You have just finished removing an implant for a patient who had a total knee arthroplasty performed 2 months ago. The patient's wound cultured positive for Methicillin Resistant Staphylococcus aureus (MRSA). The environmental services worker asks how she should clean the room. What do you tell her?

Response:

Methicillin-resistant *Staphylococcus aureus* (MRSA) is a gram-positive bacteria that is resistant to beta-lactam antibiotics including methicillin, oxacillin, penicillin, and amoxicillin (CDC, 2010). It is transmitted in the same way as antibiotic-susceptible Staph aureus. Typically these infections occur in those patients with altered skin integrity (as in surgical wounds) or other avenues in which the bacteria can enter the body, such as catheters and drains, and in those persons with impaired immune systems. It is now the isolated organism in 55% of ICU nosocomial infections in the U.S (Dunlap, 2007). MRSA is not confined to hospital populations and is a world-wide problem, as evidenced by the number of articles in foreign journals related to this topic (Coia et al, 2006; Dancer, 2008; Mears et al, 2009). Colonization of health care workers means that patients are not the only reservoirs for the disease (Cimolai, 2008). The jury is still out on universal screening of either patients or health care workers. Screening may identify more patients with MRSA, but without appropriate infection control practices will not in and of itself decrease rates of transmission.

Unlike other infectious agents such as Creutzfeld Jakob Disease (CJD) and *Mycobacterium tuberculosis*, MRSA is not that difficult to kill. Disinfectants effective against *Staphylococcus aureus* are most likely also effective against MRSA. A list of EPA-registered products which are effective against MRSA can be found at [http://epa.gov/oppad001/list_h_mrsa_vre.pdf](http://epa.gov/oppad001/list_h_mrsa_vre.pdf) It is important to follow the label on the cleaner/disinfectant to ensure maximum effectiveness. Outbreaks of MRSA are more often related to a failure to follow recommended procedures for cleaning and disinfection rather than the cleaning agent used (Siegal et al, 2007). Environmental services should provide education to ensure their staff is competent to use these products safely. If OR staff are responsible for room cleaning, they should also be included in this education. Environmental services workers should have access to and utilize the same PPE’s available to other OR staff and be included in any infection control audits.

Contaminated hands are the chief mode of transmission for SSI’s. Prioritizing hand hygiene is the single most beneficial intervention in the control of MRSA (Dancer, 2008). Standard precautions and transmission-based (in this case, contact) precautions should be put into place. Standard precautions state that persons at risk for coming into contact with blood, body fluids, or secretions should be wearing PPE, and contaminated equipment
should be handled in a manner that prevents transfer of infectious materials to others and to the environment (Siegel, 2007). It is preferable to use one-time use or disposable items for equipment that cannot be decontaminated. Designating equipment, such as a blood pressure cuff, to the patient for the entire hospital stay is one way to help control costs (Ott et al, 2005). Shared equipment that comes into direct skin contact should be cleaned after each use and allowed to dry. Special laundering beyond that performed by the hospital laundry is not required (CDC, 2010). Of course, linen or trash bags should not be dragged across the floor to help prevent transmission of the microorganism to other parts of the facility. With the advent of electronic medical records, many OR’s now contain computers, PDA’s, and other sensitive equipment which will become damaged if they become wet. A disposable cover should be used on these items to protect them. Always check to see if the manufacturer has instructions for cleaning.

There is no evidence that spraying or fogging rooms or surfaces with disinfectants will prevent MRSA infections more effectively than the targeted approach of cleaning frequently touched surfaces. There is also no sound rationale for putting known cases at the end of the schedule. The number of air exchanges in the OR makes this unnecessary (Coia, et al, 2006).

Other departments involved in the care of the patient should be notified of a patient’s infectious disease status immediately so that appropriate precautions can be put in place. Visitors should follow the same precautions as staff, and educated on the appropriate use of PPE’s and handwashing technique. As infectious status is not always known, standard precautions including strict hand washing practices should be followed for every patient.

References and Resources


Dancer, S.J. (2008). Importance of the environment in meticillin-resistant Staphylococcus aureus acquisition: The case for hospital cleaning. *Lancet Infectious Diseases*, 8, 101-113. This is an excellent article outlining the transmission cycle for *Staph aureus* and the role of cleaning in breaking that cycle.


