

Don't kill the biofilm. Collapse its skeleton.

A high-performance mechanical extraction strategy for ICU ecosystems — a neutral, non-disinfectant cleaner that dissolves biofilm structure while a protective microbiome re-establishes.

99.9%
S. AUREUS REMOVED

<10S
DAILY DRAIN ROUTINE

0
SELECTIVE PRESSURE

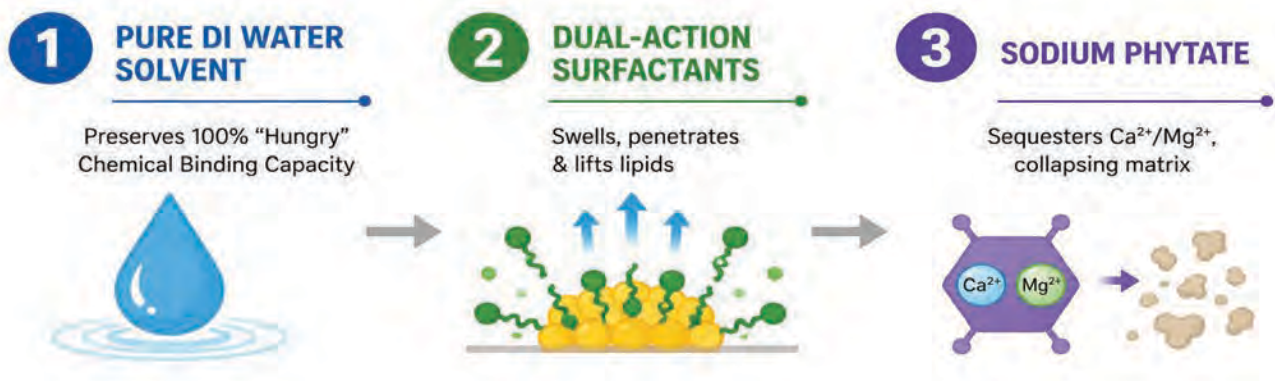
Cogent One Health™ – Clean with Purpose

This master summary compiles the exact biochemical mechanisms, validation data, and peer-reviewed evidence establishing Sodium Phytate as a disruptive alternative to traditional hospital disinfectants. By executing a simple, daily Two-Cloth “Wipe Dry” routine using Cogent One Health RTU (formulated with pure Deionized Water and targeted surfactants), hospitals can completely drop chemical-kill agents in non-critical zones, effectively clearing the dry surface biofilm reservoir while allowing a healthy, protective environmental microbiome to re-establish.

In ICU and critical care use process to deep clean and remove bio films prior to application of disinfectant.

I. THE COGENT FORMULATION: CORE MECHANISMS

Unlike legacy disinfectants that attempt to chemically “kill” bacteria through an impenetrable outer layer, this non-bio-cidal solution attacks the structural foundation of the biofilm matrix using three highly targeted steps:



1. The Pure Deionized (DI) Water Solvent: Standard facility tap water contains minerals that pre-saturate cleaning chemistry. Using 100% DI water ensures that every single binding site on the sodium phytate molecule remains completely open, unbonded, and “hungry” to pull minerals out of the environment.

2. The Dual-Action Surfactant System: A targeted blend of anionic and nonionic surfactants lowers surface tension. Anionic surfactants introduce a negative charge that forces the dense biofilm matrix to swell and unfold, while nonionic surfactants penetrate microscopic cracks to emulsify surface skin lipids and oils.

3. The Sodium Phytate “Ionic Crowbar”: Sodium phytate is a highly structured, plant-derived organophosphate chelating agent. The dense framework of a dry surface biofilm relies entirely on divalent cations—specifically Calcium (Ca^{2+}) and Magnesium (Mg^{2+})—to act as structural “bridges” that cross-link and harden the matrix. Sodium phytate aggressively captures and sequesters these ions away from the biofilm, forcing its physical structure to destabilize and collapse.

II. THE PEER-REVIEWED EVIDENCE BASE

This strategic use of sodium phytate (phytic acid salts) is heavily backed by independent, international microbiology and medical literature:

*Matrix Breakdown Against Superbugs: Research published in Antimicrobial Agents and Chemotherapy and Frontiers in Cellular and Infection Microbiology demonstrates that Sodium phytate complexes rapidly penetrate mature biofilms, drastically lowering the minimum biofilm eradication concentration (MBEC) for high-risk pathogens like MRSA and *Pseudomonas aeruginosa*. *Rapid Destruction of Biomass: A landmark study in the Journal of Oral Microbiology confirms that phytate salts dissolve the Extracellular Polymeric Substance (EPS) framework by stripping away metal stabilizers, converting a hardened colony into loose, easily displaced cells. *The Science of Surface Pre-Conditioning: The foundational validation for the non-rinse protocol comes from Microbiology Spectrum (2023), which explicitly proved that “phytic acid was found to cause significant inhibition of dual-species biofilm formation when used as a surface preconditioning agent”. Further data in Colloids and Surfaces B: Biointerfaces shows that leaving the trace phytate film creates an electrostatic shield that actively repels initial bacterial docking. [1, 2, 3]

Traditional disinfection fails, rebounds in 48–96 hours, and breeds resistance

The chemical-kill model regularly falls short in practice. Harsh oxidizers strip pipes and surfaces, wipe out everything, and create a **biological vacuum** — then aggressive, drug-resistant superbugs rebound faster than before.

Every kill cycle applies immense evolutionary selection pressure, the engine of antimicrobial resistance (AMR). Cogent inverts the paradigm: stop killing, start dissolving.

48–96 hrs

Time for pathogen populations to recover after a chemical kill.

1,000–1,500×

More resistant biofilms are to disinfectants than free-floating cells.

AMR driver

Cell-rupturing chemistry induces the stress responses that mutate superbugs.

How the formula destabilizes a biofilm no oxidizer can penetrate

01

Solvent · Pure DI Water

100% deionized water leaves every phytate binding site open and "hungry." Tap minerals would pre-saturate the chemistry.

02

Surfactants · Dual-Action Blend

Anionic charge forces the dense matrix to swell and unfold; nonionic penetrates cracks to emulsify surface lipids and oils.

03

Chelator · Sodium Phytate

The "ionic crowbar" captures the Ca^{2+} and Mg^{2+} bridges that cross-link and harden the matrix, forcing it to collapse.

The result: Strip the metal bridges and the hardened colony becomes loose, displaced cells — dual surfactants then solubilize and remove the residue when water is discharged.

Scrub-free ICU sink drain routine — under 10 seconds, once daily

A one-step routine that targets multidrug resistant biofilms drug resistant pathogens through competitive exclusion, not chemistry.

Apply at the best time so solution can stay undisturbed for best results.

Coat the walls — 10 second application.

Pour 250 ml in a slow circular motion so the solution sheets every vertical wall.

Dwell and protect--

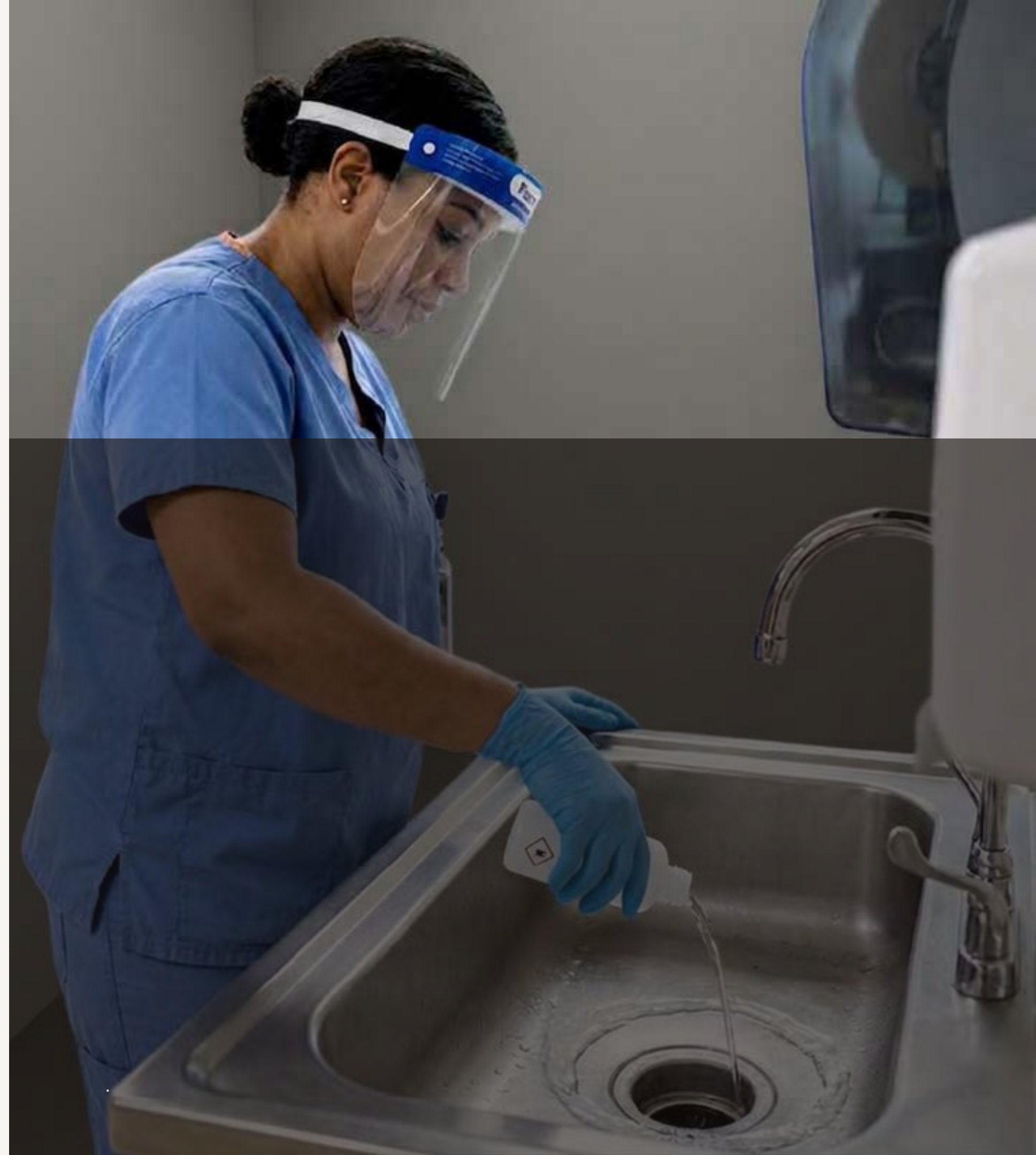
Do not rinse The longer it dwells, the more Phytate dissolves the minerals binding the biofilm.

Never agitate or brush

Brushing creates pathogen spreading aerosols.

Morning flush.

Place 500ml of water in a small container and pour slowly down the drain in a circular fashion to flush cleaner and loosened debris past the P Trap.



Three bans that keep the protective microbial shield intact

No Chemical Cross-Contamination

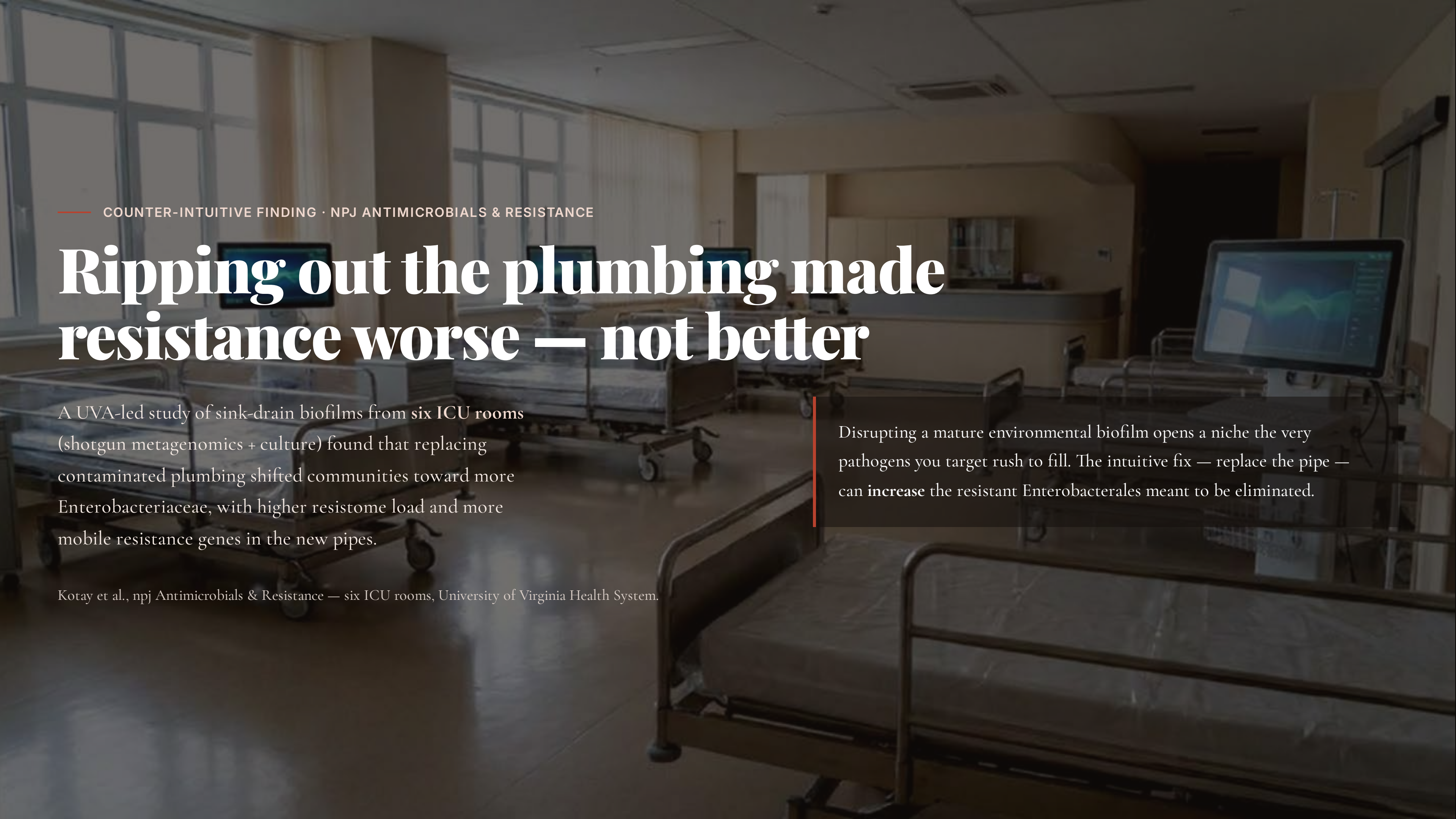
Never pour spent disinfectant wipes, bleach, or alcohol sanitizers down patient handwashing sinks — it destroys the protective microbial shield.

No Nutrient Dumping

Ban clinical waste, meds, IV fluids and sugar/protein-rich liquids down drains. **Starving pathogens beats bleaching them.**

Regulate Faucet Pressure

Use a moderate flow. High-pressure blasting shears biofilms, causing planktonic shedding and airborne droplet hazards.

A dimly lit hospital room with several empty beds and medical monitors. The room has large windows on the left side, and the beds are arranged in rows. The overall atmosphere is quiet and clinical.

COUNTER-INTUITIVE FINDING · NPJ ANTIMICROBIALS & RESISTANCE

Ripping out the plumbing made resistance worse — not better

A UVA-led study of sink-drain biofilms from six ICU rooms (shotgun metagenomics + culture) found that replacing contaminated plumbing shifted communities toward more Enterobacteriaceae, with higher resistome load and more mobile resistance genes in the new pipes.

Kotay et al., npj Antimicrobials & Resistance — six ICU rooms, University of Virginia Health System.

Disrupting a mature environmental biofilm opens a niche the very pathogens you target rush to fill. The intuitive fix — replace the pipe — can **increase** the resistant Enterobacterales meant to be eliminated.

Independent studies back sodium phytate as a biofilm disruptor

"Phytic acid was found to cause significant inhibition of dual-species biofilm formation when used as a surface preconditioning agent."

MICROBIOLOGY SPECTRUM, 2023

- 01 Matrix breakdown vs. superbugs**
Phytate complexes penetrate mature biofilms, lowering the MBEC for MRSA and Pseudomonas aeruginosa.
- 02 Rapid EPS destruction**
Phytate salts dissolve the extracellular polymeric framework by stripping metal stabilizers (Journal of Oral Microbiology).
- 03 An electrostatic shield**
A trace phytate film actively repels initial bacterial docking (Colloids and Surfaces B: Biointerfaces).

Sodium Phytate & Phytic Acid (IP6) Reference Sheet

Cross-Industry Applications in Healthcare, Infection Control, Food Safety & Dentistry

1. Food Processing & Industrial Sanitization (Bactericidal Proof)

Antibacterial Effects of Phytic Acid against Foodborne Pathogens... (2019)

Journal of Food Protection — Evaluated against *E. coli*, *S. aureus*, and *Salmonella*. Flow cytometry proved phytic acid disrupts intercellular adhesion, alters morphology, and causes rapid cell membrane collapse. **Infection Control Value:** Proves mechanism is mechanical cell damage, preventing antibiotic resistance adaptation.

Synergistic Bactericidal Action of Phytic Acid and Sodium Chloride... (2016)

International Journal of Food Microbiology — Dense, established multi-species biofilms were treated. While 0.4% phytic acid or NaCl alone had no effect, their co-administration triggered a profound synergistic matrix dissolution. **Infection Control Value:** Foundation for medical device and endoscope cleaning protocols where resilient biofilms reside.

Antibacterial Activity of Sodium Phytate Against *E. coli* O157:H7 in Meats (2014)

ResearchGate — Proved sodium phytate actively halts aggressive Gram-negative growth inside heavy organic matter. **Infection Control Value:** Confirms formula stays highly effective even when challenged by blood, proteins, or bio-soils.

2. Dental Medicine & Micro-Structure Infection Control

Chitosan–Sodium Phytate Nanoparticles for Caries Prevention (2024)

ACS Applied Materials & Interfaces — Engineered a green nanocomposite coating that completely prevented biofilm buildup and blocked organic acid corrosion without destabilizing benign native microbiota microenvironments. **Infection Control Value:** Establishes phytates for anti-infective, biocompatible medical coatings on implants and catheters.

Phytic Acid: An Alternative Root Canal Chelating Agent (2015)

Journal of Endodontics — Investigated phytic acid's capacity to strip the clinical 'smear layer' (microbial debris and organic tissue). Proved to be a non-toxic, non-mutagenic substitute for EDTA that sweep-cleans deep structures without cell toxicity. **Infection Control Value:** Validates use in deep chronic wound irrigation rinses and surgical cavity washes.

3. Clinical Hygiene & Biocompatible Wound Care

Phytic Acid Demonstrates Rapid Antibiofilm Activity and Inhibition... (2023)

Microbiology Spectrum (ASM) — Targeted mature, highly tolerant clinical biofilms (*E. faecalis* and *C. albicans*). Achieved rapid eradication and acted as a surface pre-conditioner to completely block new bacterial adhesion lines. **Infection Control Value:** Demonstrates immediate application for surface sanitizers and anti-plaque clinical shields.

Antioxidant and Antibacterial Phytate Hydrogel for MRSA Infected Wound Healing (2022)

Materials Letters — Coordinated sodium phytate into an injectable hydrogel matrix. Delivered targeted bactericidal eradication against Methicillin-Resistant *Staphylococcus aureus* (MRSA) while scavenging free radicals to accelerate healing. **Infection Control Value:** Directly translates to active therapeutic wound care dressings and post-surgical gels.

4. Cross-Industry Mechanism Translation Matrix

Discovery Field	Raw Data / Mechanism Proven	Healthcare & Infection Control Adaptation
Food Processing	Achieves a 6-log bacterial reduction when paired with organic salts/ethanol.	Formulation of high-efficiency, lower-alcohol hospital surface disinfectants.
Food Logistics	Remains fully active and stable when mixed with heavy organic loads and proteins.	Ensures extreme efficacy in medical instrument pre-soaks contaminated with blood.
Dental Care	Safely cleanses microscopic dentin tubules without causing soft tissue cytotoxicity.	Validates safety profiles for open-wound irrigation, mucosal sprays, and rinses.
Oral Medicine	Chelates calcium matrices to physically break up complex extracellular biofilms.	Provides non-toxic, biodegradable alternative to harsh EDTA/bleach device flushing.

This is for informational purposes only. For medical advice or diagnosis, consult a professional. AI responses may include mistakes.

ICU Drain Maintenance Protocol

Ecological Biofilm Deconstruction & Aerosol Prevention Overview

Traditional harsh disinfectants fail to permanently penetrate hospital plumbing biofilms. Instead, they act as an evolutionary filter—wiping out harmless microbial competitors and selecting for aggressive, multi-drug resistant pathogens (MDROs) such as *Pseudomonas aeruginosa* or *Klebsiella pneumoniae*. This protocol leverages a nightly surfactant-chelator matrix disruptor paired with strict nutrient deprivation to systematically starve and thin out the biofilm. Over a 14-day execution cycle, the plumbing settles into a compressed, stable environmental microbiome that stops the generation of pathogen aerosols caused by faucet water splashes.

The Two Non-Negotiable Operational Rules

Rule 1: The Strict Nutrient Input Ban

The ICU sink must be used **exclusively for handwashing**. Absolutely no clinical chemical waste, medication leftovers, saline, intravenous fluids, coffee, or food waste may be discarded down the drain. This completely cuts off the organic carbon and nutrient supply lines required for pathogen replication and thick slime shield production.

Rule 2: The Nightly 250 mL Routine

At the quietest hour of the night shift, staff slowly pour **250 mL of the ready-to-use solution** down the drain in a circular fashion to uniformly wet the vertical sidewalls. This volume targets the typical 1.25" to 1.5" P-traps, achieving fluid displacement of standing water with minimal dilution under a slow, piston-like flow model. The solution must dwell entirely undisturbed.

MORNING FLUSH

Measure 500ml of tap water in a small container and slowly pour the water down the drain in a circular fashion to rinse the drain walls and P Trap without dispersing loosened soils.

The 14-Day Timeline of Structural Transformation

Phase & Timeline	Plumbing / Biofilm Status	Aerosol Risk Mitigation Impact
Phase 1: Day 0 Baseline	Vertical walls and P-trap water are choked with a thick, shaggy, multi-layered Extracellular Polymeric Substance (EPS) slime shield.	High Risk: Faucet water violently collides with erratic, jagged biofilm peaks, shattering the stream into contaminated aerosol spray.
Phase 2: Days 1-3 Structural Lift	Sodium phytate chelates calcium and magnesium cross-links, destabilizing the slime shield while surfactants roll up organic layers.	The morning water run safely flushes the top most, loosened bacterial slurry past the stack before daily clinical work begins.
Phase 3: Days 4-7 Regression	Deprived of food residues and chemical stressors, remaining bacteria contract. Shaggy protrusion peaks flatten out.	As surface profile resistance drops, incoming water hits fewer jagged obstructions, dramatically minimizing splash vectors.
Phase 4: Day 14+ Bioshield	The plumbing settles into a thin, highly compressed, and smooth biosurface dominated by passive, harmless environmental strains.	Zero Aerosols: Running water glides smoothly down flat drain walls with zero aerosol emission, establishing a safe microbiome and prevents microbial crawl up the drain pipe.

Chemical Mechanics Under Overnight Dwell

- 1. Sodium Phytate:** Actively disarms the biofilm matrix structural matrix by binding with divalent cations (calcium and magnesium) required for cross-linking the EPS slime layer.
- 2. Surfactants (Anionic & Non-Ionic):** Lowers interfacial surface tension along vertical pipe walls, allowing liquids to sheet evenly, wrap around cellular debris, and detach organic soil matrices.
- 3. Preservatives (0.3% Acticide MBS / 0.6% Phenoxyethanol):** Function strictly as protective stabilization agents. They prevent microbes from consuming the organic cleaner components overnight and block bacterial blooming in the trap liquid.

Clinical Communication Toolkit

Sink-Side Safety Sticker Text

CRITICAL INFECTION CONTROL RULE: THIS SINK IS FOR HANDWASHING ONLY

DO NOT DISCARD: Leftover IV Fluids, Saline, Medications, Coffee, Food Waste, or Nutritional Shakes.
DO NOT FLUSH WITH DISINFECTANTS OR BLEACH: Harsh chemicals destroy the natural, passive biofilm needed to outcompete dangerous hospital pathogens. Protect the drain's bioshield to prevent pathogen splash back.

5-Minute Shift Huddle Script

"Team, we are transitioning to an ecological drain strategy to stop contaminated aerosol splashback from reaching our patients. Traditional bleaching breeds hyper-resistant superbugs. Instead, our nightly 250 mL surfactant-chelator soak flattens the biofilm matrix, creating a harmless, smooth environmental bioshield. To make this work, two rules are strict: First, Handwashing ONLY—absolutely no coffee, meds, or IV fluids down the drain, or we feed the pathogens. Second, NO disinfectants down the drain, or we kill our friendly bacteria. Night shift will pour the solution slowly in a circle apply when sink will not likely be used allow to dwell undisturbed. Let's protect our bioshield!"

V. WARD-LEVEL BENEFITS: SUBSTRATE SAFETY & MEDICAL ECOLOGY

Transitioning general hospital wards to this continuous surface conditioning loop yields major clinical and asset-protection advantages over traditional disinfectants:

*100% Asset Protection: Standard oxidizers cause environmental stress cracking (ESC) on electronics, hospital mattress covers and micro-pitting on steel. This formulation is completely non-corrosive; it preserves expensive touchscreen monitors and plastic bedpanels and mattress covers, while acting as a natural rust-inhibiting conversion layer on stainless steel. *Re-Establishing Beneficial Microbiomes: Aggressive chemical disinfection wipes out harmless background bacteria, creating a dangerous biological vacuum that is quickly colonized by hyper-resistant superbugs. Dropping disinfectants outside of critical care zones (like the ICU) removes this selective evolutionary pressure. *Competitive Exclusion: The daily routine extracts dangerous, deep-seated pathogen biofilms while leaving a non-toxic surface energy. This allows a healthy, balanced, non-pathogenic environmental microbiome to re-establish on the ward, naturally crowding out invaders through resource competition.

[1]Antimicrobial activity and surface preconditioning study, Microbiology Spectrum:

<https://journals.asm.org/doi/abs/10.1128/spectrum.00267-23>

[2][Natural Anti-biofilm Agents: Strategies to Control Biofilm-Forming Pathogens

<https://pmc.ncbi.nlm.nih.gov/articles/PMC7658412/>

[3][Antimicrobial Activity of Phytic Acid: An Emerging Agent in Endodontics

<https://www.frontiersin.org/journals/cellular-and-infection-microbiology/articles/10.3389/fcimb.2021.753649/full>

[4] 5 Effective Methods to Remove Biofilm

<https://www.colgate.com/en-us/oral-health/plaque-and-tartar/biofilm-removal-three-effective-methods>



Contact & Ordering

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Visit site for detailed information and Safety Data Sheet



Product Formats

9566-4: 4 x 3.78L case

9566-6: 6 x 946ml case

9566-12: 12 x 70-count wipes per case