

FREQUENTLY ASKED QUESTIONS

Public Reporting on MRSA and VRE

December 2008

Questions about MRSA and VRE diagnosis and treatment

How are MRSA and VRE diagnosed?

Swabs are performed when patients are admitted to the hospital, and periodically for patients that are at risk. The swabs are sent to the laboratory for analysis and if positive, the laboratory notifies Infection Control so that the patient can be placed under Contact Precautions.

How are MRSA and VRE treated?

If a patient is colonized with MRSA or VRE, generally no treatment is necessary, as the organism will be cleared on its own when the person's health is restored. If it is determined that the patient is infected (e.g. Blood infection, skin infection or wound infection etc.) then the patient will be treated with the appropriate antibiotic as determined by a physician.

Questions about Publicly Reporting MRSA

What is Methicillin-resistant Staphylococcus aureus (MRSA)?

Methicillin-resistant Staphylococcus aureus (MRSA) is a type of bacteria that is resistant to certain or all types of the beta-lactam classes of antibiotics such as penicillins, penicillinase-resistant penicillins (e.g. cloxacillin) and cephalosporins. MRSA are strains of *S. aureus* that have an MIC to oxacillin of ≥ 4 mcg/ml. or contain the *mecA* gene coding for penicillin binding protein 2a (PBP 2a).

What are the risk factors for MRSA?

Risk factors for MRSA acquisition include invasive procedures, prior treatment with antibiotics, prolonged hospital stay, stay in an intensive care or burn unit, surgical wound infection and close proximity to a colonized person. MRSA can also be transmitted from mother to child through breast milk.

What is a case of MRSA bacteraemia?

A MRSA bacteraemia case is a patient identified with laboratory confirmed bloodstream infection with methicillin resistant Staphylococcus *aureus* (MRSA). A blood stream infection is a single positive blood culture for MRSA. The following scenarios could constitute a MRSA bacteraemia case:

- a) *New nosocomial case associated with the reporting facility*

The infection was **not** present on admission (i.e., onset of symptoms > 72 hours after admission) or the infection was present at the time of admission but was related to a previous admission to the same facility within the last 72 hours.

b) New case associated with other health care facility

The infection was present on admission (i.e., onset of symptoms < 72 hours after admission) and the patient was exposed to another health care facility (including LTC) other than the reporting facility within the last 72 hours.

c) New case associated with a source other than a health care facility or unknown/indeterminate source

The infection was present on admission (i.e., onset of symptoms < 72 hours after admission) and the patient was not exposed to any health care facility in the last 72 hours.

What will be publicly reported for MRSA?

Beginning December 30th, each hospital will post its quarterly rate and case count of MRSA bacteraemia acquired in their facility on their website. The first reporting period will cover the months of September, October and November.

At the end of each quarter, the ministry will report the previous quarter's data on its website (www.ontario.ca/patientsafety) by hospital site including:

- (i) the number of new hospital-acquired MRSA bacteraemia cases. Where the number is zero (0) or totaling five (5) or more associated with that hospital site, the number will be posted. If the number is less than 5 cases (i.e. 1 to 4 cases), it will state "< 5 cases," and
- (ii) the hospital acquired MRSA bacteraemia rate

What is the difference between colonization, infection, and bacteraemia?

Colonization: The presence and growth of a microorganism in or on a body with growth and multiplication but without tissue invasion or cellular injury. The patient will be asymptomatic.

Infection: The entry and multiplication of an infectious agent in the tissues of the host. Asymptomatic or subclinical infection is an infectious process running a course similar to that of clinical disease but below the threshold of clinical symptoms. Symptomatic or clinical infection is one resulting in clinical signs and symptoms (disease).

Bacteraemia: The presence of bacteria in the bloodstream.

What is the method of calculation for the MRSA bacteraemia infection rate?

The method of calculation of the MRSA bacteraemia infection rate for the reporting period (on a quarterly basis) is:

Number of nosocomial patients with laboratory identification of MRSA bacteraemia x
1000

Total number of patient days

Where the numerator is the total number of newly identified cases for MRSA bacteraemia associated with the reporting facility, for the reporting period. The denominator is the total number of in-patient days for the reporting period. There are no exclusion criteria.

How is MRSA transmitted?

The single most important mode of transmission of MRSA in a health care setting is via transiently colonized hands of health care workers who acquire it from contact with colonized or infected patients, or after handling contaminated material or equipment. The unrecognized colonized patient presents a particular risk for transmission to other patients.

What is the impact of MRSA on the patient who has it?

In acute care, MRSA infection and colonization impact on patient outcomes, quality of care and duration of hospitalization:

- Patients infected with MRSA have been shown to have a higher incidence of mortality, particularly those with MRSA bacteraemia.
- The use of Contact Precautions to manage MRSA impacts a patient's quality of care and quality of life, with patients expressing greater dissatisfaction with treatment and receiving less documented care.
- The duration of stay in hospital for patients with MRSA is often longer than those without.

Can you put patients with MRSA together?

PIDAC's best practices document strongly recommends that patients known to be colonized or infected with MRSA be placed in a single room with individual toileting facilities. In acute care settings, MRSA-positive patients should not share rooms with MRSA-negative patients.

If a single room is not available, patients known to be colonized or infected with MRSA may be cohorted with other patients who are colonized or infected with MRSA, after consultation with the Infection Prevention and Control Professional.

Questions about Publicly Reporting VRE

What is Vancomycin-resistant Enterococci (VRE)?

Enterococci are bacteria that are normally present in the human intestines and in the female genital tract and are often found in the environment. These bacteria can sometimes cause infections. Vancomycin is an antibiotic that is often used to treat infections caused by enterococci. In some instances, enterococci have become resistant to this drug and thus are called vancomycin-resistant enterococci (VRE). VRE have a minimal inhibitory concentration (MIC) to vancomycin of ≥ 32 mcg/ml. They contain the resistance genes VAN-A or VAN-B.

What are the risk factors for VRE?

Risk factors for VRE acquisition include severity of underlying illness, presence of invasive devices, prior colonization with VRE, antibiotic use and length of hospital stay.

What is a case of VRE bacteraemia?

A VRE bacteraemia case is a patient identified with laboratory confirmed bloodstream infection with Vancomycin-resistant Enterococci (VRE-Bacteraemia). A blood stream infection is a single positive blood culture for VRE.

The following scenarios could constitute a VRE bacteraemia case:

a) *New nosocomial case associated with the reporting facility*

The infection was **not** present on admission (i.e., onset of symptoms > 72 hours after admission) or the infection was present at the time of admission but was related to a previous admission to the same facility within the last 72 hours.

b) *New case associated with other health care facility*

The infection was present on admission (i.e., onset of symptoms < 72 hours after admission) and the patient was exposed to another health care facility (including LTC) other than the reporting facility within the last 72 hours.

c) *New case associated with a source other than a health care facility or unknown/indeterminate source*

The infection was present on admission (i.e., onset of symptoms < 72 hours after admission) and the patient was not exposed to any health care facility in the last 72 hours.

What will be publicly reported for VRE?

Beginning December 30th, each hospital will post its quarterly rate and case count of VRE bacteraemia acquired in their facility on their website. The first reporting period will cover the months of September, October and November.

At the end of each quarter, the ministry will report the previous quarter's data on its website (www.ontario.ca/patientsafety) by hospital site including:

- (i) the number of new hospital acquired MRSA bacteraemia cases. Where the number is zero (0) or totalling five (5) or more associated with that hospital site, the number will be posted. If the number is less than 5 cases (i.e. 1 to 4 cases), it will state "< 5 cases," and
- (ii) the hospital acquired VRE bacteraemia rate

What is the difference between colonization, infection, and bacteraemia?

Colonization: The presence and growth of a microorganism in or on a body with growth and

multiplication but without tissue invasion or cellular injury. The patient will be asymptomatic.

Infection: The entry and multiplication of an infectious agent in the tissues of the host. Asymptomatic or subclinical infection is an infectious process running a course similar to that of clinical disease but below the threshold of clinical symptoms. Symptomatic or clinical infection is one resulting in clinical signs and symptoms (disease).

Bacteraemia: The presence of bacteria in the bloodstream.

What is the method of calculation for the VRE bacteraemia infection rate?

The method of calculation of the VRE bacteraemia infection rate for the reporting period (on a quarterly basis) is:

$$\frac{\text{Number of nosocomial patients with laboratory identification of VRE bacteraemia}}{1000} \times \text{Total number of patient days}$$

Where the numerator is the total number of newly identified cases for VRE bacteraemia associated with the reporting facility, for the reporting period. The denominator is the total number of in-patient days for the reporting period. There are no exclusion criteria.

How is VRE transmitted?

The single most important mode of transmission of VRE in a health care setting is via transiently colonized hands of health care workers who acquire it from contact with colonized or infected patients, or after handling contaminated material or equipment. The unrecognized colonized patient presents a particular risk for transmission to other patients.

What is the impact of VRE on the patient who has it?

In acute care, VRE infection and colonization impact on patient outcomes, quality of care and duration of hospitalization:

- The use of Contact Precautions to manage VRE impacts a patient's quality of care and quality of life, with patients expressing greater dissatisfaction with treatment and receiving less documented care.
- The duration of stay in hospital for patients with VRE is often longer than those without.

Can you put patients with VRE together?

PIDAC's best practices document strongly recommends that patients known to be colonized or infected with VRE be placed in a single room with individual toileting facilities. In acute care settings, VRE-positive patients should not share rooms with VRE-negative patients.

If a single room is not available, patients known to be colonized or infected with VRE may be cohorted with other patients who are colonized or infected with VRE, after consultation with the Infection Prevention and Control Professional.

Questions about Public Reporting Process and Requirements

Will the public reporting of MRSA and VRE follow the same format as the public reporting of *Clostridium difficile* (*C. difficile*)?

While you will still use WERS to publicly report your hospital's MRSA and VRE rates, there are a number of differences too. The main difference is that MRSA and VRE rates will be posted quarterly, whereas *C. difficile* rates are posted monthly.

Also, "outbreaks" of MRSA and VRE will not be tracked for the purposes of public reporting. This is because the bacteraemia rates are expected to be extremely low for individual facilities and outbreaks of bacteraemia are not expected. Bacteraemia rates will provide useful information over time for the province as a whole.

If a patient with an infected wound on admission, but does not have bacteraemia, subsequently develops a bacteraemia, should they be counted as a new case?

If the bacteraemia developed in less than 72 hours, then it would not be attributed to the reporting facility and such a case should not be counted as a new nosocomial case associated with the reporting facility. It should be accounted as a case either associated with other health care facilities or a source other than a health care facility. If the bacteraemia developed in greater than 72 hours, then it should be attributed to the reporting facility.

Where the bacteraemia case was attributed to another reporting facility (if the patient had been transferred from another hospital or health care facility within 72 hours), it is not required that the hospital contact that other facility for public reporting purposes.

If a patient's original MRSA bacteraemia had been successfully treated with clinical resolution and more than six weeks has elapsed since the completion of the antimicrobial treatment of the original bacteraemia, but this patient, upon re-admission to the hospital, gets MRSA bacteraemia, should we count them as a case?

Yes. The question indicates that "the infection was **not** present on admission (i.e., onset of symptoms > 72 hours after admission) or the infection was present at the time of admission but was related to a previous admission to the same facility within the last 72 hours." Therefore, the patient fits the case definition for a case associated with the reporting facility and a subsequent MRSA bacteraemia in this patient is considered to be a new episode and is counted as a case by the reporting facility. The same applies to patients with VRE.

What determines the rate?

The number of new cases of either MRSA or VRE bacteraemia acquired in the hospital in a quarter is divided by the number of patient days for that quarter. The results are multiplied by 1000. This represents the rate of either hospital acquired associated MRSA or VRE bacteraemia associated with the reporting facility per 1000 patient days. (e.g. 5 cases ÷ 10,000 patient days = 0.0005 x 1000 = 0.5 per 1000 patient days). The rates of infection will be calculated by quarter.

Does the public reporting of MRSA and VRE apply to all hospitals or just all acute care hospitals?

All Ontario hospitals including rehabilitation, complex continuing care, mental health and addiction facilities will be required to publicly report.

The MOHLTC filed O. Reg. 257/08 amending Regulation 965 made under the *Public Hospitals Act* by adding section 22.2 which deals with hospitals' public reporting requirements for information concerning indicators of the quality of health care provided to hospitals. The information regarding the reporting requirements for MRSA and VRE were sent to hospitals on October 20, 2008.

Will MRSA and VRE bacteraemia data be collection be retrospective or prospective?

Hospitals will be required to report through Web-Enabled Reporting System (WERS) on a retrospective basis. For the December 30, 2008 reporting, hospitals will report both their MRSA-bacteraemia data and their VRE-bacteraemia data from September 1, 2008 to November 30, 2008 in WERS.

How frequently will hospitals have to publicly report on MRSA?

Hospitals will have to enter their data in WERS for MRSA and VRE bacteraemia on a monthly basis. Reporting however, will occur on a quarterly basis as per the following schedule:

Quarterly data for	Date reported on WERS	Date Publicly Reported
Sept-Oct-Nov 2008	December 15 th , 2008	December 30 th , 2008
Jan-Feb-March 2009	April 15 th , 2009	April 30 th , 2009
April-May-June 2009	July 15 th , 2009	July 30 th , 2009
July-Aug-Sept 2009	Oct 15 th , 2009	Oct 30 th , 2009

Every quarter thereafter, January, April, July, and October.

Is it likely or possible that infection rates for MRSA and VRE will vary from hospital to hospital?

Yes, rates may vary and may be a factor of the types of procedures and services or depending upon the type of patients served by the hospital.

What will the health care system do with the rate information?

Hospital acquired infection rates provide one measure of patient safety and the quality of care. The rate of hospital acquired MRSA and VRE bacteraemia will assist hospitals to evaluate the effectiveness of infection prevention and control interventions and make further improvements based on this information.

Questions about the Prevention and Control of Hospital-acquired Infections

What are the screening recommendations for hospitals?

According to PIDAC's best practices document, screening is conducted to identify colonized and infected patients. Screening is not a control method in itself and Routine Practices must be carried out on all patients at all times whether or not screening is conducted. Screening for risk factors for MRSA and VRE should include a screening tool that is applied to all patients admitted to the hospital.

The following patients are at increased risk for both MRSA and VRE and should be screened for MRSA and VRE:

1. those who have previously been colonized or infected with MRSA or VRE
2. those who have spent time in a health care facility outside of Canada in the last 12 months;
3. those who have been admitted to, or who have spent more than 12 continuous hours as a client/patient/resident in, any health care facility in the past 12 months;
4. those transferred between health care facilities (e.g. between hospitals or between a long-term care facility and a hospital);
5. clients/patients/residents who have recently been exposed to a unit/area of a health care facility with an MRSA or VRE outbreak;
6. other high-risk client/patient/resident populations as identified by the Infection Prevention and Control Professional(s), Public Health or the Regional Infection Control Network.

Additional individuals may be considered for MRSA and VRE specimens as outlined in the PIDAC best practices document (Refer to page 20).

What are the necessary precautions for MRSA and VRE in acute care settings?

Hospitals should employ Contact Precautions for patients with MRSA and VRE, these include:

- Hand hygiene as described in Routine Practices (refer to Appendix D, "*PIDAC'S Hand Hygiene Fact Sheet for Health Care Settings*");
- Appropriate patient placement, i.e. single room or cohorting of patients.
- Gloves for entering the patient's room or bed space;
- Long-sleeved gown for entering the patient's room or bed space;
- Hand hygiene by the patient before leaving his/her room;
- Dedicated use of equipment or adequate cleaning and disinfecting of shared equipment.

How aggressive should the hospital be with patients who are colonized with MRSA or VRE?

Hospital infection prevention and control practices should be consistent with and follow the steps outlined in the PIDAC best practices document "Infection Prevention and control of resistant *Staphylococcus aureus* and *Enterococci* in all Health Care settings" (March 2007).

Is decolonization of infected patients recommended?

Decolonization refers to the use of topical agents, such as nasal antimicrobial ointment and body wash and/or oral antibiotics, to remove resistant bacteria from a colonized individual. Decolonization has been used, along with other measures, to help control the spread of MRSA and VRE in some centres.

According to the PIDAC best practices document, decolonization therapy of MRSA and VRE patients is not currently recommended.

What should hospitals be doing if their MRSA or VRE Bacteraemia rates are high?

Hospitals that identify a high rate of MRSA or VRE bacteraemia should review their infection and control practices to ensure that it aligns with best practices, including the PIDAC documents and the Canada Communicable Disease Report, “Surveillance for Methicillin-Resistant *Staphylococcus aureus* in Canadian Hospitals - A Report Update from the Canadian Nosocomial Infection Surveillance Program.”

Hospitals should also review their surveillance practices, environmental cleaning practices, hand hygiene program/practices, and consult with their local Public Health Unit (PHU) and Regional Infection Control Network (RICN) to identify if there are any further actions that they can consider taking.

Unlike CDAD, there are no legal requirements for hospitals to report their MRSA and VRE colonization, infection, or bacteraemia rates to the public health unit. As such, it is dependent upon the good judgment of the hospital and professionals to decide when additional assistance is required.

What are hospitals doing to improve the occurrences of hospital-acquired infections?

There is strong collaboration among Ontario hospitals, the provincial government and the Ontario Hospital Association to continually improve system performance, particularly in the area of patient safety. At a provincial level, hospitals:

- participate in the MOHLTC’s infection prevention and control core competencies education program;
- use PIDAC’s best practice guidance documents;
- are implementing the provincial *Just Clean Your Hands* campaign; and
- attend education sessions held by the OHA and the RICNs on a variety of infection prevention and control topics.

Hand Hygiene is the corner stone in preventing the spread of all infections in a health care setting. The Kingston hospitals actively conduct surveillance to find cases of MRSA and VRE. If a patient is positive for MRSA or VRE they are placed under precautions. Hospital environmental cleaning is a high priority as it helps to prevent infections. All the Kingston hospitals have implemented the ***Just Clean Your Hands*** program, a Ministry of Health and Long Term Care initiative aimed at improving staff compliance with performing hand hygiene at certain high risk points in the provision of care.

Now with the new public reporting system on HAIs, hospitals can trend and eventually benchmark their infection control rates.