

Washington DC Hospital Study

Twelve month analysis of microbial contamination within a Neonatal Intensive Care Unit – Pre and Post installation of Ultra Violet Germicidal Irradiation system in the NICU HVAC

***Unpublished data**

Study Sample Locations

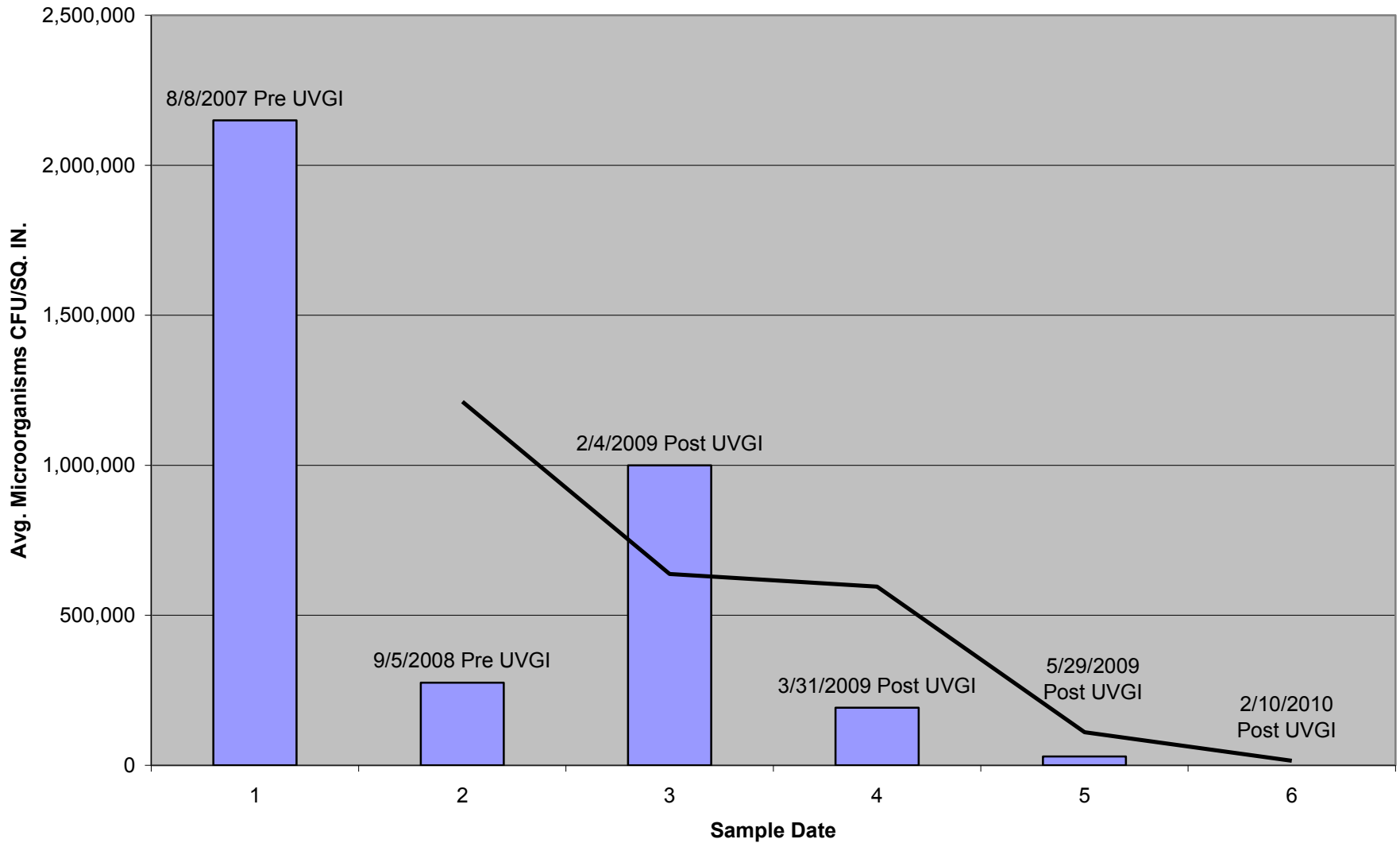
- Qualitative & quantitative environmental samples collected from:
 - ✓ HVAC cooling coils, condensate drain pans and final filters
 - ✓ NICU Supply air grilles, return air grilles and sinks

WDCH Study Results

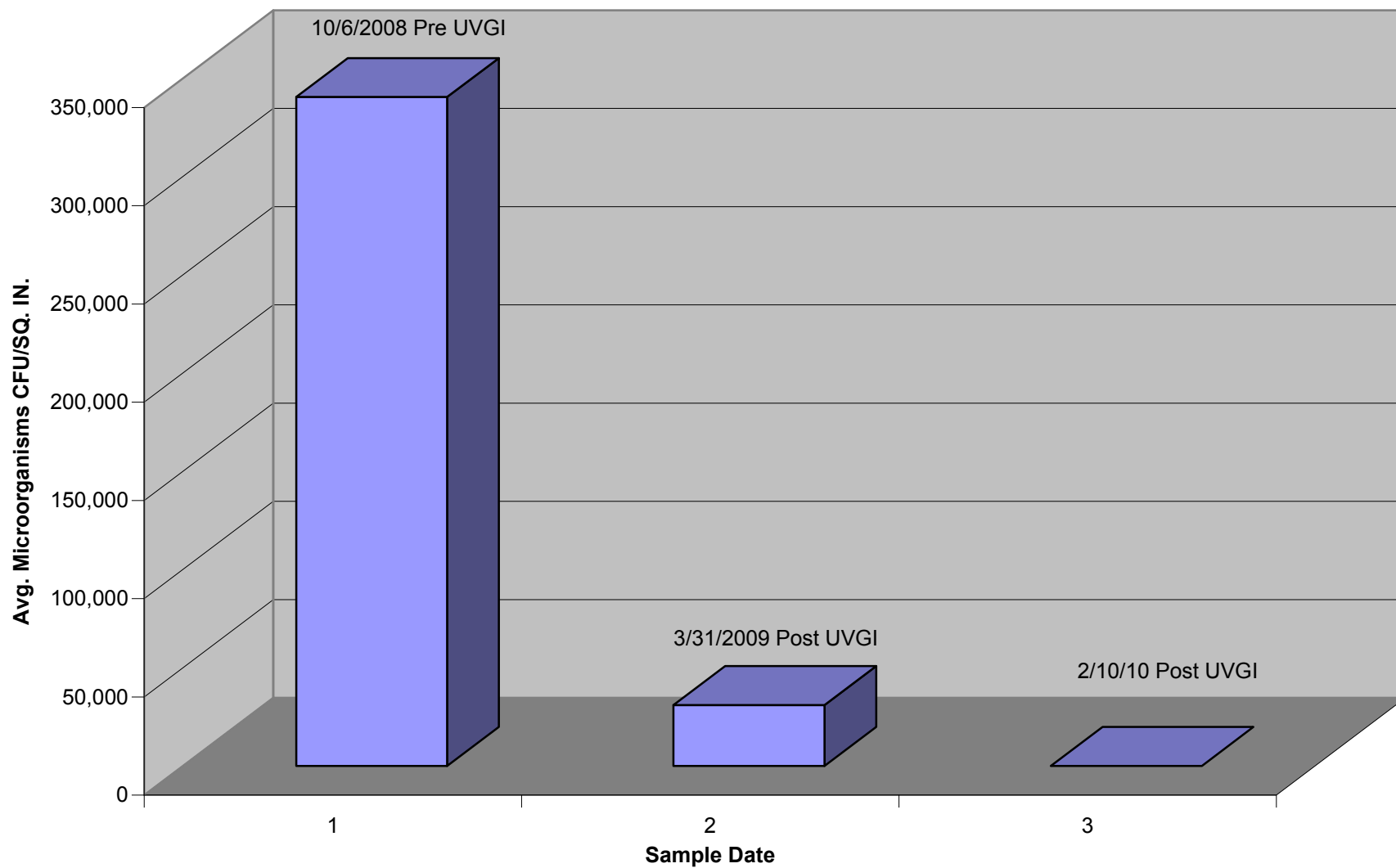
Microorganisms isolated from WDCH NICU Environment

Type	Microorganism Species	WDCH HVAC	WDCH Surfaces
Bacteria	<i>Pseudomonas</i> sp.	♦	♦
	<i>Acinetobacter</i> sp.	♦	♦
	<i>Klebsiella</i> sp.		♦
	<i>Staphylococcus</i> sp.	♦	♦
	<i>Bacillus</i> sp.	♦	♦
	<i>Corynebacterium</i> sp.	♦	♦
	<i>Enterobacter</i> sp.		♦
	<i>Citrobacter</i> sp.		♦
	<i>Raoutella</i> sp.		♦
	<i>Aeromonas</i> sp.		♦
	<i>Serratia marcescens</i>		♦
	<i>Enterococcus</i> sp.		♦
	<i>Pantoea</i> sp.		♦
	<i>Penicillium</i> sp.	♦	♦
Fungi	<i>Alternaria</i> sp.	♦	
	<i>Aspergillus</i> sp.	♦	
	<i>Fusarium</i> sp.		♦
	<i>Paecilomyces</i> sp.		♦
	<i>Cladosporium</i> sp.	♦	♦
	Yeast	♦	♦
	<i>Chaetomium</i> sp.	♦	

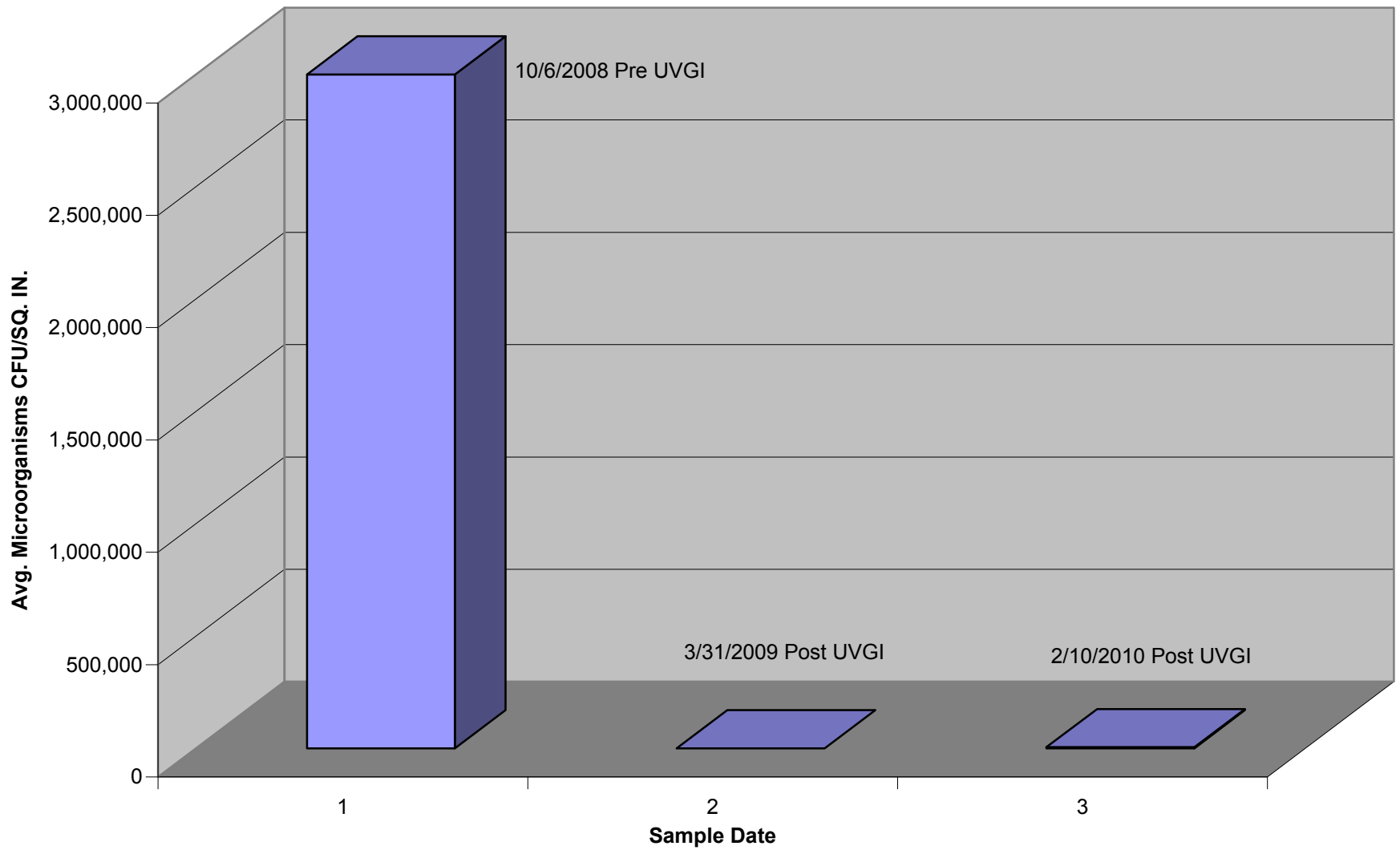
WDCH NICU HVAC Surfaces – AHU-2: Bacteria & Fungi



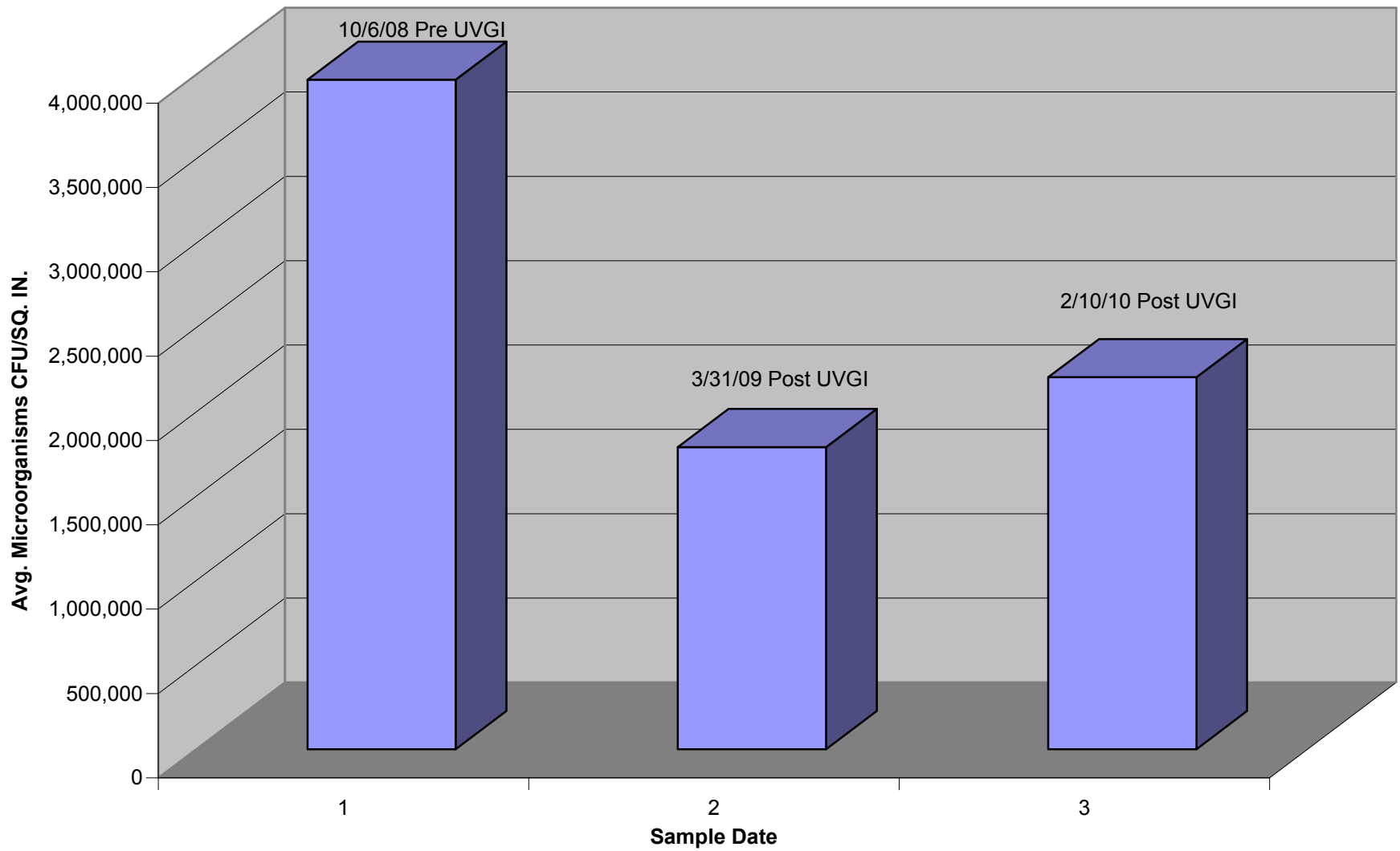
WDCH NICU Environment – SA Grille: Bacteria & Fungi



WDCH NICU Environment – RA Grille: Bacteria & Fungi



WDCH NICU Environment – Sinks: Bacteria & Fungi



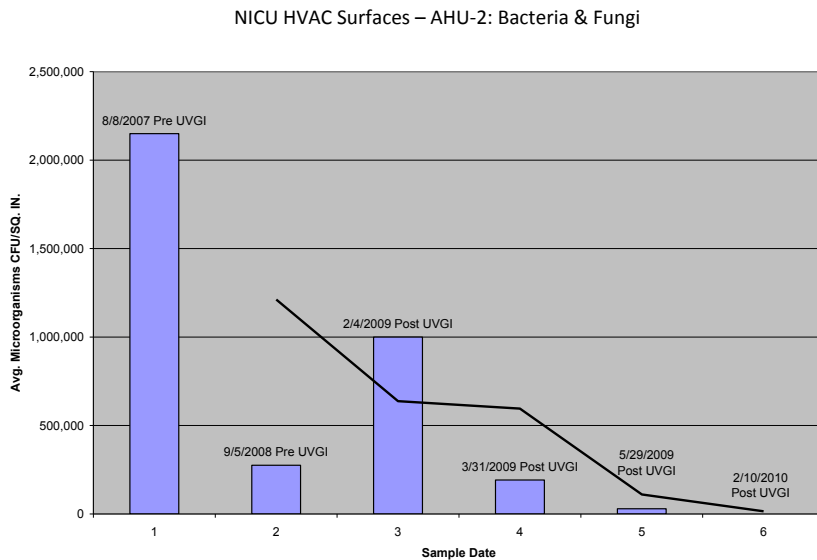
Comparison of WDCH pre and post
data to Women and Children's
Hospital of Buffalo pre and post
data

Similar Microorganisms Cultured from NICU Environments

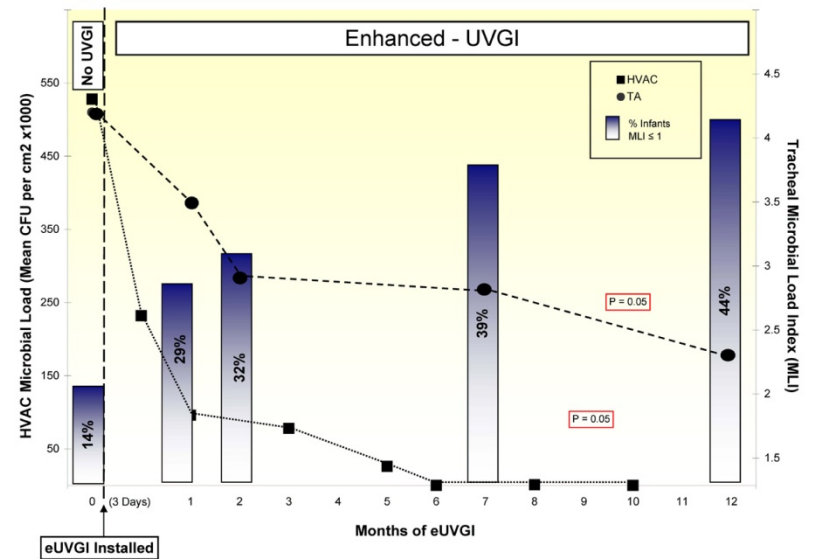
Type	Microorganism Species	WDCH HVAC	WCHOB HVAC	WDCH Surfaces	WCHOB Surfaces
Bacteria	<i>Pseudomonas</i> sp.	◆	◆	◆	◆
	<i>Acinetobacter</i> sp.	◆	◆	◆	◆
	<i>Klebsiella</i> sp.		◆	◆	◆
	<i>Staphylococcus</i> sp.	◆	◆	◆	◆
	<i>Bacillus</i> sp.	◆	◆	◆	◆
	<i>Corynebacterium</i> sp.	◆	◆	◆	◆
	<i>Enterobacter</i> sp.			◆	◆
	<i>Serratia marcescens</i>		◆	◆	
	<i>Enterococcus</i> sp.			◆	◆
Fungi	<i>Penicillium</i> sp.	◆	◆	◆	◆
	<i>Alternaria</i> sp.	◆	◆		◆
	<i>Aspergillus</i> sp.	◆			◆
	<i>Cladosporium</i> sp.	◆	◆	◆	◆
	Yeast	◆	◆	◆	◆
	<i>Chaetomium</i> sp.	◆			◆

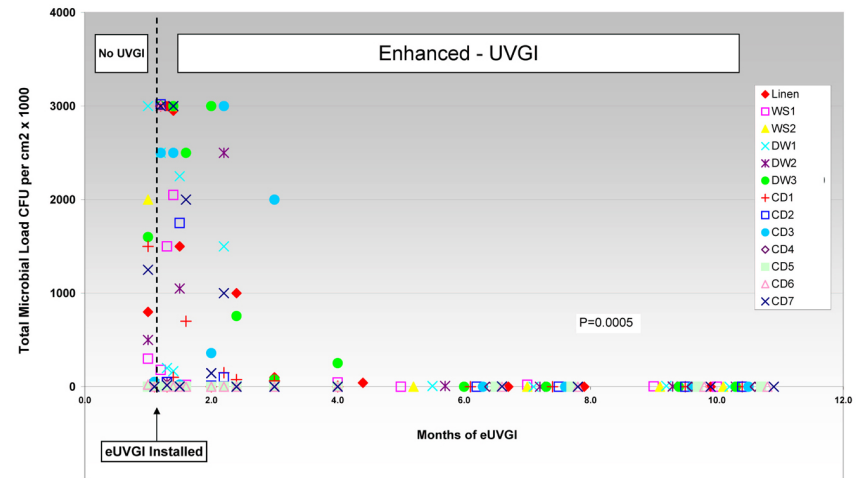
Environmental Samples – NICU HVAC

WDCH

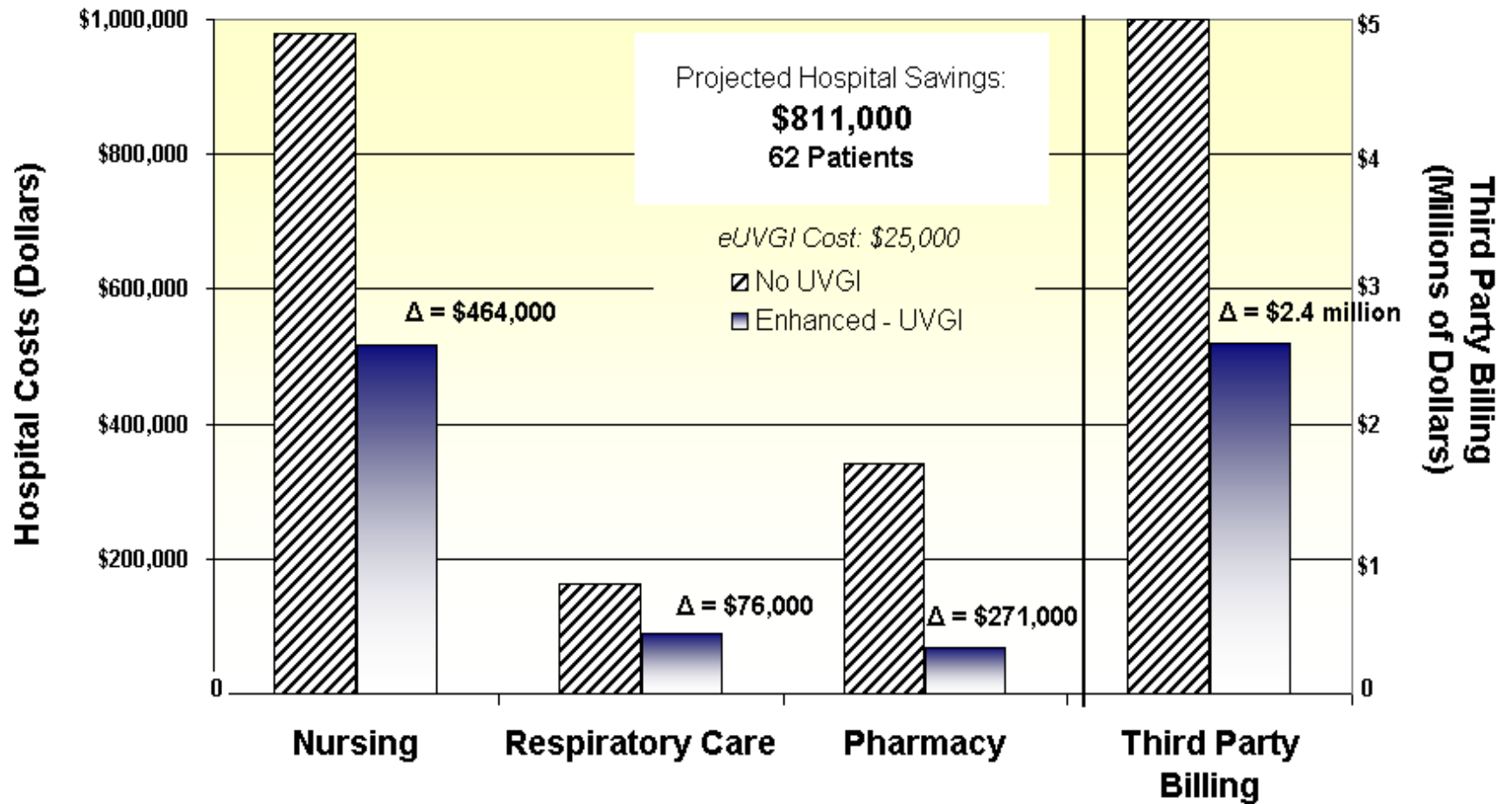


WCHOB





WCHOB Hospital Costs



Conclusions from Women and Children's Hospital of Buffalo Study

- Most problematic bacteria related to Hospital Acquired Infections were isolated in HVAC and NICU air grilles: *Acinetobacter*, *Pseudomonas*, *Staphylococcus*
- HVAC microbial contamination (Bacteria and Fungi) was reduced by a factor of > 5 Logs
- Reduced Ventilator Associated Pneumonia (VAP)
- Reduced antimicrobial use
- Reduced antimicrobial resistance
- Reduced morbidity and mortality
- Reduced Hospital direct costs > \$800,000/annum

Conclusions from Washington DC Hospital Study

- Most problematic bacteria related to Hospital Acquired Infections were isolated in HVAC and NICU air grilles:
Acinetobacter, Pseudomonas, Staphylococcus
- HVAC microbial contamination (Bacteria and Fungi) was reduced by a factor of > 5 Logs
- NICU air diffuser microbial contamination was reduced by a factor of >5 Logs
- NICU Chief has indicated NICU infections are dramatically down with 0 VAP (Ventilator Associated Pneumonia) infections reported in past 27 months