454815 - HOW CLEAN ARE WE? DETERMINING MICROBIAL GROWTH ON COMMONLY TOUCHED ITEMS IN THREE OPERATING ROOMS

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Introduction: The operating room (OR) is a high-risk environment for transmission and acquisition of infection. Patients as well as medical personnel are vulnerable to infection if proper infection prevention and control measures are not followed. Does adherence to universal precautions and the current cleaning process remove pathogens from OR equipment?

Methods: Local REB approval was obtained for this study. This descriptive study sampled five standardized items in three functioning ORs (cardiac, trauma and general surgery room) at three different times over one normal working weekday. The five items sampled were the oxygen flowmeter on the anesthesia machine, the OR bed control, the ventilator valve (manual to automatic), the telephone handle, and the right hand door handle inside the OR. All samples were collected by one investigator in the same protocol and order and was observed by an experienced microbiology technician. Samples were taken in each room at the beginning of the day before the first patient entered, during a random time in the day while surgery was in progress, and at the end of the workday, but before initiation of room cleaning. Each item was swabbed with a sterile moistened (1 mL normal saline) swab in two directions over its surface. The swab was inserted into a sterile test tube and transported to the microbiology laboratory for transfer onto blood, chocolate and MacConkey agar culture plates using a sterile 100 uL pipette. Plates were incubated for 48 hours at standard settings of 35° C, 5% CO₂, and humidity of 15 psi. Identification of the number of colony-forming units was performed by a blinded lab technician.

Results: Coagulase-negative Staphylococcus was the most common organism found in all rooms, whereas Micrococcus, gram positive Bacillus, and diptheroids were found scattered on different items throughout the ORs. These organisms were found most frequently in the morning, after terminal cleaning done previously. Alpha Streptococcus was found on the door handle of the Trauma OR and the phone handle of the Cardiac OR on the random midday samples. Escherichia coli (E.coli) was found in the General Surgery OR door handle on the first two samples. The samples from the Cardiac OR grew the most E.Coli. It was found on all first samples, except for the door handle. The midday sample found E.Coli only on the bed control sample.

Discussion: This study identified many organisms that survive on OR equipment. The majority of samples cultured normal skin organisms, expected to be found on items touched by humans and not very pathogenic. Pathogenic microbes cultured that pose a threat to staff and patients included alpha Streptococcus from the respiratory tract and E.coli, a common gram negative enteric organism. The most E.coli grew on the Cardiac OR items. As the day progressed, E.coli was not found to be growing throughout the room. Surprisingly, more organisms were found first thing in the morning, when the ORs would be expected to be the cleanest. Unfortunately, the cleaning process may not have

eliminated the microbes. It is possible that the process of sampling may have eliminated the organism from the equipment. Terminal cleaning procedures by inexperienced or reduced staff and the lack of adherence to universal precautions could explain these results.

References: Anesthesiology 2006; 105: A944