

Research Summary
Hospital Operating Room 006

Type of Research: CFU Air Sampling – Hospital Operating Rooms During Actual Operations

Dates: 9.24.02, 10.15.02, 12.04.02 & 12.11.02

Test Site: Hamot Medical Center
OR #6
201 State Street
Erie, PA

Abstract: Air sampling of an of an operating room was facilitated by Ann Schlimm RN, CIC Infection Control Hamot Medical Center to measure the change in airborne bacterial levels before and during the use to the AiroCide™ Air Quality Improvement™ System. Two rounds of testing were conducted, implementing four (4) ACS-100 units in the first test and five (5) ACS-100 units in the second test. The resulting data supports the hypothesis that there would be a significant reduction of airborne bacterial colony forming units (CFU's) with an AiroCide™ system operating continuously during a surgical procedure.

On 9.24.02 BEFORE the AiroCide system was operating, a total of 565 CFU's (an average of 70 CFU/m³) were sampled and cultured in OR #6 during an operation. On 10.15.02 AFTER four (4) AiroCide ASC-100 units were operating during an operation, a total of 284 CFU's were counted (35 CFU/m³). This is a reduction in CFU/m³ of 50.00%.

On 12.04.02 BEFORE the AiroCide system was operating, the total CFU count in OR #6 during an operation was 566 (70 CFU/m³). On 12.11.02 AFTER five (5) AiroCide ASC-100 units were operating during an operation, a total of 83 CFU's were counted (10 CFU/m³) This is a reduction in CFU/m³ of 85.57%.

Background: Operating Room #6 is approximately 3,600 cubic feet. The AiroCide units were mounted on the ceiling of the operating room as evenly placed as possible.

Protocol: Please see attached air sampling reports from AEGIS Co., Inc.

Lab Results Airborne CFU Bacteria

Bacteria Summary

Please see attached air sampling reports page 1 under Interpretation from AEGIS Co., Inc. which identified airborne bacteria such as Staphylococcus species to include aureus.

Environmental

Overview:

Bacteria, Mold and Fungi are naturally occurring everywhere in our world and are plentiful in our environment. Modern operating rooms have high velocity and highly efficient HEPA type filtering systems that effectively reduce CFU's in the OR prior to the doctors, staff, patient and equipment being introduced into the OR. When all the necessary personnel have arrived in the OR there is a sudden "spike" of bacterial CFU's in all operating rooms. These "spikes" as identified in the tables below is one of the variables that cause the increase of nosocomial infections.

Air Sampling CFU Testing Summary

Location	Date of Test	Date of Test	Date of Test	Date of Test
Hamot Medical Center	September 24, 2002	October 15, 2002	December 4, 2002	December 11, 2002
Areas That Were Air Sampled In Operating Room # 6	Baseline Test Before AiroCides Operating	Post Test After 4 AiroCides Operating	Return to Baseline Test Before AiroCides Operating	Post Test After 5 AiroCides Operating
Incision Area	24	24	141	12
Back Table (Sterile Area)	82	24	94	<12*
Foot of table (Sterile Area)	47	71	71	12
Perfusionist Station	130	47	94	12
Anesthesia Work Area	59	47	71	12
Exhaust Vent	94	71	47	35
Area Above OR Lights	47	<12*	24	<12*
Under Sterile Table @ Foot	82	<12*	24	<12*
Total CFU's	565	284	566	83
Percentage of CFU/m³ Drop		50.00%		85.57%

IMPORTANT NOTE:

Areas outside of OR #6 are not included in this data.

* Numbers less than 12 are not countable and therefore are considered 0 for the percentage of change in this table.

Conclusions:

On 9.24.02 BEFORE the AiroCide system was operating, a total of 565 CFU's (an average of 70 CFU/m³) were sampled and cultured in OR #6 during an operation. On 10.15.02 AFTER four (4) AiroCide ASC-100 units were operating during an operation, a total of 284 CFU's were counted (35 CFU/m³). This is a reduction in CFU/m³ of 50.00%.

On 12.04.02 BEFORE the AiroCide system was operating, the total CFU count in OR #6 during an operation was 566 (70 CFU/m³). On 12.11.02 AFTER five (5) AiroCide ASC-100 units were operating during an operation, a total of 83 CFU's were counted (10 CFU/m³). This is a reduction in CFU/m³ of 85.57%.

Ms. Ann Schlimm RN, CIC
Infection Control
Hamot Medical Center

Date: _____