

# THE ADVANTEX® ADVANTAGE

## FROM THE FLOOR UP – THE BATTLE TO CONTROL HAIs

### THE FLOOR COULD BE THE WEAKEST LINK IN FIGHTING HAIs

Pathogens are consistently introduced to the floor throughout the day by shoes, transport equipment such as wheelchairs and beds, treatment devices or computer carts, and non-slip patient socks that traverse the floors and frequently, directly into a bed. More importantly, there is a consistent potential for cross-contamination on the floor by an item expected to be clean and often handled without gloves, a freshly laundered mop.

### FINANCIAL IMPACT

It was estimated in 2002 that 1.737 million HAIs occurred in hospitals in the United States that year resulting in 98,987 deaths, a rate of 5.8%.<sup>1</sup>

There were 39 million patient stays in hospitals during 2009.

- Average HAI cost of \$1,024 per admission.
- Average HAI remedial cost per infected patient is \$23,735.
- Total HAI cost of \$40.3 billion, represents 11% of total hospital spend in 2009.<sup>2</sup>

## THE GEERPRES® SOLUTION

### ADVANTEX® G8 MICROFIBER APPLICATOR SYSTEM

The Advantex® G8's, large-capacity removable tank makes refilling easy. The dual outlet dispenses to provide uniform application and flow control. The frame swivels 360° to reach tight spaces. Patent pending.

### ADVANTEX® MOP FRAME

Utilizes micro hook and loop fastening. Ideally suited for the Advantex® Single-Use Microfiber Mop.

### ADVANTEX® SINGLE-USE MICROFIBER MOP

Best-in-class, single-use microfiber mops. Eliminate the risk of cross-contamination.

### RESEARCH REVEALS MICROFIBER LAUNDERED MOPS CAN RETAIN RESIDUAL PATHOGENS

During a survey of five Cleveland-area hospitals, researchers found floors in patient rooms to be frequently contaminated with HAI pathogens including *Clostridium difficile* (C. diff), found in 44% of rooms cultured after patient discharge cleaning and 53% with the patient housed in the room.<sup>3</sup>

In eleven Arizona hospitals, a study to examine the effectiveness of laundering cloth and microfiber reusable towels used in cleaning and disinfection of rooms after terminal discharge of patients, revealed that viable microorganisms were found on 93% of the towels after laundering.<sup>4</sup>

**THIS STUDY EVALUATED LAUNDERED MICROFIBER MOPS FROM ELEVEN HOSPITALS AND FOUND THAT 273% OF THE NEWLY LAUNDERED MOPS CONTAINED MICROBIAL CONTAMINATION, INCLUDING HAI PATHOGENS.**



# LAB RESULTS OF LAUNDERED MOPS

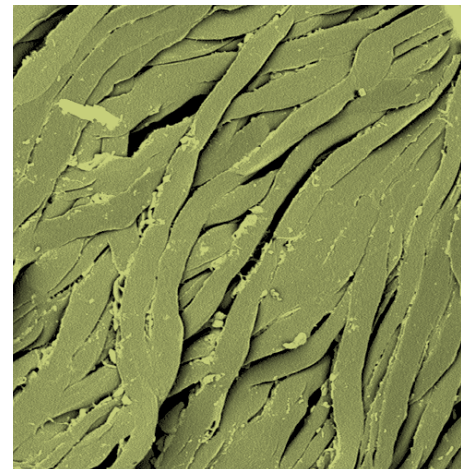
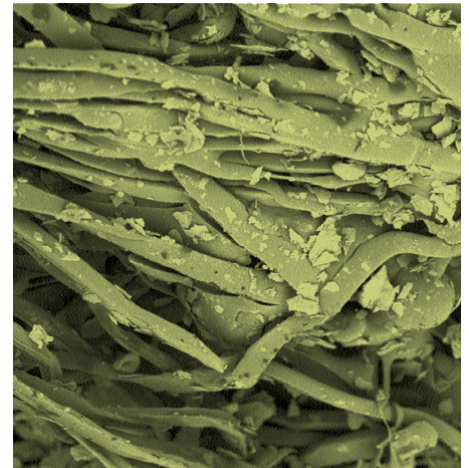
LAUNDERED MICROFIBER MOP STUDY – TABLE I

DATA Result / # Microorganisms PER MOP					
sample #	TAC Ttl Aerobic Count	MRSA <i>Staphylococcus</i>	E-Coli <i>Escherichia coli</i>	C-Diff <i>Clostridium difficile</i>	Yeast
1	<1000	<1000	<1000	<1000	<1000
2	<1000	<1000	<1000	<1000	<1000
3	<1000	<1000	<1000	<1000	<1000
4	<1000	<1000	<1000	<1000	<1000
5	<1000	<1000	<1000	<1000	<1000
6	11,500,000	1,200,000	<1000	430,000	2,860,000
7	8,000,000	120,000	330,000	230,000	790,000
8	350,000	40,000	<1000	150,000	40,000
9	3,500,000	600,000	<1000	1,340,000	170,000
10	300,000	20,000	<1000	150,000	20,000
11	<1000	<1000	<1000	<1000	<1000
12	<1000	<1000	<1000	<1000	<1000
13	200,000	100,000	<1000	20,000	<1000
14	<1000	<1000	<1000	<1000	<1000
15	<1000	<1000	<1000	<1000	<1000
16	<1000	<1000	<1000	<1000	<1000
17	<1000	<1000	<1000	<1000	<1000
18	<1000	<1000	<1000	<1000	<1000
19	<1000	<1000	<1000	<1000	<1000
20	240,000	20,000	<1000	<1000	<1000
21* Cloth	2,430,000	940,000	20,000	<1000	<1000

The microbiological tests on newly laundered flat mops resulted in seven mops (35%) with microbial contamination, as shown in Table 1. **THREE OF THE ELEVEN HOSPITALS' MOPS WERE POSITIVE FOR PATHOGENS, REPRESENTING A 27.3% CONTAMINATION RATE AS ONE OF THE HOSPITALS WAS TESTED TWICE TO CONFIRM FINDINGS.**

The microfiber mop has reduced efficacy as reuse and laundering takes place. The laundered microfiber flat mops, as shown above, show fibers that appear to be melted and carrying residual contaminants. These unknown contaminants would likely be reintroduced onto the floor surface the next time the mop is used.

## IMPACT OF LAUNDRY PROCESSES ON MICROFIBER'S STRUCTURE AND EFFICACY



Two Separate Laundered Mops with Melted Microfiber and Soil Accumulation at 1000x Power  
(Phenom G1 SEM and Quorum Technologies SC7620 Mini Sputter Coater with a Gold/Palladium Target)

### FRONT COVER FOOTNOTES

<sup>1</sup> Klevens RM, Horan TC, Gaynes RP, Pollock DA, Cardo DM. Estimating health care-associated infections and deaths in U.S. hospitals, 2002. *Pub Health Reports* March-April 2007; vol 122:160-164.

<sup>2</sup> R. Douglas Scott II, Economist. The direct medical costs of healthcare-associated infections in U.S. hospitals and the benefits of prevention, Division of Healthcare Quality Promotion, National Center for Preparedness, Detection, and Control of Infectious Diseases Coordinating Center for Disease Control and Prevention, March 2009.

<sup>3</sup> Deshpande A, Cadnu JL, Fertelli D, et al. Are hospital floors an underappreciated reservoir for transmission of health care-associated pathogens? *American Journal of Inf. Control*. 45, 2017: 336-338.

<sup>4</sup> Sifuentes LY, Gerba CP, Weart I, Engelbrecht K, Koenig DW. Microbial contamination of hospital reusable cleaning towels. *American Journal of Infection Control* xxx 2013: 1-4.

# MOVING TO SINGLE-USE MOPS

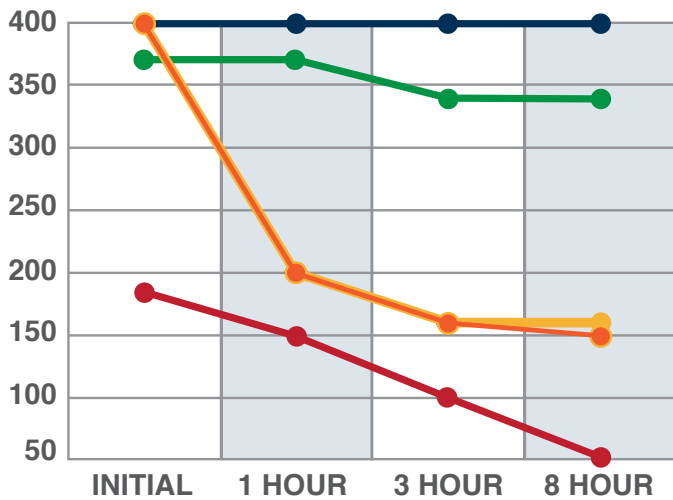
Many hospitals are moving to single-use microfiber mops and wipes to help reduce the risk of HAIs from floor surfaces. Single-use mops remove the potential of cross-contamination with virgin microfiber in every use, while eliminating the risk of efficacy degradation through microfiber structural breakdown or pathogen retainage in the mop, as a result of an inadequate laundering process.

As shown in Figure 2 and 3, additional tests were run to evaluate the potential of disinfectant neutralization on several brands of single-use and laundered microfiber mops.

FIGURE 2

## Microfiber Mops in Neutralizing Quaternary Ammonium Disinfectant

### QUATERNARY COMPATIBILITY (1 MOP in 400 ML of 400 PPM)

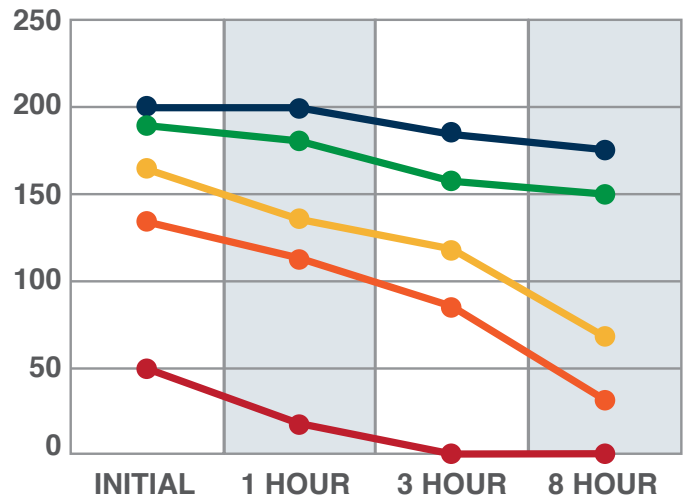


(500 ml of Quat Required for Laundered Mop to Provide Enough Solution for Testing)

FIGURE 3

## Microfiber Mops in Neutralizing Chlorine Disinfectant

### CHLORINE COMPATIBILITY (1 MOP in 400 ML of 400 PPM)



(500 ml of Chlorine Required for Laundered Mop to Provide Enough Solution for Testing)

### KEY FIGURE 2 & 3

- ADVANTEK®
- BRAND B
- BRAND D
- BRAND C
- Laundered Mops

# THE ADVANTEX® ADVANTAGE

## FROM THE FLOOR UP – THE BATTLE TO CONTROL HAIs

### SUMMARY & RESULTS

Studies have shown that floors may harbor HAI pathogen organisms. These pathogens may not be neutralized by using mops that bind disinfectants or may be transported through unexpected means, including socks or laundered mops damaged by the laundering process and reducing their ability to effectively clean and disinfect the floor.

Inadequately laundered mops can be reintroduced to the hospital with remnant HAI pathogens.



### Test Results for Several Microfiber Mop Brands for Absorption, Application Efficacy, and Wasted Disinfectant Product

MOP Absorbency and Application Efficacy									
MOP	Dry Wt. (g)	Wet Wt. (g)	Solution Absorbed Wt. (g)	Post Application Wt. (g)	Solution Delivery (g)	% Solution Release	Floor Coverage (sq. ft.)	Solution Waste (g) per Use	% Solution Waste
ADVANTEX®	18.8	168.9	150.1	24.9	144.0	96%	250	6.2	4%
Brand B	16.2	137.1	120.9	46.3	90.8	75%	158	30.1	25%
Brand C	23.6	179.3	155.7	87.5	91.8	59%	159	63.9	41%
Brand D	13.6	124.8	111.2	22.3	102.5	92%	178	8.7	8%
Laundered Mops	94.0	496.0	402.0	342.0	154.0	38%	267	248.0	62%

To reduce HAI risk, hospitals should convert to single-use microfiber mops. This study evaluated Advantex® (Brand A) and several brands of single-use microfiber mops and determined that differences vividly exist between brands on several critical criteria such as disinfectant neutralization, absorbency and dispersion/release efficacy, floor coverage, and wasted chemical solution. The full-length microfiber mop case study and lab results are available upon request.

(By David Harry and Jack McGurk, MPA.)

**RECEIVE AN ADVANTEX® MOP TRIAL PACK WITH ADVANTEX® G8 PURCHASE**

Buy (1) Advantex® G8 Microfiber Applicator System and receive (1) Advantex® Single-Use Microfiber Mop Trial Pack (Qty.10 mops). While supplies last.