as well as Ziehl–Neelsen staining. Bronchoscopes were reprocessed preceding each procedure as per standard operating protocol.

Results

BAL fluid samples of 7 clinically unrelated patients, undergoing bronchoscopy, had yielded Mycobacterium tuberculosis (RIF-R), at a very low concentration via Nested TB PCR and MGIT 960 rapid culture. In all 7 cases, a single flexible bronchoscope had been used. The bronchoscope had been reprocessed after each use. All except the first patient had no suspicion of TB. The index case, however, was a known MDR TB patient on ATD medication.

During detailed inquiry, the following gaps were found :

1. During leakage testing, the bending section was not angulated and was observed only for a few seconds, not 30 seconds as recommended by the manufacturer.
2. Before high-level disinfection by ortho-phthalaldehyde, internal lumens were not washed with alternate suction using water and air.
3. Before storage, the channel interiors were not dried by alcohol purging as per the recommendation.

Following the reprocessing of the bronchoscope with careful and supervised emphasis on the gaps present previously, 3 wash samples were sent for GeneXpert and BACTEC MGIT rapid TB culture. All 3 of these samples came back negative for Mycobacterium tuberculosis.

SERIAL NO	PATIENT	INDICATION FOR BRONCHOSCOPY	GENEXPERT OF BAL	MGIT 960 (upto8 wks)	MGIT 960 (8-12 wks)
1	A	MDR TB	+ve	+ve	+ve
2	B	Bronchiectasis	+ve	-ve	+ve
3	C	SOL lung	+ve	-ve	+ve
4	D	Chronic Bronchitis	+ve	-ve	+ve
5	E	SOL lung	+ve	-ve	+ve
6	F	Pneumonitis	+ve	-ve	+ve
7	G	COPD	+ve	-ve	+ve

Table No.1

Discussion

One of the upstream issues related to breaches in bronchoscope reprocessing was detected when nested TB PCR and prolonged MGIT 960 methods found rifampicin-resistant Mycobacterium tuberculosis from six patients whose TB was never suspected after use of the bronchoscope on an MDR-TB case. Flexible bronchoscopes carry a very high microbial bioburden, especially in suction channels. Hence, proper cleaning is required to reduce contamination by 4-6 $\log_{10}$ before the subsequent high-level disinfection (HLD). Failure to flush lumens adequately and omit alcohol purging during drying cycles led to incomplete decontamination. The processes for rinsing and storage were all acceptable, yet those breaches still allowed cross-contamination. Stringent adherence to SOP practices and re-processing under Infection Control surveillance returned negative results. The team recommended adopting Automatic Endoscope Re-processors (AER) for standardisation of procedures and prevention of human error. Nested TB PCR, highly sensitive detection (86-100%), allowed for detecting low concentrations of bacilli, which MGIT culture then confirmed, but needed long incubation beyond 12 weeks. Without PCR, the breach so devastating to safe bronchoscopy practices would have gone undetected.

Conclusion

Our study aimed to establish the following facts:

- Lapses in re-processing of bronchoscopes can be accurately identified with the help of GeneXpert MTB/RIF and corrective action can be taken in a quick time.
- Stringent measures should be implemented to ensure proper, SOP-based, decontamination of bronchoscopes and other semi-critical or critical devices.
- Random sampling at regular intervals should continue to be done to ensure safe bronchoscopy practices.
- The need for establishing a bronchoscope surveillance protocol, especially in high TB burden countries, to curb the risk of spread by bronchoscopes, is very great.

Reference

1. Revised National Tuberculosis Control Programme Guidelines on Programmatic Management of Drug Resistant TB (PMDT) in India www.tbcindia.nic.in - See more at: http://www.tbfacts.org/drug-resistant-tb-in-india/#sthash.gRloG5ye.dpuf
2. TB India 2015 Revised National TB Control Programme Annual Status Report, New Delhi, 2015 www.tbcindia.nic.in
3. Bhargava, A "The Revised National Tuberculosis Control Programme in India: Time for revision of treatment regimens and rapid upscaling of DOTS-plus initiative", Medicine and Society www.ncbi.nlm.nih.gov/pubmed/19267041
4. Revised National Tuberculosis Control Programme National Strategic Plan 2012-2017
5. J.Kovaleva, F.T.M.Peters, H.C.Van der Mei, J.E.Degener. 2013. Transmission of Infection by Flexible Gastrointestinal Endoscopy and Bronchoscopy. Clin Microbiol Rev. 2013 Apr; 26(2): 231–254.
6. Buss AJ, Been MH, Borgers RP, Stokroos I, Melchers WJ, Peters FT, Limburg AJ, Degener JE. 2008. Endoscope disinfection and its pitfalls—requirement for retrograde surveillance cultures. Endoscopy 40:327–332 [PubMed]
7. Alvarado CJ, Reichelderfer M. 2000. APIC guidelines for infection prevention and control in flexible endoscopy. Association for Professionals in Infection Control. Am. J. Infect. Control28:138–155 [PubMed]
8. Kulka.K, Hatfull.G, Ojha.A.K. 2012. Growth of Mycobacterium tuberculosis biofilms. J Vis Exp. 2012 Feb 15;(60). pii: 3820. doi: 10.3791/3820.

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Stories of Hospital Housekeeping - The Unseen Infection Control Warriors

The Hospital Infection Control (HIC) Committee of Sankara Eye Foundation

"I'm helping put a man on the moon." This is an anecdote of an interaction by JFK with a janitor at NASA.

In community health care settings, where large volumes of patients are served daily, housekeeping is an integral backbone of infection prevention and control. Their dedicated efforts maintaining cleanliness, ensuring OT sterility not just helps prevent surgical site infections (SSIs) but form the foundation of safe and effective healthcare delivery. They are key to us eliminating needless blindness from India.

Mr. Tarun Kumar: Dedication to Hygiene and Patient Care

Tarun Kumar, a valued member of the housekeeping team, describes his journey as one of growth and responsibility. "I am proud that I contribute to maintaining hygiene in the hospital. Every day, I strive to do my work better." He highlights that the proudest moments are when patients feel cared for and safe. Challenges such as deep cleaning, OT cleaning, and infected room management remain part of his daily routine, yet he approaches them with commitment and resilience.

Ms. Rabiya: A Decade of Service to Patient Safety

Rabiya has devoted more than ten years to hospital housekeeping. For her, cleanliness is directly linked to patient safety: "I've realised how crucial cleanliness is in a hospital setting. I'm passionate about ensuring every patient and visitor feels safe." She emphasises the critical role of housekeeping in preventing hospital-acquired infections and supporting the recovery of patients. Her biggest challenge is maintaining thorough cleaning in the midst of high patient volumes, but teamwork and discipline allow her to succeed.

Shared Values Across the Housekeeping Team

Our housekeeping champions, like Mr. Nishant Patel, often face difficulties, such as visitors not adhering to cleanliness norms. Yet they take pride in knowing their work ensures no patient or staff member suffers due to lapses in hygiene. Their collective message is inspiring: "Be interested in your work, avoid conflicts, and perform your duties with honesty. Every effort in cleanliness saves lives."

Take home message

On behalf of the HIC Committee of Sankara Eye Foundation India, we recognize housekeeping staff as true partners in infection control. Their unseen but essential contributions prevent SSIs, safeguard patients, and uphold the trust communities place in healthcare institutions. It is time we continue to celebrate and empower these unsung heroes—the backbone of infection prevention in community hospitals.

Recognition Programs for Housekeeping Staff

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Background and Rationale

When was the last time we paused to recognize the silent workforce that keeps our hospitals safe? While doctors and nurses are often celebrated for their lifesaving roles, the housekeeping staff, who form the first line of defence against hospital acquired infections (HAIs) remain largely invisible. From disinfecting isolation rooms to safely managing biomedical waste, their work underpins every dimension of patient safety and infection prevention. Yet, despite this indispensable contribution, housekeeping staff frequently go unnoticed, leading to low morale, high attrition, and compromised performance.

Recognition programs provide a structured method to acknowledge, motivate, and retain this critical workforce. By aligning recognition with organizational objectives, healthcare institutions can strengthen infection control, improve compliance, and build a culture of safety.

Scientific Basis and Theoretical Underpinnings

Why recognition work better than a salary increments or strict supervision? The answer lies in psychology and organizational science, where recognition has consistently emerged as a high impact motivator. Theoretical frameworks provide a lens to understand why acknowledgment is so powerful:

1. **Maslow's Hierarchy of Needs:** Beyond food, shelter, and safety, individuals yearn for belonging, esteem, and self actualization. Recognition directly satisfies esteem needs by validating competence and contribution [1]. For housekeeping staff, being acknowledged as "infection control partners" elevates their identity within the hospital ecosystem.
2. **Herzberg's Two-Factor Theory:** Herzberg distinguished between hygiene factors (salary, working conditions) and motivators (recognition, achievement). While wages prevent dissatisfaction, it is recognition that drives motivation and performance [2]. This explains why a "Housekeeper of the Month" award can inspire more compliance than routine wage hikes.
3. **Organizational Justice Theory:** Perceptions of fairness are central to workforce morale. Transparent recognition based on objective audits and safety compliance creates trust and reduces attrition [3]. For staff at the lowest rungs of hierarchy, fairness in recognition is not just motivational, it is dignifying.
4. **Social Exchange Theory:** Workplaces thrive on reciprocity. When institutions value housekeeping staff, they reciprocate through loyalty, reliability, and higher adherence to infection control protocols [4]. Recognition, in this sense, becomes an investment in organizational resilience.
5. **Self-Determination Theory (SDT):** Recognition nurtures intrinsic motivation by reinforcing autonomy, competence, and relatedness [5]. When a housekeeper receives a certificate for infection control excellence, it reinforces their professional identity not just as "cleaners," but as integral patient safety actors.

Together, these theories show that recognition is not sentimental, it is scientifically grounded, with direct links to improved performance, morale, and patient outcomes.

Recognition Strategies for Housekeeping Staff

How can hospitals move from theory to practice? Recognition strategies must be **low cost, sustainable, and culturally sensitive,** while directly linking acknowledgment to patient safety indicators. A structured framework can be applied across **individual, team, and organizational levels:**

1. Individual-Level Recognition

- **Spot Awards:** Quick certificates or badges given by supervisors when staff demonstrate exceptional compliance.
- **Skill Badges:** Visible recognition like "Hand Hygiene Star" or "Biomedical Waste Champion" displayed on uniforms.
- **Performance Boards:** Photos and names of recognized staff displayed in wards or staff areas.

2. Team-Level Recognition

- **Unit Awards:** Recognizing entire housekeeping teams if their ward achieves 100% environmental cleaning audit compliance.
- **Collective Celebrations:** Small gatherings with refreshments where nursing and medical staff publicly thank housekeeping teams.
- **Peer Recognition:** Nurses and infection control officers nominate housekeeping staff for monthly "Support Excellence" awards.

3. Organizational-Level Recognition

- **Annual Safety Awards:** Recognizing staff during infection control or patient safety week in front of the entire hospital.
- **Policy Committee Involvement:** Inviting senior housekeepers to safety committees, giving them visibility and voice.
- **Certification Programs:** Awarding "Infection Safety Certified Housekeeper" certificates, linked with competency training.

4. Non-Monetary Tangible Rewards

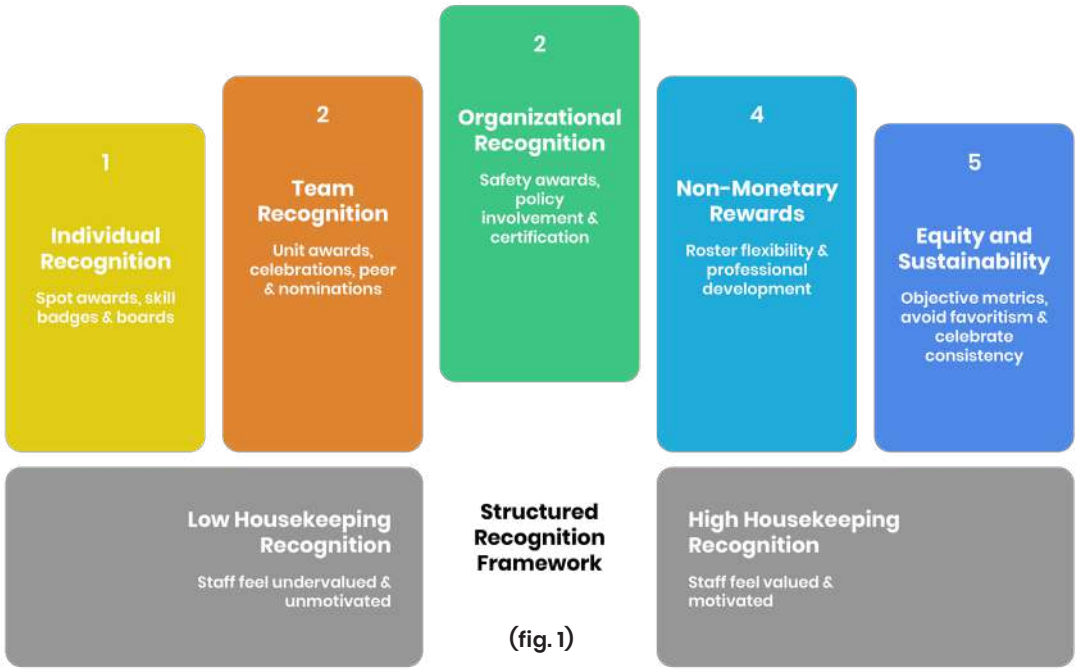
- **Roster Flexibility:** Recognized staff may get priority in shift/leave preferences.
- **Professional Development:** Access to external training or exposure visits.

5. Equity and Sustainability

- Recognition should be based on **objective metrics** (audit scores, incident reports).
- Avoid favouritism by **rotating recognition**.
- Celebrate not only "stars" but also **consistent performers**, reinforcing reliability as equally valuable.

This framework (fig. 1) ensures recognition is not sporadic or symbolic but must be embedded in the daily culture of patient safety.

Implementing Effective Housekeeping Recognition



(fig. 1)

Practical Considerations in Implementation (fig. 2)

What challenges might hospitals face in implementing recognition programs?

- **Objectivity:** If recognition is subjective, it risks creating resentment. Hence, linking recognition to measurable safety indicators (audit scores, training completion, compliance rates) is critical
- **Equity:** Over recognition of a few "visible" workers may demotivate others. Balanced and transparent processes are essential
- **Cultural Sensitivity:** In collectivist Asian contexts, team based recognition often has more resonance than individual awards
- **Integration with Training:** Recognition should reinforce training outcomes e.g., acknowledging staff after successful IPC (Infection Prevention &

Control) workshops

- **Sustainability:** Programs should be cost neutral and policy backed, ensuring continuity beyond leadership changes

(fig. 2)

Conclusion

Can patient safety ever be complete if the very workforce safeguarding hygiene remains invisible? Housekeeping staff are indispensable to infection prevention, yet their contributions often go unrecognized. Recognition programs scientifically grounded in motivation and organizational theories offer a practical, sustainable pathway to elevate morale, reduce attrition, and improve compliance with infection control protocols.

Studies in Indian hospitals highlight that acknowledgment of housekeeping staff improves both morale and performance, leading to cleaner environments and reduced HAI incidence [6]. Recognition has been linked with higher job satisfaction, reduced absenteeism, and better compliance with infection prevention protocols. Importantly, recognition not only enhances morale but has also been empirically associated with improved compliance to infection prevention practices and lower rates of environmental contamination [7].

By embedding recognition into organizational culture, healthcare institutions not only affirm the dignity of their most overlooked workforce but also strengthen their own resilience. In the end, **recognition is not a luxury or a token gesture it is a strategic tool for safer healthcare systems**.

References

1. Maslow AH. A theory of human motivation. Psychol Rev. 1943;50(4):370-96. doi:10.1037/h0054346. Available from: https://doi.org/10.1037/h0054346
2. Herzberg F, Mausner B, Snyderman BB. The Motivation to Work. New York: Wiley; 1959. Available from: https://archive.org/details/motivationtowork00herz
3. Colquitt JA, Conlon DE, Wesson MJ, Porter COLH, Ng KY. Justice at the millennium: A meta-analytic review of 25 years of organizational justice research. J Appl Psychol. 2001;86(3):425-45. doi:10.1037/0021-9010.86.3.425. Available from: https://doi.org/10.1037/0021-9010.86.3.425
4. Cropanzano R, Mitchell MS. Social exchange theory: An interdisciplinary review. J Manage. 2005;31(6):874-900. doi:10.1177/0149206305279602. Available from: https://doi.org/10.1177/0149206305279602
5. Deci EL, Ryan RM. Self-determination theory: A macrotheory of human motivation, development, and health. Can Psychol. 2008;49(3):182-5. doi:10.1037/a0012801. Available from: https://doi.org/10.1037/a0012801
6. World Health Organization India. Infection prevention and control in India. Geneva: WHO; 2024. Available from: https://www.who.int/india/health-topics/infection-prevention-and-control
7. Albright J, de Oliveira F, Kumar S. Recognizing hospital cleaning staff improves compliance with infection prevention: a systematic review. J Hosp Infect. 2021;115:1-9. doi:10.1016/j.jhin.2021.05.005. Available from: https://doi.org/10.1016/j.jhin.2021.05.005

Cognitio Leges

POCSO Act and Medical Care for Survivors of Sexual Violence – Part 3

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This issue will continue to clarify practical queries related to the management of survivors of sexual violence.

Q 1. Is it necessary to collect all medical evidence in all cases of sexual violence, even when there is a delay in reporting after the alleged sexual violence?

Ans: The collection of medical evidence depends on several factors, including the nature of the sexual violence, the actions taken by the survivor after the incident, and the timing of the medical examination. For instance, the type of evidence collected may differ depending on whether the sexual violence involved penetration or not, whether it was penile or non-penile, which body orifice was affected, and whether ejaculation occurred. Additionally, post-violence behaviours such as bathing, douching, washing, urination, or defecation can impact the availability of medical evidence. Timing is also crucial: if the survivor reports the incident within 12 to 24 hours, swabs should be collected to look for motile sperm. If the survivor reports to the hospital within 96 hours, swabs can still be taken to check for evidence of semen. However, if the survivor seeks medical help four to five days after the incident, swabs for semen, blood stains, or lubricant can still be collected. It is also important to gather clothing worn at the time of the assault, even if the medical examination is delayed. Any trace evidence, such as loose hair, buttons, or nail clippings, should be collected during the examination if available. For more detailed information, please refer to the Ministry of Health & Family Welfare (MoHFW) Guidelines and Protocols for medico-legal care for survivors and victims of sexual violence.[1]

Q 2. What is the relevance of Medical Opinion in sexual violence vis-à-vis Current Law?

Ans: The new criminal law, the Bharatiya Nyaya Sanhita (BNS) 2023, has replaced the Indian Penal Code[2]. It expands the definition of rape to include both penetrative and non-penetrative acts. This includes penetration into orifices such as the anus, mouth, urethra, or vagina by either the penis, objects, or body parts (such as fingering). These changes reflect the amendments made through the Criminal Law Amendment of 2013. It's important to recognise that in cases of non-penetrative sexual violence or when penetration involves objects or body parts, there may be no or less medical evidence available. This understanding is crucial for doctors, police, lawyers, courts, and all other stakeholders involved in delivering justice to survivors and victims of sexual violence.

Q3. How should the doctor respond to the police requisition asking to find out whether the person is 'habituated to sex' after a medical examination of the person?

Ans: Section 149 of the Bharatiya Sakshya Adhiniyam (BSA) prohibits questioning the victim about her general moral character or previous sexual experiences to establish consent or its quality during cross-examination.[3] This means that past consensual sexual acts are irrelevant when examining the current act of sexual violence. Old injuries should only be documented in cases of chronic sexual abuse. Therefore, a doctor is not required to provide an opinion in response to police inquiries about whether the survivor is "habituated to sex." Despite the Supreme Court's prohibition on questioning a woman's past sexual history, some doctors still engage in insensitive practices, such as the two-finger test (virginity test) which have been declared as unconstitutional.[4,5] The healthcare professionals should be mindful of the fact that these tests are not only irrelevant to the current incident of sexual violence, but performing a two-finger test could be considered contempt of court, and the doctor could also face charges of professional misconduct. Hence, doctors could inform the police that such tests are unconstitutional as per the apex court's directives.

Q 4: Should a doctor give a provisional opinion in every case examined?

Ans: Whenever a doctor identifies positive examination findings—such as injuries, sexually transmitted infections (STIs), or a wet smear test that shows spermatozoa—they should provide a provisional opinion immediately. It's important to note that in some cases of medical examination, there may not be any positive findings to suggest sexual violence has occurred. This can occur due to factors such as delays in reporting for the medical examination, activities following the assault, the nature of the sexual violence, and the facilities available at the time of examination. However, providing a provisional opinion is crucial; without it, the investigating officer may struggle to frame charges against the accused or to make an arrest. For further details about the drafting of provisional opinion, please refer to the MoHFW Guidelines and Protocols for medico-legal care for survivors and victims of sexual violence.[1]

Q 5: What should the doctor or a hospital do in case there is a delay on the part of the Police in collecting the sealed evidentiary materials or packets?

Ans: The doctor should always pack, seal, and label all evidentiary materials and packets before handing them over to the police, along with a detailed report. This is necessary for onward transfer to the Forensic Science Laboratory (FSL) for testing and analysis. If there is a delay in the collection of these evidentiary materials by the police after the medical examination, the doctor can send a reminder letter to the police to expedite the process. If the police continue to fail in collecting the materials, a letter should then be addressed to their superior officers (Superintendent of Police of the concerned district), explaining the urgent need for the prompt collection of these evidentiary materials and packets from the doctor or hospital for transfer to the appropriate laboratories.

References

1. Ministry of Health and Family Welfare, Government of India. Guidelines and Protocols for Medico-Legal Care for Survivors/Victims of Sexual Violence. 2014. Available from https://mohfw.gov.in/sites/default/files/953522324.pdf
2. The Bharatiya Nyaya Sanhita 2023 (Act No. 45 of 2023)
3. The Bharatiya Sakshya Adhiniyam, 2023 (Act No. 47 of 2023)
4. Lillu @ Rajesh vs State of Haryana 2013 INSC 243
5. State of Jharkhand vs Shailendra Kumar Rai @ Pandav Rai 2022 INSC 1139

A Soldier, A Nurse, A Leader: Col. Binu Sharma's Journey of Courage and Compassion


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From the disciplined ranks of the Armed Forces to the boardrooms of healthcare leadership, Col. Binu Sharma has walked a remarkable path. Today, as CEO of INS India, she is a torchbearer of infusion safety and a national voice for nurses. In this conversation, she shares her journey, milestones, and vision for nursing's future.

Shaped by the Armed Forces

Sharma noted that her military background instilled discipline, resilience, and a deep sense of responsibility. "Leading from the front, staying calm under pressure, and putting the team first are lessons I carry every day," she explained. As CEO of INS India, these values have translated into strong systems, high standards, and a culture of accountability always paired with compassion, because in healthcare, empathy and safety must walk hand in hand.

From Bedside to National Leadership

Her journey began in critical care, where she sharpened her clinical skills and confidence. Moving into leadership with large healthcare chains, she built systems, policies, and competency frameworks that prepared her for national impact.

The COVID-19 pandemic, she recalled, was a defining test. Guiding thousands of nurses through uncertainty, ensuring safety while sustaining quality care, demanded resilience and vision. Recognitions such as the Commendation Medal, Mother Teresa Award, and the Nightingale Award for Nursing Leadership are reflections of this commitment.

Strengthening the Nursing Voice

Sharma emphasized that nurses are the backbone of healthcare, yet their voices remain underrepresented. Her mission is to create structured pathways for leadership through certifications, competency frameworks, and continuing education.

"Empowerment comes from strong foundations, core competencies, visibility, and recognition," she said, highlighting awards such as the Torch Bearer for Nursing Leadership and Woman of Excellence Award as symbols of progress. She urged nurse leaders to collaborate with other healthcare professionals to shape policy and healthcare transformation.

INS India: Milestones and Frontiers

Among her proudest achievements is the INFUZE Certification, now helping hospitals nationwide adopt safe infusion practices. Building state and city chapters has been another milestone, engaging nurses directly at the grassroots level.

Looking ahead, she envisions digital nursing education, advanced skills in vascular access, and global standards integrated into everyday practice. Initiatives like Skillathons in infusion therapies and training final year students on essential skills are bridging the gap between academics and practice.

Advice to Young Nurses

Her message to aspiring leaders is clear: *"Master your basics, keep learning, and lead with empathy."* She encourages nurses to seek mentors, embrace challenges, and invest in their growth. Reflecting on her own journey from a small village to Armed Forces leadership, she shared her mantra:

"True leadership is about creating more leaders, not followers.

Balancing Discipline, Compassion, and Innovation

Sharma explained that discipline and compassion are not opposites but complements. Military precision gave her structure, while nursing reminded her of empathy and human connection. Innovation, she added, ties it all together whether through digital initiatives, competency frameworks, or certifications. This balance has allowed her to drive both transformation and trust.

A Call to the Nursing Fraternity

Closing with a powerful message, she urged nurses to embrace pride in their profession:

"*Nursing is not just a profession, it is a movement of courage, compassion, and change. Each of us has the power to transform healthcare. Stand tall, claim your space, and push boundaries.*" She encouraged the next generation to equip themselves with digital, financial, and analytical skills, noting that awards like the Topmost Healthcare Leader and Nursing Icon Award are not just personal milestones but symbols of what the profession can achieve. "*The future of healthcare will be incomplete without strong, empowered nurses leading the way.*"

Quick Highlights

Leadership Mantra: Create more leaders, not followers.

- Key Awards: Commendation Medal, Nightingale Award, Mother Teresa Award, Torch Bearer Award, Woman of Excellence, Nursing Icon Award.
- Vision: Nurses as decision makers in healthcare, empowered through competency, visibility, and recognition.
- Signature Initiatives: INFUZE Certification, Skillathons, Digital Nursing Education, Student Engagement Programs.

Persistence, Partnership, and Prevention

Standing UPPP Against Infections

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The healthcare community today stands at a decisive crossroad. On one side is the growing threat of antimicrobial resistance (AMR) and preventable infections; on the other, an opportunity to unite, innovate, and take decisive action. The theme of International Infection Prevention Week (IIPW) 2025—"STAND UPPP for Infection Prevention" calls on professionals, policymakers, and the public to rise together. UPPP represents Unity, Preparedness, Prevention, and Protection, and it perfectly echoes the ongoing global momentum to empower, educate, and eliminate.

Empowering Stakeholders at Every Level

Empowerment is the first step in sustainable infection prevention and antimicrobial stewardship. For healthcare workers, this means ensuring access to evidence-based guidelines, tools for surveillance, and platforms for sharing best practices across departments. Interdepartmental collaboration between clinicians, microbiologists, infection prevention specialists, pharmacists, and nursing staff creates a safety net that strengthens both patient outcomes and institutional resilience.

Empowering patients is equally vital. From understanding when antibiotics are truly needed to embracing preventive measures such as hand hygiene and vaccination, patients play a frontline role in infection control. Policymakers, too, must be empowered with data-driven insights to strengthen legislation, resource allocation, and monitoring frameworks that safeguard public health.

Educating for Awareness and Change

Awareness and training form the backbone of infection prevention. Hospitals and community health programs are increasingly investing in capacity-building workshops for healthcare professionals and laypersons alike. Simulation-based training on proper use of personal protective equipment (PPE), hand hygiene audits, and antimicrobial stewardship rounds have shown measurable improvements in adherence.

Public education is just as critical. Misuse of antibiotics often driven by misconceptions and self-medication continues to fuel AMR. Targeted campaigns through schools, workplaces, and media platforms can reshape behaviors and build a culture of prevention. Initiatives that demystify antimicrobial stewardship in simple language are helping communities recognize their role in protecting these precious drugs for future generations.

Eliminating Risks Through Innovative Practices

The elimination of preventable infections requires both vigilance and innovation. Ground level initiatives such as point-of-care diagnostic tools, automated disinfection technologies, and real-time infection surveillance systems are reshaping hospital safety. Collaborative audits between departments help identify gaps and implement corrective measures swiftly.

Infection prevention extends beyond the hospital walls. Public health initiatives such as clean water access, sanitation drives, and vaccination campaigns are crucial in reducing infection burdens at the community level. The renewed emphasis on adult vaccination against influenza, pneumococcal disease, hepatitis, and other preventable illnesses is particularly significant. Adult immunization not only protects individuals but also reduces the spread of infections within families, workplaces, and vulnerable groups.

Lessons From the Frontline: Persistence and Proactivity

From personal experience, persistence and proactivity

are far more effective than reacting to problems after they occur. Infection control succeeds when it is seen not as a policing exercise but as genuine involvement in patient care. When treating teams feel supported rather than monitored, collaboration becomes natural and outcomes improve.

Having open dialogues with every stakeholder and offering prompt, constructive feedback have proven to be true game changers. Ground level corrections whether it is reminding staff about hand hygiene, ensuring proper device care, or addressing small but recurring lapses can make a profound difference. Most importantly, when each individual, from housekeeping staff to senior consultants, feels how important they are in the bigger picture, their ownership and pride in infection prevention become the strongest complement to institutional goals.

Interdepartmental Collaboration: A Unified Shield

No single department can fight infections in isolation. The strength of infection prevention lies in coordinated teamwork. For example, pharmacists monitoring antibiotic usage, nurses reinforcing hand hygiene compliance, microbiologists detecting resistant pathogens early, and administrators ensuring adequate resources, all these roles weave together into a unified shield of protection. Case studies have shown that hospitals with strong interdepartmental collaboration report significantly fewer healthcare associated infections and reduced antimicrobial misuse.

The Power of Patient Awareness

Patients today are more informed and engaged than ever before. Hospitals that encourage shared decision making, where patients are educated about infection risks, preventive measures, and the importance of completing prescribed treatments see higher adherence and lower readmission rates. Interactive patient education sessions, bedside posters, and digital engagement platforms are transforming patients from passive recipients into active partners in infection prevention.

Public Health Initiatives: Communities in Action

Across the globe, public health campaigns are leveraging community networks to spread infection prevention messages. School-based hygiene programs, vaccination drives in rural settings, and digital campaigns on antibiotic use are amplifying reach. Partnerships between healthcare institutions and community organizations have proven particularly effective in tackling misinformation and ensuring equitable access to preventive services.

Standing Together: The Way Forward

The fight against antimicrobial resistance and preventable infections is not confined to laboratories or hospitals, it is a societal responsibility. The 2025 IIPW theme, "STAND UPPP for Infection Prevention", is a timely reminder that unity and proactive action are our strongest defenses. By empowering every stakeholder, educating for lasting behavior change, and eliminating risks through collaboration and innovation, we can safeguard the future of healthcare.

Antimicrobial resistance threatens to reverse decades of medical progress. Yet, with empowered professionals, informed patients, persistent efforts, and strong interdepartmental collaboration, we have the tools to turn the tide. The time to act is now: to empower, to educate, and to eliminate.

Picture Crossword

Cracking the Code

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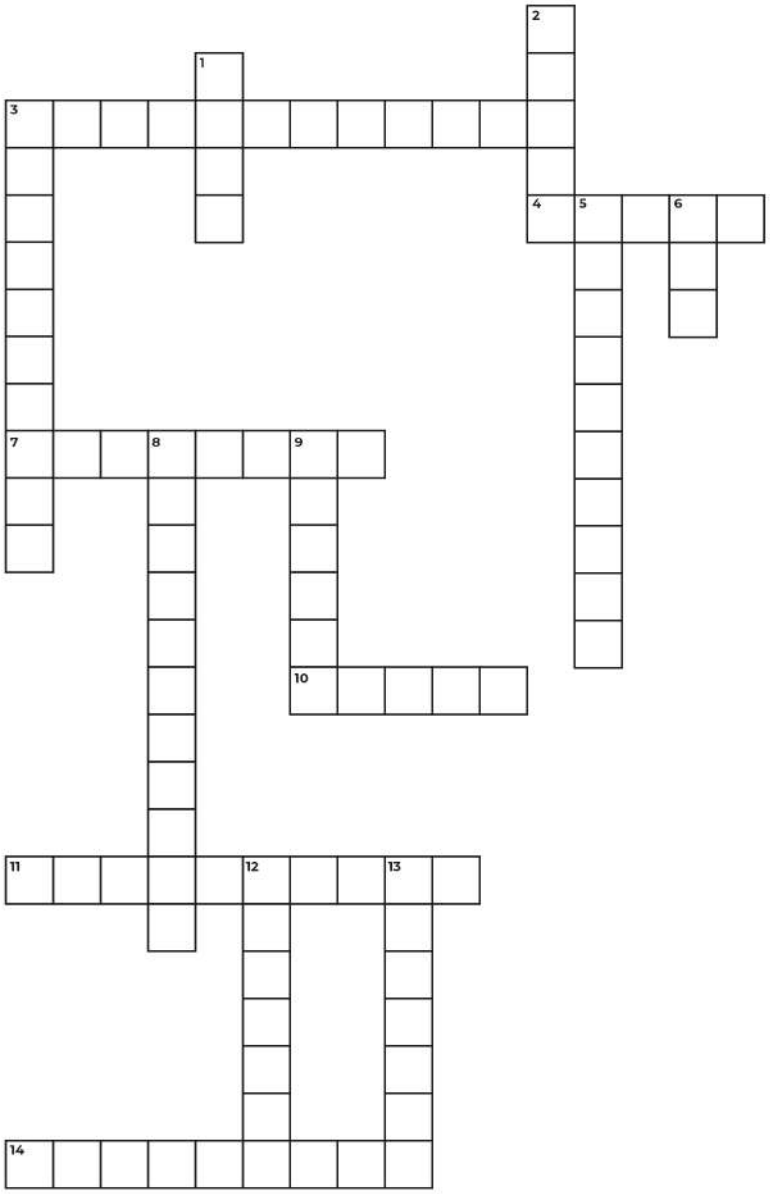

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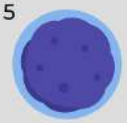
5 

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From Prescription to Healing: Understanding and Preventing Medication Errors

Healthcare is an intricate world in which every pill, every dosage, and every instruction weighs in. They are meant to heal; however, in wrong doing or any sort of misuse, they can cause horrible consequences, including injuries and sometimes even death. Medication errors do not just occur by accident; medication errors are preventable incidents that may occur through the drug therapy process, from diagnosing to the prescribing stage, preparation stages, dispensing, and administration.

Thus, Are You Ready To Stay Cautiously Working in Every Step?

Medication Error

A medication error refers to any preventable event that can lead to the use of a medication incorrectly or result in possible harm to the patient during the time the medication is in the custody of the healthcare professional, patient, or consumer.

Steps in Drug Therapy:

1. Diagnosis
2. Prescription
3. Drug dispensing by a pharmacist
4. Drug administered
5. Patient gets well

Therefore, an error at any step can potentially be injurious.

Prescription Errors – The First Domino

Founded to cater for errors in prescribing medicines, prescription errors account for close to 70% of all medication errors that cause untoward effects. A prescription error develops from either a slip, a lapse, or a straightforward nuance in judgment that is usually avoidable. Human factors are crucial in this area.

The golden rule in prescribing—known as the "5 Rights"—remains a timeless safeguard:

- Right patient
- Right drug
- Right dose
- Right route
- Right timing (frequency & duration)

Transcription Errors

Such discrepancies take place when pharmacists or physicians analyse medication orders from sheets to nursing documentation forms. Reported to constitute 11–12% of errors in hospitalised patients, transcription mistakes may include:

- Wrong drug name or formulation
- Incorrect route or dosage
- Missed doses
- Addition of unordered drugs

Still, technology can contribute to the reduction of such risks. Computerised Physician Order Entry (CPOE) systems enhance the speed and accuracy of the process. In the case of verbal orders, safeguards like read-back verification help to decrease the chances of mishearing.

Administration Errors

Though being accurately prescribed and transcribed, errors may still arise at the final administration segment. Such errors amount to 26–38% of the hospital medication errors, the most common types being wrong timing (50%) and omitted doses (42%).

The well-known "5 Rights" apply here as well: right patient, right drug, right dose, right route, and right time. However, these lapses occur, often under pressure or distraction.

Documenting Errors

Documentation represents one of four chief elements guaranteeing safe care; yet that is when things go wrong most of the time:

Physician Perspective

1. Failure to record the medical history of the patient may lead to improper medication. Failing to document the patient's liver and renal function.
2. Failing to document allergy or potential for drug interaction.

Pharmacist Perspective

1. No document related to allergy or potential for drug interaction.
2. Improper documentation related to drug storage.
3. Improper documentation related to drug usage.

Nurses Perspective

1. Documented before administration.
2. No documentation.
3. Incorrect transcription.

All care chains are vulnerable if accurate documentation is absent.

Common Causes of Medication Errors in Paediatrics

Medication safety in children is a different ball game. Factors like age, weight, prematurity, and body surface area all come into dosing, really. Errors commonly arise from wrong calculations, the use of different dosing devices, and the presence of different formulations. This is an area where even a slight error can have wildly significant repercussions.

Strategies for Safer Care and to Avoid Medication Errors

Medication safety needs to be systemic. However, among the nursing staff, intervention can contribute much to hazard reduction:

- Adequate staffing: Sitting patient ratios in the ICU should be either 1:1 or 1:2 at most.
- Discount distractions: Nurses should avoid casual conversations during drug rounds.
- Proper storage: Drug cabinets must be well-organised and properly labelled to prevent mix-ups.
- Continual training: Pharmacology, numeracy, and dose-calculation refreshers are advantageous for nurses when making high-stakes decisions.

Future Directions and Conclusion

Medication errors remind us that healthcare is as much about precision as it is about compassion. By strengthening systems, training staff, and embracing technology, the healthcare community can transform these preventable mistakes into opportunities for safer, more effective care.

After all, behind every prescription lies not just a drug but a promise of healing.

MR. MOHAMED AARIF MA
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Sree Gokulam Healthcare Institutions
Trivandrum, Kerala

DR. LALLU JOSEPH
Secretary General, CAHO

Quality Icon of the Month: A Dialogue with Lallu Joseph on Driving Change

Quality Journey of Mr. Mohamed Aarif MA

Mohamed Aarif MA is the General Manager of quality at Sree Gokulam Healthcare Institutions, Trivandrum, Kerala. He has more than 15 years of experience in the healthcare quality field. His journey began with a strong vision and hope for meaningfully contributing toward developing standards for accrediting hospitals. Today, he has had the opportunity to gain vast experience in more than 40 NABH accreditations across various fields, such as Hospital Accreditation from the 3rd edition onward, Blood Bank Accreditation, Medical Imaging Accreditation, Emergency Certification, and even 5S Certification.

Aarif's qualifications and affiliations are a testament to his commitment to the industry. He is a Certified Internal Auditor through QCI, Certified Internal Surveyor through AACI, and an Advanced Level CPQIH professional with certification through CAHO. He is part of leadership by way of the District Representative of AHMP, and he is a life member of the organisations AHMP, CAHO, and AHPI. He trained at an Advanced-level CPQIH Program offered by CAHO, Collaborative Change Management in Healthcare program, and the Certified Executive Program in Healthcare Management.

Early Challenges in Quality Leadership

Entering his role as a Quality Manager, one of the initial hurdles he faced was acceptance and cooperation from the other departments in the implementation of accreditation requirements. This resistance was at its peak among senior professionals; the initial resistance came on account of recommendations put forth by the Quality team. It had not been an easy task to convince departments to move along with standardised processes and protocols, but Aarif continued with resolve, good communication, and by showing them how these changes really did have a marked effect on patient safety and indeed on organisational excellence.

By the time something had happened, his sincere efforts had borne the desired fruits of trust and fruitful working relationships with administrators, doctors, paramedics, and nursing staff. He also learned to involve stakeholders early and provide data-driven evidence for every recommendation from the standpoint of quality, not as a check on compliance but as a culture of collaboration. On applying such a mindset, it would be easier to implement the quality initiatives and, more importantly, build further commitment to patient-centred care throughout the organisation.

Strategies to Overcome Challenges

Since for Aarif, patience and communication are the basis of overcoming challenges in quality management, he uses this approach to assist his staff in understanding the standards, guidelines, laws, and regulations upon which quality and patient safety are established. He believes in solving problems before they arise as much as possible through periodic meetings, open feedback, and regular training programs under Learning and Development at the hospital.

The culture must be one where employees are encouraged to express their concerns and suggestions. By working on education, engagement, and inclusivity, Aarif has put together a culture where challenges are addressed together and continuous improvement is afforded priority in everyday practice.

Light Moments Along the Way

While quality management is often very serious, Aarif does remember some very funny moments. The first of these occurred in 2018 when he first started to implement standards in a 1,250-bedded medical college hospital. On the day of the initiation meeting for the assessment of accreditation, there were barely 10 doctors present, along with the Chairman and Dean of the institution. The assessors were amused by such a large gathering of only a handful of people and asked if this hospital really had so

few doctors for so large an institution. By the time of the closing meeting, however, a large number of doctors had come to present an altogether different impression.

Aarif, looking back on that experience, has described it as both funny and instructive. It had illuminated the unawareness about accreditation among some medical staff at the time. To address that, he was motivated to conduct stronger awareness sessions and involve stakeholders more in future assessments.

Impact of Accreditation on Services

For Aarif, the very nature of the environment had changed because of the accreditation standards. In the days before accreditation, staff largely relied on their knowledge and skills, as they had little training. Accreditation brought about the need for demonstrations, practical sessions, and continuing education, which equipped the staff and contributed to building a patient-centred culture.

Very quickly, patients, too, began to reap the benefits of accreditation that lifted hospital standards, instilled confidence in the services, and forged better relations with the patient, the staff, and the institute. Communication, dignity, and respect entered the realm of care experience, which raised patient satisfaction. Simultaneously, safety protocols for infection control were standardised and strictly enforced in terms of medication management and emergency preparedness. Regular audits with monitoring schemes ensured accountability, fairness, and improvement.

Rewards of Leadership in Quality

It's a very rewarding role, according to Aarif, despite the difficulty involved in trying to bring about systemic change. He believes that great leadership is that sense of purpose beyond the doing; being able to directly affect patient safety, clinical outcomes, and staff engagement.

Interacting with the culture on an organisational level excites him the most: empowering frontline staff, transforming data into meaningful action, and ensuring patients receive care with dignity and respect every time. He values the professional and personal growth gained from carrying out these responsibilities: resilience, empathy, strategic thinking, and motivating teams to be leaders.

The greatest reward is really in achieving concrete outcomes-fewer infections, safer care processes, team achievements, and simply having patients and families say "thank you." Those successes have always made the hurdles worth it for Aarif.

Quality Improvement Initiatives

Under Aarif's leadership, Sree Gokulam Healthcare Institutions have undertaken several impactful quality improvement projects:

- **Reducing Falls in Hospitalised Patients:** A fall-risk assessment tool was introduced at admission, with call bell alarms, colour-coded tags for high-risk patients, and non-slip footwear provided as needed. Staff training reinforced the protocols, leading to a 40% reduction in inpatient falls.
- **Medication Safety:** Double-check systems for high-risk drugs and standardised reconciliation at every care transition were implemented. This significantly lowered medication error rates and improved both safety and staff accountability.
- **Reducing Hospital-Acquired Infections (HAIs):** A comprehensive infection-control program introduced strict hand hygiene compliance, central line bundles, and improved environmental cleaning. The results included measurable decreases in CAUTI and CLABSI, improving patient outcomes while reducing costs.

These initiatives highlight his focus on blending evidence-based standards with practical, measurable outcomes.

Partnership with CAHO

Aarif has been a proud life member of CAHO since 2016. His first CAHOCON, in 2016, left him inspired and proud to see an entire platform set up for quality professionals. He owes much of his professional development to CAHO, which has provided the opportunities for specialised training programmes and faculty through its Centre for Quality Promotion (CQP).

In addition to these developments in himself, he has made sure that his teams, doctors, and managers go to CAHO's workshops, webinars, and educational series, so that these benefits truly permeate through the institutions he looks after. In all his earlier places, he has always encouraged hospitals to join CAHO, thereby promoting org-wide learning and exposure to national and international best practices.

This affiliation, he said, has come in handy in institutionalising structured quality initiatives, patient safety practices, and a culture of continuous improvement.

Tools, Training, and Innovations

Aarif finds much value in programs that are accredited by CAHO, case-based workshops, and simulation-based training. The CQP, with expert inputs, developed the frameworks that speak directly to the quality journey of his hospital.

He mentioned that innovations like CAHO's infection control initiatives, framework of quality improvement, and educational series are powerful tools that have allowed his teams to reduce errors, maintain improvements, and systematically enhance patient safety.

Future Goals

Looking ahead, Aarif's priorities as a General Manager of Quality are clear. His focus will be on enhancing patient safety, improving clinical outcomes, and deepening the culture of continuous quality improvement. Key goals include:

- Proactively identifying and mitigating patient safety risks.

- Strengthening staff engagement and education.
- Leveraging data analytics to monitor performance and guide interventions.
- Integrating patient feedback into care processes to ensure patient-centeredness.

By building on existing foundations while advancing new initiatives, Aarif aims to further elevate the standard of care and reinforce the institution's commitment to excellence.

In conclusion, Mohamed Aarif's life is a lovely metaphor for the very essence of quality leadership: resilience in the face of resistance, learning endlessly, and a vision firmly rooted in patient safety. It is a living reminder that accreditation is not about compliance; it is about culture, systems, and outcomes that truly transform healthcare.

MS. SUSHMA KATURI

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DR. LALLU JOSEPH

Secretary General, CAHO

Quality Icon of the Month: A Dialogue with Lallu Joseph on Driving Change

Quality Journey of Ms. Sushma Katuri

Quality in healthcare is not merely a system, nor is it a checklist for compliance. It is a philosophy, a culture, and an attitude that enshrines in all professionals the commitment to see that each patient receives Quality care coupled with safety and consistency. A multitude of professionals advocate for this cause, and the journey of Ms. Sushma Katuri, General Manager-Corporate Quality, at Krishna Institute of Medical Sciences Ltd. (KIMS) exemplifies one such powerful example driven by passion, perseverance, and leadership.

Foundations of a Quality Professional

With almost two decades of professional commitment towards excellence in healthcare quality, she has imbibed a robust academic foundation with a BBA, one Master's degree from Osmania University, a Diploma in Quality Management from IISDT, and a Diploma in Hospital & Healthcare Management from Symbiosis International University.

Her qualifications include: Certified Healthcare Quality Practitioner (CHQP) from AHPI, Certified Lead Auditor in ISO Quality Management Systems, Internal Auditor for NABH, OHSAS, ISO 15189:2022 (NABL), and FSMS 22000, Lean Six Sigma Green Belt, and Certified Internal Surveyor-American Accreditation Commission International (AACI). Each accreditation contributed a new dimension to his expertise, honing his audit, process improvement, and risk management skills.

She views quality as not something handled by one department but a shared responsibility of every person in the hospital system.

The Beginning of a Journey

The journey started back in 2007 when she joined KIMS Hospitals right after her studies. The first task offered to her was to implement ISO Quality Management Systems, something very foreign to her then.

With her spirit of Passion and Perseverance she learned the nitty-gritty of quality standards under the tutelage of Motivating Director Ms. Anita Dandamudi, Working along and coordinating with stakeholders across departments, she was able to lead the implementation of ISO successfully. The game changer was the closing meeting, wherein the Managing Director, Directors, and external auditors appreciated her for the effort bestowed by her and that of her team.

"That moment was transformative," she recalls. *"It wasn't just about implementing ISO—it was about realising the power of structured systems to change the way healthcare is delivered."*

Facing the Early Challenges

The early days of being a quality manager were far from smooth. The need to create processes ab initio, then sell them to the staff, demanded determination of highest order. Many of the clinicians and staff alike did not view quality systems as structured; they were what they called extra work. Especially hard was enveloping doctors, nurses, and many other staff with already heavy clinical duties. Yet, with steadfast efforts, numerous training courses, and an open-door policy, she was able to earn trust and spread awareness.

"Quality was never meant to be an obstacle," she emphasises. *"It was about making their work safer, easier, and more meaningful for patients."*

The Role of Accreditation

Perhaps we can say the year 2010 marked another milestone for KIMS, having the first accreditation from NABH in its tenure. Since then, the hospital has been following a structured framework that protects patients' rights, increases accountability, and standardises core clinical practices, such as informed consent.

Today, informed consent is a process, rather than a mere formality; a comprehensive explanation is given to the

patients in a language they understand, also involving the next of kin, where necessary. This has immensely improved transparency, trust, and satisfaction among patients.

It also strengthened the monitoring systems, clinical outcomes, infection prevention, and operational efficiency. With each accreditation, there was a shift in the culture of the hospital, even further from improvement.

Transformative Leadership

Over the years, the hospital experienced over 40 assessments, including more than 30 NABH and 30 ISO certifications, and several AACI surveys. But, in her view, the most rewarding is witnessing the visible change in systems and people.

From her perspective, "the most rewarding aspect is watching quality become part of everyday practice. When staff are confident to go about their processes and patients receive benefits directly, that is when you know it has all been worth the effort."

This was a proud moment when the AACI International Accreditation was attained, an achievement that was realised after years of persistence. Her quality team and she along with full management support from the hospital, made the success possible.

Driving Innovation in Quality

Innovation has been at the core of KIMS's journey toward quality improvement. A key step was the creation of a fully paperless Electronic Health Record (EHR) system. Contrary to typical systems, this EHR system captures real-time quality indicators, discharge tracers, lab and radiology reports, nursing and doctor notes, as well as incident reports.

The EHR also keeps the incident-reporting system in place and issues automatic alerts to the Quality Department whenever an issue arises. This ensures the timely activation of investigation, escalation, and corrective action, with all actions being reviewed by the Clinical Safety Committee.

Academic quality meetings are conducted weekly, with stakeholders from all units presenting their improvement projects. Projects that prove successful are then implemented in the full hospital network, and the learning is no longer confined to one unit. As a result, these innovations have reduced adverse events, improved safety, and helped improve operational efficiency.

Partnership with CAHO

She has found her professional growth anchored in her association with CAHO (Consortium of Accredited Healthcare Organisations), which has allowed her to learn from front-runners of the industry, share best practices, and keep abreast of evolving healthcare scenarios.

She has been linked with CAHO as a guest faculty member, an advisory board member, and a conference organiser, and she has taught management and healthcare at KIMS, Apollo Institute, ASCI, and Acharya Nagarjuna University. She has furthered the development of patient safety at KIMS by utilising fresh insights gained from the national projects of CAHO.

Tools that Made a Difference

The hospital's quality journey has been strengthened by several tools and methodologies, including:

- Audits and clinical safety rounds for ongoing improvement
- A root cause analysis (RCA) and failure mode and effects analysis (FMEA) approach towards risk management
- Lean Six Sigma for process enhancement
- Collection of digital dashboards and MIS reports for real-time decisions
- Incident reporting systems for safety assurance

These training programs, put together by CAHO, NABH, and international organisations, took this alignment forward for staff with global best practices.

The Road Ahead

With respect to the future, she only sees further development of patient safety culture towards embedding sustained practices on a long-term basis. Her aims are:

- Advanced analytics for enhanced outcome monitoring
- More development of digital health solutions, providing more visibility
- More infection prevention measures are being developed and rolled out across all units
- Using patient feedback as input to improvement cycles
- Roll out of accreditation to the whole hospital group
- Environmental management, including recycling and green initiatives
- Front-line staff empowered to take ownership of quality

"The ultimate goal is to position KIMS Hospitals as a benchmark for healthcare excellence," she reiterates, "where patient safety and quality care are not just priorities but rather, a way of life."

Conclusion

The story of Ms. Sushma Katuri's ascent is more than just one instance of personal achievement; it is a tribute to the transformation that quality brings to healthcare. Her journey from the modest beginnings of implementing ISO to leading many international accreditations is a living example of how orderly systems, innovative practices, and an engaged stakeholder community can transform the delivery of care.

At its most basic principle, the journey affirms that quality cannot be assigned to one department; it is the collective responsibility of all. When every individual in the hospital embraces that responsibility, it leads to not only better adherence to standards but also safer patients, empowered staff, and a stronger health-care delivery system.

DR. CHETAN GINIGERI
Program Director - Paediatrics
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Safe Care from the Start: Dr. Chetan Ginigeri's Perspective on Protecting Newborns and Children

Insights from the WPSD Podcast

In a compelling conversation with Dr. Chetan Ginigeri, an eminent paediatrician and thought leader in child health, the importance of creating safety in every aspect of paediatric and newborn care comes to the forefront. Dr. Ginigeri whose career spans frontline clinical care, community health initiatives, and advocacy for children's wellbeing, shared his perspectives and practical approaches in an exclusive interview for the CAHO newsletter, marking World Patient Safety Day's vital theme: "Safe care for every newborn and every child – Patient safety from the start."

Dr. Ginigeri's journey as a pediatrician was shaped by early exposure to the demanding, yet deeply fulfilling, world of child healthcare. Inspired by formative clinical rotations and outstanding mentors, he found his calling in a field where science meets empathy. "The experience of working in diverse community settings, contributing to national health programs, and navigating socioeconomic challenges has reinforced my commitment to both direct patient care and broader advocacy for children," he remarked.

Discussing this year's World Patient Safety Day, Dr. Ginigeri emphasized that the theme represents "a sacred responsibility" for all healthcare professionals. Children are inherently vulnerable not just due to their developing physiology but because they require care systems designed specifically around their unique needs. Protecting young patients, he asserts, is not a passive task but an active, ongoing commitment that spans from the very first moments of life through every stage of childhood.

When asked about the common risks that children face in healthcare environments, Dr. Ginigeri detailed several preventable harms. "Medication and diagnostic errors, healthcare-associated infections, misuse of medical equipment, in-hospital falls, and oversight of early warning signs in clinical deterioration are recurring concerns," he explained. Addressing these risks necessitates robust, child-focused safety checklists, continuous team training, vigilant infection control practices and a culture that values both open communication and parental involvement. "Reporting and learning from every incident is vital," he affirmed, underscoring safety as an evolving discipline rather than a static checklist.

A recurring plea in Dr. Ginigeri's discussion was the need for policymakers to take bold, child-centric action. He urged decision-makers to "prioritize child-specific safety protocols" and acknowledge the distinct physiological and developmental needs of young patients. "Children are not small adults," Dr. Ginigeri stressed. He called for dedicated funding, tailored safety standards, ongoing research, and system-wide training as prerequisites for genuine safety and meaningful outcomes.

For healthcare systems and professionals striving to operationalize safety, Dr. Ginigeri recommended key steps: designing pediatric care pathways, investing in staff education, performing ongoing risk assessments, and fostering environments that are physically and emotionally safe for children. He highlighted the importance of empowering families through clear communication, and building rapid response systems to identify and rectify hazards without delay. "Every health team member should identify deterioration early, prevent infections actively, ensure medication safety, and follow up after discharge—these are non-negotiable," he stated.

The World Health Organization's emphasis on awareness, mobilization, empowerment, and research provided another anchor for Dr. Ginigeri's reflections. Of these pillars, he identified empowerment as the most urgent for sustained impact. "Children and families must be equipped to understand and participate in every decision about their care, creating a lasting culture of safety, advocacy, and shared vigilance," he noted.

Turning to innovation, Dr. Ginigeri expressed optimism about the transformative potential of digital health, telemedicine, artificial intelligence in early risk prediction, advances in newborn intensive care, genomic therapies, and family-centered models. "Research and technology combined with relentless advocacy have the power to ensure safer and more individualized care in the coming decade," he predicted.

He also outlined actionable steps for communities to advance the cause. "Supporting local and national safety movements, educating oneself on child health rights, volunteering for advocacy, and spreading validated information especially through social media can forge a collective voice for safety," he suggested. Accountability, he argued, starts with all stakeholders: "From policymakers to frontline caregivers, and especially parents, everyone plays a role in creating safer outcomes for children".

When asked about his own approach to newborn safety, Dr. Ginigeri advocated for thorough, standardized newborn assessments, immediate infection prevention protocols, and equipping families with knowledge from the start. Trust, continuous education, and a seamless transition from hospital to home are central to his ethos.

Finally, Dr. Ginigeri highlighted the indispensable role of parents and caregivers as safety partners. "Maintaining accurate medical records, sharing concerns, adhering to infection and medication guidelines, and participating fully in care decisions create a robust safety net around every child," he concluded, inviting all stakeholders to join in this ongoing endeavour.

Through Dr. Ginigeri's pragmatic wisdom and passionate advocacy, this interview calls on healthcare teams, policymakers, and families to unite under the banner of patient safety, a commitment that begins at birth and extends throughout the continuum of childhood.

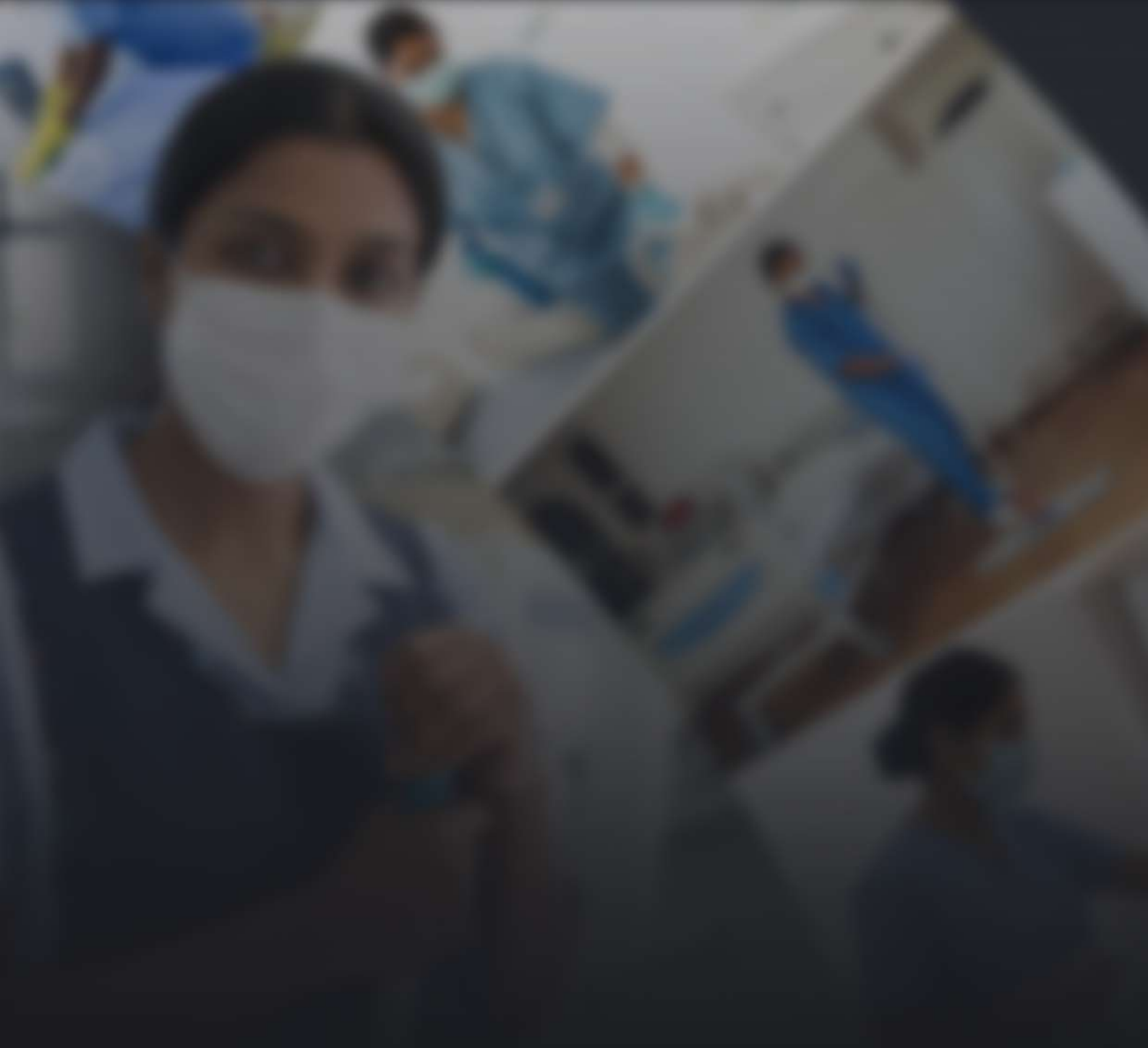
Crossword Puzzle Answers

Down

1. Data
2. Virus
3. Antibiotic
5. Lymphocyte
6. DNA
8. Temperature
9. Biopsy
12. Scalpel
13. Pipette

Across

3. Autoanalyser
4. Slide
7. Testtube
10. Yeast
11. Microscope
14. Autoclave



From Hygiene to Healing:
The Unsung Role of Housekeeping in Healthcare

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