Policy & Procedure

Policy Title:	Management of Antimicrobial Resistant Organisms (AROs)	
Applies To:	Team Members in all Acute Care Clinical Areas, Infection Prevention and Control departments, Microbiology Laboratory	
Approved:	**Effective:**	**Next Review:**
March 21, 2022	May 3, 2022	March 21, 2026
Sponsor:	**Senior Director, Quality Improvement and Safety**	
Approval Authority:	Vice President, Quality, System Performance and Transformation	
Number: IPC-ARO-001	**Manual:** Infection Prevention and Control	

Note: This policy is not intended for use in Long Term Care or Community Care Environments, or Nova Scotia Health units solely dedicated to caring for Patients awaiting discharge/transfer to long term care facilities.

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PURPOSE

This policy enhances Patient safety through a standardized approach to Antimicrobial Resistant Organism (ARO) screening and management.

POLICY STATEMENTS

1. Routine Practices including a Point of Care Risk Assessment (PCRA) must be practiced with all Patients at all times.
2. The ARO Screening Tool must be completed by the Regulated Health Care Provider (RHCP) only, at the **first point of entry** to the health care system for all **admitted** Patients (e.g., Emergency Departments, Pre-admission departments, etc.).
   2.1. UHCP and Learners do not complete the ARO Screening Tool.
   2.2. If screening specimens are not completed at the first point of entry, this must be conveyed to the receiving care area as part of the Transfer of Accountability (TOA).
3. Required Screening specimens must be collected within 24 hours of admission by the RHCP/UHCP who is responsible for the Patient and/or the RHCP/UHCP who is providing care directly to the Patient.

4. The RHCP/UHCP must perform the swab collection procedure on the Patient (i.e., the Patients must not collect their own specimens) as per Management of AROs – Care Directive – NSHA CD-IPC-001.

   4.1. UHCPs collect specimens and document as directed by the responsible RHCP.

5. Microbiology laboratory staff are responsible to report new cases of AROs to Infection Prevention and Control (IPAC) and Public Health as per "It's the Law" Reporting Notifiable Diseases and Conditions.

Note: AROs includes, but is not limited to:

- Methicillin-resistant *Staphylococcus aureus* (MRSA),
- Vancomycin-resistant *Enterococcus* (VRE), and
- Carbapenemase-producing *Enterobacterales* (CPE).

PRINCIPLES AND VALUES

- Nova Scotia Health is committed to the safety of Patients and Team Members through ongoing screening for Antimicrobial Resistant Organisms (AROs).
- Active Screening of risk factors and collecting swabs for laboratory identification leads to early identification of AROs.
- Identifying a Patient's ARO status through risk-based Screening at the earliest point of admission is a mandatory component of the permanent health record; and necessary in order to apply further control measures such as Patient bed placement and Contact Precautions.
- Colonization of AROs often comes before infection, and so a comprehensive approach including early identification, implementation of Contact Precautions to manage cases, and ongoing surveillance is essential to prevent transmission and Infection with AROs.
- **To prevent and control the spread of AROs, a multi-faceted approach that incorporates strategies specific to Hand Hygiene, Routine Practices and Additional Precautions, enhanced cleaning and disinfection, risk assessment, risk reduction, and education will be used.**

PROCEDURE

Screening

6. The registration clerk is responsible to:

   6.1. Verify Patient/client flags in the electronic Patient record (e.g., Meditech, STAR, PHS) upon registering the Patient.

Note:

The System indicates if the Patient:

- Has previously been identified as MRSA, VRE, CPE or other ARO positive.

- Is a MRSA, VRE, CPE or other ARO contact who requires Antimicrobial Resistant Organism (ARO) testing.

7. The RHCP admitting the Patient:
   - 7.1. Completes the ARO Screening Tool.
   - 7.2. Explains to the Patient the rationale for the ARO Screening questions, and any testing required.
   - 7.3. Places Neonates born of Patients being screened for an ARO on Contact Precautions until the results of the birthing Patient's screening are known to be negative.
     - 7.3.1. Neonates born of Patients being screened for an ARO do not need to be screened.
   - 7.4. If a Patient meets the Screening criteria and the Patient declines to have the required specimens and/or subsequent specimens collected:
     - 7.4.1. Provides the Patient with appropriate education regarding the importance of ARO screening
     - 7.4.2. Respects their decision
     - 7.4.3. Places the Patient on Contact Precautions for the duration of the admission **and notifies IPAC**. Private room not required.
   - 7.5. Advises the bed utilization coordinator/supervisor of special requirements indicated by the ARO Screening tool when assigning beds (i.e., the need for Contact Precautions and a private room on admission).
     - 7.5.1. The bed utilization coordinator/supervisor will assign a bed based on requirements indicated by the screening tool, subject to availability.
     - 7.5.2. If a private room is required but is unavailable, IPAC/delegate will be notified.
   - 7.6. **Notifies IPAC** and places the Patient on Contact Precautions when a Patient:
     - 7.6.1. Indicates they have an ARO history that is not identified in the organizational electronic health record system.
     - 7.6.2. Has been hospitalized outside of the Maritime Provinces, or internationally within the last year.
       - Additional Screening may be required according to geographical region.

Management of Previously Identified MRSA/VRE/CPE/other Positive Patients

1. The RHCP is responsible to:
   - 1.1. Place any Patient with previously identified MRSA/VRE/CPE/other AROs on Contact Precautions and in a private room.
     - 1.1.1. If a private room is not available, the Patient is placed on Contact Precautions and IPAC/delegate notified.

1.2. Ensure that two or more previously identified ARO positive Patients are not placed in the same room unless assessed and approved by IPAC.

1.3. Contact IPAC for a review of Patient specifics to determine if routine swabbing is required, or if the Patient meets the criteria for deflagging.

1.4. Place neonates born of Patients known to be colonized or infected with an ARO on Contact Precautions for the duration of the admission.

1.4.1. Do not screen these neonates for ARO.

Note: Given the nature of the care that may be provided by the birthing parent, the newborn can become colonized at any time.

Specimen Collection

1. The RHCP/UHCP is responsible to:

1.1. Collect specimen(s) as per Management of ARO's – Care Directive – NSHA CD-IPC-001.

Transfer Screening/Swabbing

1. When there is a Patient who is positive for an ARO on a unit, the RHCP/UHCP who is caring for any Patient being transferred from that unit to another unit within the same facility or another care facility within Nova Scotia Health is responsible to collect specimens from the transferring Patients, as per Management of ARO's – Care Directive – NSHA CD-IPC-001 and document.

- This includes Patients who are discharged in the registration system from one facility and are admitted into the registration system of receiving facility (i.e., a Patient from Colchester requires transfer to Halifax for specialized treatment.)
- The type of testing required depends on the type of ARO positive Patient present on the unit (i.e., if the Patient is MRSA and VRE positive, all Patients will require an MRSA & VRE specimen on transfer to another unit or facility.)
- ARO positive Patients do not require transfer swabs unless there is a Patient on the unit with a different ARO (e.g., an MRSA positive Patient is transferring and there is a VRE positive Patient present on the unit. The Patient would require a VRE swab only.)

1.1. In outbreak situations, IPAC advises regarding specimens required and the need for Contact Precautions.

Newly Identified ARO Patient (Presumptive and Confirmed)

1. The RHCP is responsible to:

1.1. Place a Patient on Contact Precautions when a Microbiology report - indicates presumptive or positive for MRSA/VRE/CPE/other and transfer to a private room.

Note: When a private room is not available, contact IPAC for direction. In some circumstances, Patients with the same organism may be able to be housed in the same room once a risk assessment is made (referred to as cohorting).

1.2. Notify the Most Responsible Provider (MRP) to assess whether initiation or modification of antimicrobial therapy is required if a positive clinical isolate or infection.

1.3. Provide verbal education and applicable Nova Scotia Health Patient and Family Guides to the Patient and family.

1.4. Document in the Patient health record the use of Contact Precautions and education provided.

2. IPAC is responsible to complete Patient Contact Tracing and collaborate on follow-up education.

MRSA/VRE/CPE Contacts

1. The RHCP is responsible to:

1.1. Place any Patient who has shared a room with a newly identified ARO positive Patient on Contact Precautions.

1.2. Complete or assign to the UHCP one set of MRSA/VRE/CPE specimens as appropriate as per Management of ARO's – Care Directive - CD-IPC-001 (for example: the roommate of a newly identified VRE Patient would require VRE specimen collection but not MRSA or CPE.)

1.3. Repeat these specimens 72 hours later if contact with MRSA or VRE.

1.3.1. IPAC is responsible to advise on when to complete repeat CPE/other specimens.

1.4. Contact IPAC to determine if Contact Precautions can be discontinued if results are negative.

1.5. Notify IPAC to flag Patients as a contact in the electronic health record system if the Patient is discharged prior to obtaining a swab.

1.5.1. Obtain a swab and place the Patient on Contact Precautions on their return to a health care facility.

1.6. Document in the Patient health record the use of Contact Precautions and education provided.

Discontinuing Precautions

1. RHCP consults IPAC prior to discontinuing precautions.

- Duration of precautions will be reviewed on a case-by-case basis by IPAC.

Management of Identified Multidrug-resistant Positive Patients (e.g., Extended Spectrum B-lactamase (ESBL)).

1. When a culture/specimen (wound, urine, blood etc.) is positive for a multi-drug-resistant organism the RHCP is responsible to:
    1.1. Place the Patient on Contact Precautions and transfer to a private room if possible.
    1.2. Notify the MRP to assess whether initiation or modification of antimicrobial therapy is required.
    1.3. Maintain Contact Precautions for the duration of the index hospital stay when infection or colonization with these bacteria is first detected.
    1.4. Discontinue Contact Precautions on a case-by-case basis.
        1.4.1. IPAC should be consulted for removal of precautions.

Note: Electronic chart flagging is not required for an ESBL.

GUIDELINES

Discharge Swabbing

1. Discharge swabs are not routinely recommended.
2. During contact tracing or in outbreak situations, IPAC may recommend obtaining ARO discharge swabs for a defined time period.
    2.1. Missed swabs in these situations will result in Patients requiring swabbing and/or Contact Precautions at the next point of entry to health care within Nova Scotia Health.

Targeted/Point Prevalence Screening

If the unit is experiencing an increased number of transmissions or an outbreak, IPAC is responsible to:

1.1. Direct the RHCP to complete targeted/point prevalence screening to identify AROs (MRSA/VRE/CPE/other) to determine the total number of new cases and evidence of ongoing transmission at a single point in time.

Note: Targeted/point prevalence screening is sometimes referred to as a “unit sweep”.

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RELATED DOCUMENTS

Policies

Antimicrobial Resistant Organisms - Care Directive - NSHA CD-IPC-001

Hand Hygiene - Policy and Procedure - NSHA IPC-RP-020

Routine Practices and Precautions - Policy - NSHA IPC-RP-001

Routine Practices - Policy - NSHA IPC-RP-005

Contact Precautions - Policy - NSHA IPC-RP-010

IWK Health

IWK - IC 325.1 - MRSA Screening & Management in Ambulatory & Inpatient Care Settings

IC 340.0 VRE: Active Screening and Management of Inpatients

Forms

Antibiotic Resistant Organism Screening Tool Infection Prevention and Control

Brochures

CPE (Carbapenemase-producing Enterobacteriaceae) 2021

MRSA (Methicillin-resistant Staphylococcus aureus) 2021

SARM (Staphyloccocus aureus resistant a la methicilline) 2017

VRE (vancomycin-resistant enterococcus) 2021

ERV (Enterococcus resistants a la vancomycine) 2017

Preventing the Spread of Germs and Infections- Routine Practices and Additional Precautions 2021

Prevenir la propagation des microbes et infections: pratiques de base et precautions supplementaires 2017

Patient and Family Stories

NSH Patient and Family Story 40 - Thank You for Caring

Other

It's the Law: Reporting Notifiable Diseases and Conditions

Provincial Microbiology Users Manual

Appendices

Appendix A: Definitions

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Appendix A: Definitions

Additional Precautions	Further safety measures based on the method of transmission (i.e., contact, droplet, airborne) that are necessary when Routine Practices alone may not be enough to interrupt transmission of an infectious agent.
Antimicrobial Resistant Organism (ARO)	A Microorganism that has developed resistance to the action of several antimicrobial agents and that is of special clinical or epidemiologic significance. ARO refers to currently known epidemiologically important antimicrobial resistant organisms e.g., MRSA (Methicillin-resistant *Staphylococcus aureus*), VRE (Vancomycin-resistant *Enterococcus*), CPE (Carbapenemase-producing *Enterobacterales*) and multidrug-resistant organisms. It may also include other epidemiologically important organisms identified (i.e., *Candida auris*). For the remainder of the document "other" will refer to these organisms.
Carbapenemase-producing Enterobacterales (CPE)	*Enterobacteriaceae* that are resistant to carbapenem antimicrobials (e.g., meropenem, imipenem, ertapenem) through the production of carbapenemase enzymes. Carbapenemases are enzymes that inactivate carbapenem, cephalosporin and penicillin antibiotics.
Cohort	A group of individuals having a statistical factor (as age or risk) in common.
Colonization	Presence of Microorganisms in or on a host with growth and multiplication but without tissue invasion, cellular injury, or symptoms.
Community Setting	A location outside of a hospital inpatient, acute care setting, or hospital clinic setting. A community setting may include, but is not limited to, a home, group home, assisted living facility, correctional facility, hospice, or long-term care facility.
Contact Precautions	Safety measures used to prevent contact transmission i.e., when contact exposure (direct or indirect) leads to an infectious dose of viable Microorganisms from an infected/contaminated source, resulting in Colonization and/or Infection of a susceptible host.
Contact Tracing	The identification and follow-up of persons who may have come into contact with an infected person. Contact tracing finds new cases quickly so they can be isolated to stop further spread. (CDC, 2016).
Decolonization	A routine where cleansing and antibiotics are used to remove antibiotic resistant organisms from the Patient's system.
Extended Spectrum B-lactamase (ESBL)	Extended-spectrum beta-lactamase (ESBLs) are a group of Gram-negative bacteria (predominantly bowel organisms) such as *E. coli* and *Klebsiella*, which can produce enzymes that break down beta

	lactam antibiotics (e.g., penicillin, cephalosporin, etc.) rendering them useless.
Infection	Entry and multiplication of an infectious agent in the tissues of a host leading to a response from the host's immune system. Infection may or may not lead to clinical disease.
Methicillin Resistant *Staphylococcus aureus* (MRSA)	Strains of *Staphylococcus aureus* that have developed resistance to beta-lactam classes of antibiotics (e.g., penicillin's, cephalosporins). Contact Precautions are used for MRSA.
MRSA Contact	Any Patient who has may have had contact with a MRSA positive Patient. A Patient/client flag is applied to the health record to indicate that Screening is required to determine Colonization and the need for Contact Precautions.
MRSA Positive Patient	A Patient that has a known positive specimen for MRSA (infection or colonization) in one or more sites. A Patient/client flag is used to identify carriers and indicate the additional precautions required.
Microorganism	A bacterium, virus, fungus, or protozoan capable of causing disease (infection) in a source or a host
Most Responsible Provider	The physician or nurse practitioner who has responsibility for directing and coordinating the care and management of an individual Patient at a specific point in time.
Multidrug-resistant Organisms	Antimicrobial resistance is the ability of Microorganisms (including bacteria, fungi, viruses, and parasites) to become resistant to treatment by antimicrobial drugs, such as antibiotics. Resistance can develop naturally over time as Microorganisms evolve, mutate and multiply.
Patient	All individuals including clients, residents, and members of the public who receive or have requested health care or services from Nova Scotia Health and its health care providers.
Patient/Client Flag	A flag or notification of a clinically relevant special need or condition that is recorded in a clinical information system, with the supporting documentation, if available, in the health record.
Point of Care Risk Assessment (PCRA)	An activity where clinical care providers evaluate the likelihood of exposure to an infectious agent for a specific interaction, with a specific Patient, in a specific environment, under available conditions and choose the appropriate actions/PPE needed to minimize exposure.
Regulated Health Care Provider (RHCP)	The practice of a regulated health care provider is set out by legislation. A college, association, board or other entity regulates the practice of the provider in the public interest by setting out the criteria for membership, a process for the investigation/resolution of complaints against members and provides that persons who are

	not admitted as members may not engage in the scope of practice as defined in the governing statute. A regulated health care provider has a governing statute; a scope of practice as defined in its governing statute; and is guided by standards of practice and a code of ethics.
Routine Practices	The Public Health Agency of Canada's (PHAC) minimum standard of Infection Prevention and Control practice to prevent the transmission of Infection in all health care settings.
Screening	The collection of specimens from specific body sites known to be associated with Colonization by a specific Microorganism. Screening is conducted to identify Patients who are colonized with specific AROs.
Targeted/Point Prevalence Screening	Often referred to as a "unit sweep"; screening to identify AROs (MRSA/VRE/CPE/other) that is done under the direction of IPAC to determine the total number of new cases and evidence of ongoing transmission at a single point in time. This may include MRSA/VRE/CPE/other specimens from all Patients on a particular unit every few weeks, specific Patients that have been on the unit for an increased length of stay, or weekly specimens if the unit is experiencing an increased number of transmissions or an Outbreak.
Team Member	Unless specifically limited by a certain policy, refers to all Employees, physicians, learners, volunteers, board members, contractors, contract workers, franchise employees, and those with affiliated appointments and other individuals performing activities within NS Health
Transitional Care Unit (TCU)	A unit or wing within an acute care facility housing Patients awaiting admission/placement in long term care facilities.
Unlicensed Health Care Providers (UHCPs)	The practice of UHCPs is not set out in or regulated by legislation. Individual UHCPs are always accountable to their employer for their actions (which includes inactions) and the decisions they make through a scope of employment, rather than a regulatory body (e.g., College, Association).
Vancomycin Resistant Enterococcus (VRE)	Strains of *Enterococcus faecium* or *Enterococcus faecalis* that have developed resistance to Vancomycin. Contact Precautions are used for VRE.
VRE Contact	A Patient that may have come in contact with VRE during a recent admission. A Patient/client flag is used to identify the need for screening and Contact Precautions.
VRE Positive Patient	A Patient that has a known positive specimen for VRE in one or more sites. A Patient/client flag is used to identify VRE positive Patients and indicate Contact Precautions are required.

Appendix B: MRSA Fact Sheet for Staff

Methicillin-Resistant Staphylococcus Aureus (MRSA) Fact Sheet for Staff

What is MRSA?

Staphylococcus aureus is a bacterium that periodically lives on the skin and mucous membranes of healthy people. Occasionally *S. aureus* can cause an Infection. When *S. aureus* develops a resistance to the beta-lactam class of antibiotics, it is called methicillin-resistant *Staphylococcus aureus,* or MRSA. It is present in the community and health care facilities.

How is MRSA spread?

MRSA is spread from one person to another by contact. In health care settings, it is commonly spread on unwashed hands of health care providers (direct contact) and contaminated equipment (indirect contact).

Colonization and Infection

Colonization occurs when the bacteria are present on or in the body without causing illness. MRSA can colonize the nose, skin, and moist areas of the body.

Infection occurs when the bacteria get past the person's normal defenses and cause disease (e.g., skin bacteria getting into the bloodstream via an intravenous catheter). Infections with MRSA may be minor, such as pimples and boils, but serious Infections may also occur, such as surgical wound infections and pneumonia.

Risk Factors for MRSA Colonization and Infection

While MRSA Infection usually develops in hospitalized Patients who are elderly or very sick (weakened immune systems), other factors that increase the risk for acquiring MRSA Infection include:

- Being colonized with MRSA
- Previous hospitalization or transfer between health care facilities (in Canada or outside Canada)
- Presence of an indwelling device (e.g., catheter, central venous access device, etc.).

Appendix C: VRE Fact Sheet for Staff

Vancomycin Resistant Enterococcus (VRE) Fact Sheet or Staff

What is VRE?

Enterococci are bacteria that live in the gastrointestinal tract of most individuals and generally do not cause harm. Vancomycin resistant *enterococci* (VRE) are strains of enterococci that are resistant to the antibiotic vancomycin. If a person has an Infection caused by VRE such as a urinary tract Infection or blood Infection, it may be more difficult to treat.

How is VRE spread?

VRE is spread from one person to another by contact. In health care settings, it is commonly spread on unwashed hands of health care providers (direct contact) and contaminated equipment (indirect contact). VRE can survive well on surfaces such as bedrails, furniture, equipment, etc.

Colonization and Infection

Colonization occurs when the bacteria are present on or in the body without causing illness.

Infection occurs when the bacteria get past the person's normal defenses and cause disease (e.g., skin bacteria getting into the bloodstream via an intravenous catheter).

Risk Factors for VRE Colonization and Infection

People at risk for Colonization or Infection with VRE are usually hospitalized and have an underlying medical condition which makes them susceptible to Infection. Those conditions include:

- Previous hospitalization or transfer between health care facilities (in Canada or outside Canada).
- Critical illness in intensive care units
- Severe underlying disease or weakened immune systems
- Urinary catheters
- Exposure to (or contact with) a Patient with VRE
- Antibiotic use, particularly vancomycin.

Appendix D: CPE Fact Sheet for Staff

Carbapenemase-producing Enterobacterales (CPE) Fact Sheet for Staff

What are CPE?

Carbapenemase-producing *Enterobacterales* are bacteria that are resistant to carbapenem antimicrobials (e.g., meropenem, imipenem, ertapenem) through the production of carbapenemase enzymes. Carbapenemases are enzymes that inactivate carbapenem, cephalosporin and penicillin antibiotics.

To date, carbapenemases have been found mostly in *E. coli* and *Klebsiella* species but have also been found in other Gram-negative bacteria. Particular classes of carbapenemases are most common in the geographic area where they evolved, but can spread around the world, usually when Patients have received health care in another country.

Because CPE are resistant to many classes of antimicrobials, treatment of Infections with CPE is difficult and involves the use of antibiotics that have significant adverse events. The case fatality rate for serious Infections may be as high as 50%.

Current status of CPE in Atlantic Canada

A small number of CPE have recently been reported in hospitals in Canada, but it is still quite rare in Atlantic Canada. Most Patients with CPE have had links to hospitals with recognized epidemic or endemic CPE (e.g., New York City hospitals with *K. pneumoniae*, receipt of health care in the Indian subcontinent). However, transmission of CPE has been reported in Ontario.

How are CPE spread?

Transmission is via direct and indirect contact. Primary site of Colonization is the lower gastrointestinal tract.

Colonization and Infection

Colonization occurs when the bacteria are present on or in the body without causing illness.

Infection occurs when the bacteria get past the person's normal defenses and cause disease (e.g., skin bacteria getting into the bloodstream via an intravenous catheter).

Risk Factors for CPE

Risk factors for Infection and Colonization with CPE will be similar to those of other resistant Gram-negative bacteria.

Currently, the major risk factor appears to be receipt of care in health care settings that have CPE, e.g., hospitals along the U.S. eastern seaboard, particularly New York City, Greece, Israel, and the Indian subcontinent. However, CPE outbreaks are being increasingly described in hospitals around the world, including Canada. People coming from the Indian subcontinent, with or without exposure to health care, are also at risk.

DISTRICT HEALTH AUTHORITY POLICIES BEING REPLACED

N/A

VERSION HISTORY

Version:	Effective:	Approved by:	What's changed:
Original	2016-03-16	VP, Quality and System Performance	N/A
Revised	2022-05-03	Vice President, Quality, System Performance and Transformation	
Revised	TBD	TBD	Minor Revision: Inclusion of UHCPs