



Healthcare



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01 - Current Risks and Problems in Existing Infrastructure

CURRENT RISKS

Hospital Acquired Infections



The Landscape of HAI Prevention in India

India's healthcare system is as diverse as its population, with facilities ranging from world-class hospitals in urban centers to basic health outposts in rural areas. This diversity presents both challenges and opportunities in the fight against HAIs. Dr. Richa Thakker, Consultant-Microbiology & Infection Control Officer, HCG Cancer Center, Mumbai, highlighted the complexities of implementing effective HAI prevention measures across such a varied landscape. "Diversity is one of the finest features of the country, India, and this is also observable in the country's healthcare industry. Most of the health facilities, specifically in the rural regions, are poorly equipped with the necessary basic infrastructure plus there is usually a lack of training and sensitization to the techniques of infection prevention and control IPC." This causes disparities in the practice of the IPC policies," she noted.

Dr. Suhas M.S., Consultant in Internal Medicine, Cytecure Hospitals further highlighted the disparity in resources across healthcare facilities: "The most significant challenge in implementing effective HAI prevention measures in India is the vast disparity between healthcare facilities. While tertiary care centers and corporate hospitals have robust infection control practices, smaller nursing homes and government hospitals often lack basic infrastructure and trained personnel."

Discussing the concerning prevalence of infections acquired from hospitals in India, Dr. D Suresh Kumar, a Surgical Oncologist, Tamil Nadu Government Multi Super Speciality Hospital, stated, "The International Nosocomial Infection Control Consortium reports that in India, there are about 9.06 hospital-acquired infections for every 1,000 ICU patient days. The infection rate can range from 4.4% to 83.09% across different hospitals in India, which is much higher compared to developed countries."

These disparities in infrastructure, resources and training create a significant hurdle in establishing consistent HAI prevention practices across the country. However, recognizing these challenges has spurred action at both governmental and institutional levels.

Confronting Hospital Infection Control Challenges in India: Insights from WHO and CDC Guidelines.

Dr. Sambhu Chakraborty, March 1, 2024

Introduction:

Hospital-acquired infections (HAIs) pose a significant threat to patient safety and public health worldwide, including in India. According to the World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC), implementing robust infection control measures is essential to mitigate the spread of HAIs and safeguard patient well-being. In this article, we delve into the specific challenges faced by hospitals in India in adhering to WHO and CDC guidelines for infection control.

Challenges Faced by Hospitals in India:

- Limited Resources:** One of the foremost challenges encountered by hospitals in India is the scarcity of resources, including personnel, infrastructure, and funds, dedicated to infection control. Many healthcare facilities struggle to allocate adequate resources to implement comprehensive infection prevention and control (IPC) programs as recommended by WHO and CDC guidelines.
- Inadequate Training and Awareness:** Another significant hurdle is the lack of sufficient training and awareness among healthcare personnel regarding infection control practices. Due to limited access to specialized training programs and continuous medical education, healthcare workers may not possess the necessary knowledge and skills to effectively prevent and manage HAIs.
- Poor Infrastructure and Hygiene Practices:** Substandard infrastructure and hygiene practices further exacerbate infection control challenges in Indian hospitals. Inadequate sanitation facilities, overcrowding, and improper waste management contribute to the transmission of infections within healthcare settings. Additionally, the lack of access to clean water and sanitation facilities hampers efforts to maintain optimal hygiene standards.

IMPACT ON PATIENTS

- Health Risks
- Financial Burden
- Emotional & Psychological Impact

IMPACT ON HOSPITALS

- Financial Loss
- Operational Burden
- Increase in Costs – Maintenance & Upkeep
- Reputation Damage
- Accreditation & Compliance Risks



40 million deaths by 2050: toll of drug-resistant infections to rise by 70%

By 2050, around 2 million people – the majority aged 70 and over – could die from drug-resistant infections each year.

PROBLEMS IN CURRENT INFRASTRUCTURE

- Mold and Fungal Growth
- Porous Surfaces Harboring Bacteria
- High Maintenance & Frequent Replacements
- Peeling Paint and Flaking of Plaster
- Moisture Traps Behind Walls
- Increase in Downtime of Activities
- Cracks in Joints
- Chemical Erosion from Excess Use of Disinfectants / Cleaning Solvents
- Biofilm Formation in Inaccessible Crevices



Painted Walls -
Mould &
Flaking



Tiles – Grout
Lines &
Breakage



Wall Vinyls –
Surface
Undulations,
Bubbling and
Peel Off



Metal Modular –
Open Joints



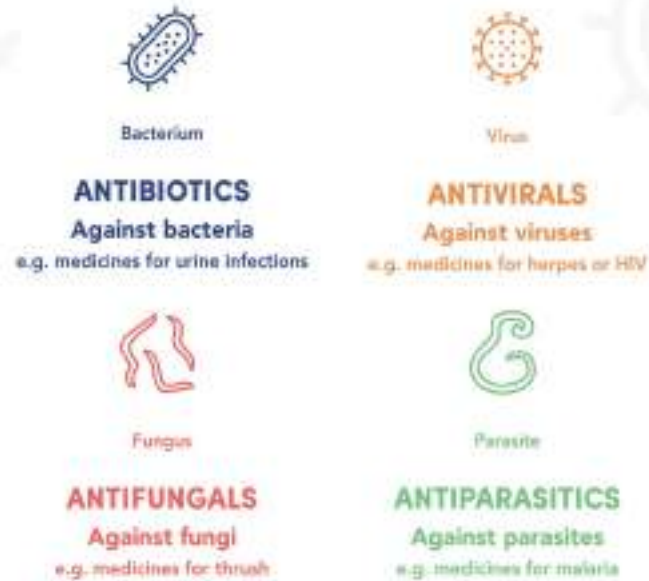
Metal Modular –
Paint Peel Off &
Denting



Metal Modular –
Cleaning Issues

02 - Difference Between Antimicrobial and Antibacterial

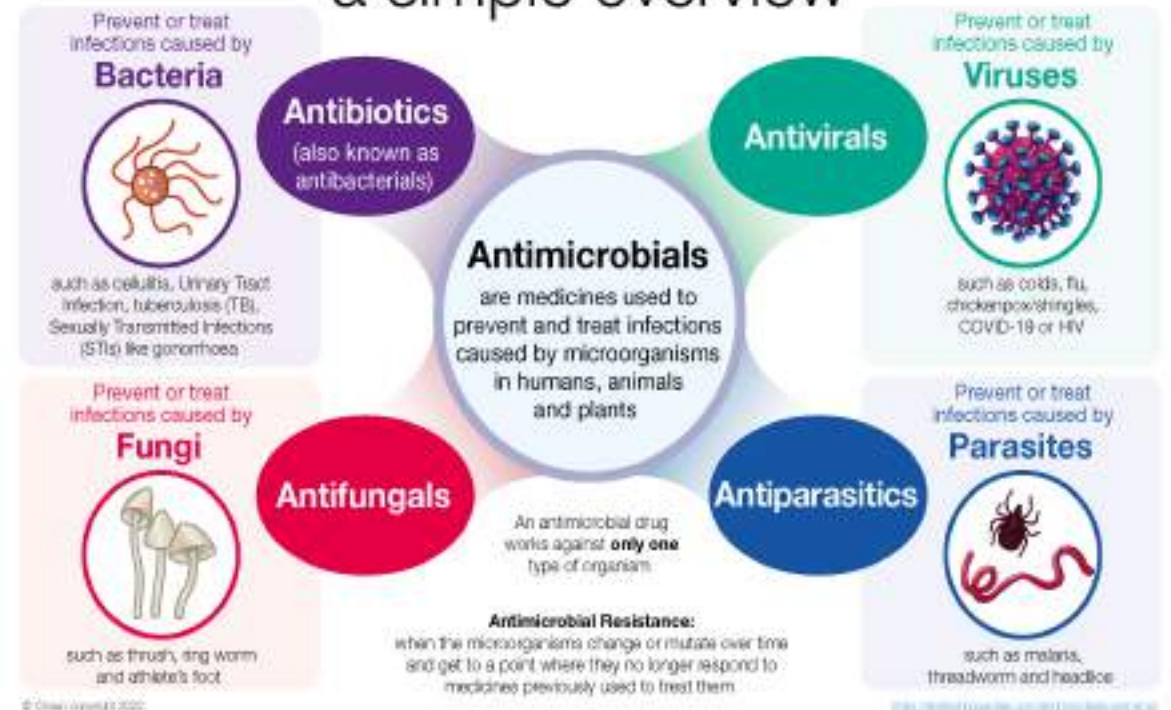
ANTIMICROBIALS



AUSTRALIAN COMMISSION
on SAFETY and QUALITY in HEALTH CARE



Antimicrobials: a simple overview



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03 – Kleenclad Solutions

SOLUTIONS



Antimicrobial Walls &
Ceilings



Medical Supply Units (MSU)



Integrated Plumbing
Systems (IPS)

SOLUTIONS



Dycem - Anticontamination
Flooring



Biovitae - Antimicrobial
Lighting



3A – Kleenclad Antimicrobial Cladding System

Performance Warranty – 30 Years *

KLEENCLAD™ ANTIMICROBIAL CLADDING

Property	Specification
Base Material	Rigid PVC (Polyvinyl Chloride, unplasticized)
Antimicrobial Technology	Silver ion (Ag ⁺) antimicrobial additive, incorporated throughout the full thickness during extrusion
Available Thickness	1.00mm ~ 12.00mm
Sheet Sizes	Up to 3050mm x 1220mm (custom sizes available)
Surface Finish	Smooth Satin (Standard), Abrasion Resistant (Textured) and High Gloss
Max. Service Temperature	60°C continuous, HDT : 70°C per ASTM D648
Min. Service Temperature	-10°C
Specific Gravity	1.46 g/cm ³ (ASTM D792)
Rockwell Hardness	R 115 (R-Scale : ASTM D785)
Tensile Strength	600 kgf/cm ² (ASTM D638)
Antimicrobial Standard	ISO 22196:2011 (IMSL, UK and India - NABL Accredited Test)
Hygiene Compliance	HACCP Approved (Food-Safe)
Fire Rating	Fire Retardant - EN 13501 B-S3-D0 , ASTM E84 Class A
Application Sectors	Hospitals Pharma Food Processing IVF Labs Cleanrooms Schools Washrooms
Performance Warranty	30 Years (Refer to Performance Warranty Certificate for details)



KLEENCLAD™ CERTIFICATIONS



APPLICATIONS – OPERATION THEATRES



APPLICATIONS – INTENSIVE CARE UNITS



APPLICATIONS – IVF LAB / CATH LAB



APPLICATIONS – STERILE CORRIDORS



KLEENCLAD™ - THE CLEAR ADVANTAGE



Seamless Thermoformed
Corners



BIOMASTER™
POLYGIENE PRODUCT PROTECTION



POWERFUL ANTIMICROBIAL ACTION
BioMaster eliminates 99.9% of microbes



LONG LASTING, 24/7 PROTECTION
Provides non-stop protection for a product's entire lifespan



SAFE TO USE IN ANY ENVIRONMENT
BioMaster contains no nanotechnology and is non-leaching

Silver Ion - Antimicrobial Technology



Fraud Detection – Laser Taggent



3B – IPS and MSU

KLEENCLAD™ ANTIMICROBIAL CLADDING

Property	Specification
Advantages	Resistant to Moisture – No Bulging or disintegration Termite Resistant Smooth Hygienic Exterior Thermoformed Corners and Edges Hinged Access Doors Easy fitment & Upgrade of Components Recyclable Easy & Quick Installation
Base Material	Integrated Composite PVC
Carcass Thickness	15 – 18mm
Dimensions	Width : 600 – 900mm Depth : 150 – 250mm Height : upto 3050mm
Antimicrobial Technology	Silver ion (Ag ⁺) antimicrobial additive & Regular Hygienic options available.
Features – MSU	Integrated unit : Medical gas, electrical sockets, USB ports, nurse call and other accessories. Easy maintenance through hinged lockable access doors.
Features – IPS	Factory finished for fitment of plumbing systems and sanitary appliances. Hinged, lockable access panels for ease in maintenance.
Fitment	Modular System – Factory finished. Fixed directly to wall with L – fixing brackets. Edges to wall sealed with mastic sealant.



IPS & MSU



3C – Design to Delivery

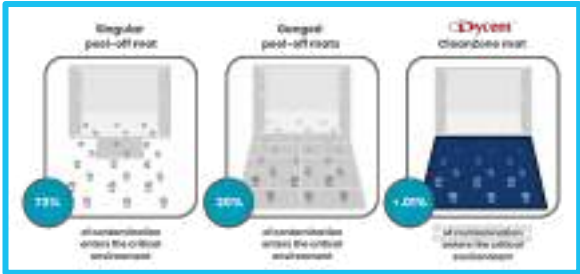
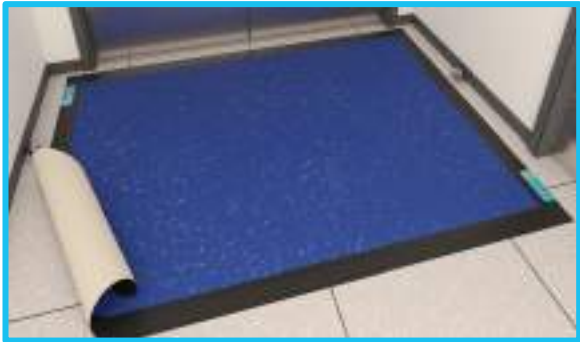
DESIGN TO DELIVERY



3D – Dycem Anticontamination Flooring

DYCEM ANTI CONTAMINATION FLOORING

Property	Specification
Product	Dycem® Anti-Contamination Flooring
Material	Patented Polymeric Flooring
Thickness	2mm – 3mm
Types	Fixed – Cleanzone & Workzone Floating Mats
Antimicrobial Technology	Silver ion (Ag ⁺) antimicrobial additive
Particulate Control	Captures and retains upto 99% of floor level and 75% of airborne particulate matter.
Performance Warranty	3 ~ 5 Years (Refer to Warranty Certificate for Details)



3E – Biovitae Antimicrobial Lighting

BIOVITAE® ANTIMICROBIAL LED LIGHTING

Property	Specification
Product	Biovitae® LED
Technology	Antimicrobial Lighting Patented wavelengths are the only ones capable of effectively penetrating biofilm and killing the bacteria within.
How does it work?	Uses a combination of visible-spectrum wavelengths (without UV) and emits a natural white light that sanitizes air and surfaces without interrupting normal activities.
Colour Temperature Options	3000K (Warm White) 4000K (Cool White)
Lumens	1400 – 6000lm (depending on the model)
Power	18W – 45W (depending on the model)
Rated Lifetime	50,000h
Angle	110°
IP Rating	Yes (IP65 – Cleanroom Lighting)
Warranty	5 years



Cladding



Lighting



Flooring



Kleenclad
Hygiene begins with us



KLEENVISION -
Design to Delivery



CUSTOMERS





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