



	No: IC - AC/ LTC 6.8
Approved By: Regional Management Team	Category: Infection Control Acute Care & Long Term Care Source: Regional Infection Control Committee
New/Replaces: Date Approved: 1999 Reviewed: Revised: Oct. 14, 2011	Subject: Management of Antibiotic Resistant Organisms (AROs)

POLICY

All suspected or known positive cases of Antibiotic Resistant Organisms (AROs) will be managed appropriately and efficiently to prevent the spread of infection to others.

DEFINITIONS

Antibiotic Resistant Organism (ARO): A microorganism that has become resistant to commonly used antibiotics that have been used to inactivate it, e.g., MRSA, VRE.

Colonization: The presence, growth and multiplication of an organism in or on a body site, without showing signs or symptoms of an infection.

Methicillin Resistant *Staphylococcus aureus* (MRSA): Strains of *Staphylococcus aureus* that are resistant to oxacillin, cloxacillin and cephalosporins. Some strains may also be resistant to aminoglycosides, erythromycin, quinolones and other antibiotics.

MRSA Positive: An individual who is positive for Methicillin Resistant *Staphylococcus aureus* (MRSA).

MRSA Suspect: An individual who has been exposed to an individual positive for Methicillin Resistant *Staphylococcus aureus* (MRSA) and requires surveillance cultures.

Vancomycin Resistant Enterococci (VRE): Enterococci that have acquired resistance to vancomycin, which is the drug of choice for treating multi-drug resistant enterococci infections.

VRE Positive: An individual who is positive for Vancomycin Resistant Enterococci (VRE).

VRE Suspect: An individual who has been exposed to an individual positive for Vancomycin Resistant Enterococci (VRE) and requires surveillance cultures.

Extended Spectrum Beta Lactamase (ESBL): An enzyme produced by certain species of enteric gram negative bacilli. ESBL has the ability to inactivate a wide range of beta-lactam antibiotics such as penicillins and cephalosporins.

ESBL Positive: An individual who is positive for an Extended Spectrum Beta Lactamase (ESBL).

ESBL Suspect: An individual who has been exposed to an individual positive for an Extended Spectrum Beta Lactamase (ESBL) and requires surveillance cultures.

Vancomycin – Intermediate *Staphylococcus aureus* (VISA): *Staphylococcus aureus* strains that have reduced susceptibility (intermediate resistance) to vancomycin.

Vancomycin – Resistant *Staphylococcus aureus* (VRSA): *Staphylococcus aureus* strains that are resistant to vancomycin.

GENERAL PRINCIPLES

AROs are increasingly being identified in health care facilities and are causing both clinical and infection control challenges. AROs are more difficult to treat than sensitive bacterial strains and once they are introduced into health care environments, they are extremely difficult to eradicate. AROs are usually introduced to the health care setting by an unidentified, infected or colonized individual. AROs also evolve following antibiotic exposure. The transmission of AROs in a health care setting most frequently occurs via the hands of health care workers or when touching contaminated surfaces. Routine Practices remains the foundation for preventing the spread of infections in all health care settings. The following specific AROs are addressed in this protocol: MRSA, VRE, ESBL, and VISA/VRSA. New AROs will continue to emerge and following Routine Practices will remain the basic practice for these as well.

The following list of specific patient/resident characteristics may contribute to the increased risk of spreading AROs: colonized or infected individuals who have large, open, poorly healing wounds, profuse colonized tracheostomy secretions, uncontrolled fecal and urinary incontinence, or extensive desquamating skin conditions.

Occasionally, transmission may occur from the environment through shared patient/resident care equipment, if inadequate disinfection occurs between individual use. Environmental cleaning plays a significant role in decreasing the spread of infection.

Risk factors associated with acquiring AROs in a health care environment include: increased age, serious underlying medical conditions, prolonged or previous hospitalizations, intensive care unit stays, abdominal or thoracic surgery, recurrent use of broad-spectrum antibiotics, presence of invasive devices, and possibly, high patient to nurse ratios.

In most situations, simple colonization with AROs is not associated with increased morbidity or mortality. On the other hand, infections associated with AROs may lead to serious consequences and ARO outbreaks often occur as a result since antimicrobial treatment options are limited. Prompt identification of the ARO along with the use of infection control measures will help to limit transmission.

There are important differences in the management of AROs in acute care hospitals, long-term care facilities and community-based health services. The compromised health of patients in **acute care hospitals** increases their risk of infection with AROs. Following Routine Practices, including hand hygiene, appropriate equipment and environmental cleaning, along with additional Contact Precautions remains very important for preventing the spread of AROs. A **long-term care facility** is a resident's home and infection control precautions must be balanced with promoting a healthy lifestyle for the resident. Following Routine Practices remains very important when caring for ARO positive residents. **Community-based health services** also need to balance infection control precautions with promoting optimal, healthy lifestyles for their clients. Evidence to date does not show that clients who are colonized or infected with an ARO pose a health risk to health care providers or other household contacts. Routine Practices are the essential infection control measures recommended to be followed for **all** clients at **all** times.

ARO Protocols

Staphylococcus aureus (*S. aureus*) are bacteria normally found in the nose and on the skin in up to 30% of the population. These bacteria can cause a variety of infections, ranging from localized skin lesions, such as impetigo, boils or wound infections, to invasive disease. Infections caused by MRSA are generally not any more serious than infections caused by other strains of *S. aureus*, but the treatment of infections caused by MRSA may be less effective. **For management of MRSA patients/residents, see protocol 6.8.1.**

Enterococci are bacteria that are part of the normal flora in the gastrointestinal tract of healthy individuals. Human feces contains great numbers of enterococci and the fecal-oral route is the usual route of transmission. Infections caused by VRE are generally not any more serious than infections caused by other enterococci, but the treatment of serious VRE infections is more problematic due to the limited antimicrobial options. **For management of VRE patients/residents, see protocol 6.8.2.**

Antibiotic resistance to gram negative bacilli is evolving. Microorganisms which produce ESBL are often also resistant to other classes of antibiotics. In Manitoba, these

enzymes have been found primarily in *E. coli* and *Klebsiella* species. The most frequent presentation has been found to be the colonization of the gastrointestinal tract and occasionally the respiratory tract. Infection caused by ESBL-producing microorganisms occasionally occur. Antibiotic treatment options are limited. **For management of ESBL patients/residents, see protocol 6.8.3.**

Strains of *S. aureus* that are intermediately (VISA) or completely resistant (VRSA) to vancomycin have been reported in North America, Asia and Europe, but are uncommon to date. If VRSA becomes common, morbidity and mortality with *S. aureus* infection will likely increase. There is significant concern about the spread of VISA and VRSA among patients due to the limited treatment options. If a VISA or VRSA infection is suspected, infection control must be notified immediately and infection control precautions need to be initiated immediately to decrease the risk of transmission to others. **For management of VISA/VRSA patients/residents, see protocol 6.8.4.**

REFERENCES

Communicable Disease Control, Manitoba Guidelines for the Prevention and Control of Antibiotic Resistant Organisms (AROs), January 2007.