Bug of the Month: Non-tuberculous Mycobacteria (NMT)

What are NMT? They are organisms we need to think about, because they may be acquired in health care settings, including ambulatory surgery facilities. They are species of mycobacteria outside of M. tuberculosis. This includes M. avium and M intracellulare which have been found associated with water, birds, animals, and soil. M. kansasii and M. fortuitum have been isolated from soil and water; and M. scrofulaceum, M. marinum, M. xenopi, and M. abscessens have been isolated only from water. These organisms are gram positive and acid fast; they have a thick hydrophobic cell wall. They may require special culture media for growth, so if infection with HMT is suspected, the lab should be notified.

The NMT are found in the environment, in soil, natural water, and drinking water; they readily form biofilm. They have been found saliva and sputum and may transiently colonize skin and the airway.

NTM are opportunistic, and are believed not to be transmitted from person to person. Infections tend to occur after trauma such as an injury or surgery, and NTM can cause lymphadenitis, post-injection abscess, surgery related infections, and pulmonary infections. Disseminated infections are usually related to immunosuppression.

Pulmonary infections with NMT may present in a manner resembling tuberculosis and often has a chronic course.

Skin and soft tissue infections are the most common site of infection with NMT. Usually, there is disrupted tissue integrity such as a puncture, traumatic injury, or a surgical wound.
Wound infections with NTM have been found following cardiothoracic surgery, augmentation mammoplasty, and breast reconstruction, liposuction, rhinoplasty and other surgeries. They are thought to be caused by direct or indirect contamination with organism-containing tap water. This can be as a result of inadequately disinfected and sterilized devices, contaminated reprocessing equipment, and rinsing of disinfected devices with tap water. Other sources of the organism have been contaminated gentian violet solution used for marking skin, lubricant used for laparoscopes. Contaminated water supply or ice may be a source. Infection with NTM should be suspected if there little or no response to standard antibiotic treatment of an infection.

Prevention: These are opportunistic pathogens that are widely present in the environment and are not known to be transmitted from person to person. Because of their thick cell wall, slow growth characteristics, they survive easily, and are resistant to many antibiotics and disinfectants. Prevention efforts should focus on processes that prevent transmission from environmental sources in health care facilities such as dust tap water, ice, improperly disinfected and sterilized equipment, contaminated products applied to skin. An effective hand hygiene program should be implemented. If there is an aquarium in the facility, employees should not be involved in cleaning the tank or have contact with water in the tank. Avoid water features, fountains, and prohibit humidifiers that mist water. Environmental cleaning protocols should be followed to minimize soil and dust. Effective disinfection and sterilization protocols should be implemented and preventive maintenance of sterilization equipment should be done. Sterile water should be used in devices whenever possible. Do not use ice from ice machines or home type icemakers. Products for cleaning and disinfecting can be purchased pre-diluted to the appropriate strength to avoid diluting them with tap water. Remember that bottled water is not sterile and can be a source of pathogenic organisms. Avoid activities that may aerosolize tap water. Maintain and disinfect ice machines on a regular basis.

Infections with NTM can be treated. They are resistant to many antimicrobial medications so sensitivity testing is important. Using a single antibiotic or monotherapy often leads to resistance so combination antimicrobial therapy should be used. Wound and soft tissue infections may require debridement in addition to antimicrobial therapy. Removal of an infected implant is usually necessary.