Introduction

Staphylococcus aureus is a gram-positive bacteria, which forms a part of the normal flora found on skin and mucous membranes. Methicillin-resistant Staphylococcus aureus (MRSA) is a strain that has developed resistance to some antibiotics. A person who is colonized or infected with this organism may serve as a reservoir for MRSA, which could then be the source for infection transmitted to other persons. Infection can occur when MRSA is associated with tissue invasion. Common sites of infection are urine and surgical wounds, invasive devices and soft tissue wounds. Less common infections are bacteremia and pneumonia. Refer to MRSA Fact Sheet.

Definitions

Cohort:
- Two or more residents colonized or infected with the same organism who are separated physically (i.e., in a separate room or neighbourhood) from other residents who are not colonized or infected with that organism.

Spatial Isolation:
- Separation by distance (minimum of 2 meters).

Policy

1. In addition to Routine Practices, use Contact Precautions for residents known to be infected or colonized with MRSA.

2. A. In LTC, in addition to Routine Practices, use Contact Precautions for contacts of newly identified positive residents known to be infected or colonized with MRSA. Contact Precautions must be in place until appropriate swabs are deemed negative (see procedure #11 Cultures – Contacts of Newly Identified Residents). Contacts are defined as:
   a. All roommates who have resided in the same room as the newly identified ARO resident for 24 hours and greater.
   b. Close contacts such as table mates or others as identified by Infection Prevention & Control upon discussion with the home.
OR

B. In LTC, use Routine Practices for contacts of newly identified positive residents known to be infected or colonized with MRSA until appropriate swabs are deemed negative (see procedure #11 Cultures – Contacts of Newly Identified Residents). Contacts are defined as:
   a. All roommates who have resided in the same room as the newly identified ARO resident for 24 hours and greater.
   b. Close contacts such as table mates or others as identified by Infection Prevention & Control upon discussion with the home.

Purpose

1. To protect the residents, visitors and healthcare workers by preventing and controlling the spread of MRSAs throughout the facility by identifying and interrupting the specific route of transmission.

2. To prevent the transfer of genetic traits of Vancomycin resistance to MRSA and avoid the development of Vancomycin-resistant Staphylococcus aureus.

3. To reduce or minimize the psychological effects of Contact Precautions on the resident by having residents with MRSA continue to have the opportunity to participate in normal activities of daily living. Residents can eat their meals in the dining room, and attend formal and informal activities with proper hand hygiene unless they are at higher risk of transmission. See Procedure #6.

Procedure

1. Identification of MRSA positive status in residents

   - Microbiology notifies Infection Prevention & Control and the nursing unit of newly identified residents with MRSA.
   - Infection Prevention & Control flags the resident’s health record so that on each admission to the health care continuum, appropriate measures are taken by health care staff.
   - Nursing may complete the MRSA Care Plan (SHR Printing Form #104025) in consultation with the Infection Control Professional, as required.
   - The LTC may use the MRSA Fact Sheet.

2. Resident Placement

   - Place the resident in a single room with private bathroom.
   - Post Contact Precautions signs or Droplet and Contact Precautions signs on the resident’s door and the bathroom door if shared. To obtain signage call 306-655-4612 or email diseasecontrol@saskatoonhealthregion.ca.
   - The dedicated Personal Protective Equipment (PPE) station must be placed away from any possible sources of contamination such as sinks and sharps containers.
   - The dedicated PPE station such as a supply cart needs to be properly stocked and must be located outside the room. Supplies should include:
     o Outside the room:
       ▪ Alcohol-based hand rub (ABHR)
       ▪ Gloves (3 sizes)
       ▪ Clean gowns
       ▪ Masks/face shield as required
- Hospital grade disinfectant
  - Inside the room:
    - Waste basket
    - Dirty hamper
    - ABHR
- If single room is unavailable, use of spatial isolation or cohorting may be necessary;
  - Post Contact Precautions signs or Droplet and Contact Precautions signs on the resident’s door and the bathroom door if shared. To obtain signage call 306-655-4612 or email diseasecontrol@saskatoonhealthregion.ca.
  - The cart with clean supplies is placed outside the room, where gown, gloves and/or masks/face shields are donned.
  - The linen hamper and waste basket are placed inside the room, where gown, gloves and/or masks/face shields are removed.
  - If these options are not available, due to space issues, contact Infection Prevention & Control to discuss other options.
- If a bathroom is shared, dedicate the bathroom to the resident who is positive. Provide a dedicated commode to all residents who regularly use the shared bathroom.
- If cohorting and/or using spatial isolation:
  A. Place residents who are colonized or infected with the same organism (MRSA) together:
    - Cohort and spatially isolate the residents with the lowest risk of transmission:
      - continent,
      - good hygiene
      - skin lesions or wounds covered by dressings
      - able to control respiratory secretions
      - capable of self-care and able to comply with infection control precautions
    - Conditions that increase risk of transmission:
      - Presence of excessive wound drainage
      - Fecal incontinence
      - All other discharges (secretions & excretions) from the body
  - Vulnerable residents to colonization or infection are those residents with:
    - Severe diseases especially those who are immunocompromised or who have underlying medical conditions (i.e., organ transplant, hematopoietic stem cell transplant)
    - Special care (i.e., hemodialysis, cystic fibrosis, and chemotherapy)
    - Recent surgery
    - Indwelling medical devices (i.e., urinary catheter, central venous line and endotracheal tubes)
    - Open draining wounds
  - If a bathroom is shared, dedicate the bathroom to the resident who is positive. Provide a dedicated commode to all residents who regularly use the shared bathroom.
  B. Identify the MRSA residents with the least risk of transmission in private rooms and cohort them using spatial isolation (as noted above) in the same room. The resident with the highest risk of transmission will be placed in a private room.
  C. Residents who are NOT colonized or infected with the same organism:
    - Consult with Infection Prevention & Control

3. Hand Hygiene

- Perform hand hygiene as per 20-20 Hand Hygiene policy in the Infection Prevention & Control manual using either alcohol-based hand rub (ABHR) or liquid soap and water.
- Resident’s hands should be cleansed before and after eating, activities and after going to the bathroom, assist the resident if needed.
4. Personal Protective Equipment

a) Gloves and Gown
- Always perform hand hygiene before donning and doffing gloves and/or gown.
- Glove and gown for all direct contact with the resident or the environmental surfaces.
- Choose a glove suitable for the task. Change gloves and perform hand hygiene after contact with infectious material that may contain high concentrations of microorganisms.
- Gowns are single use only. Remove if immediately wet.
- Perform hand hygiene before leaving the room.
- Avoid contact with environmental surfaces when leaving the room.
- See 20-150 Personal Protective Equipment - Donning and Doffing policy.

b) Wear a mask/face shield when:
- The resident has pneumonia and is sputum positive for MRSA
- Suctioning and care of residents with a tracheostomy colonized or infected with MRSA.
- There is likelihood of aerosolization from sputum positive for MRSA
- There is the likelihood of aerosolization from wound drainage positive for MRSA
- Always perform hand hygiene before donning and doffing mask/face shield
- See 20-150 Personal Protective Equipment - Donning and Doffing policy.

5. Resident Transportation

- Notify receiving department that Contact Precautions or Droplet and Contact Precautions are required.
- Lay chart on clean towel if placing on resident’s lap or bed or bag chart.
- Glove and gown for transport of resident and when anticipating direct contact with resident.
- Don mask/face shield for transport of a resident on Droplet and Contact precautions.
- Avoid contact with surfaces en route. Use elbow to push elevator buttons.
- Use clean sheet to cover resident.
- When not using the resident’s owned wheelchair, disinfect before using for next resident.
- Clean equipment with a hospital grade disinfectant.
- Transportation of the resident to other departments should be limited to essential procedures only.
- Have resident perform hand hygiene prior to leaving their room.
- When leaving their room the resident must have on freshly laundered clothing. Gloves are not required.

6. Resident Activities

- There is no requirement to limit resident activities or to avoid common areas. Refer to handout – Contact Precautions – Long Term Care Family and Visitor Information and Droplet & Contact Precautions – Long Term Care Family and Visitor Information.
- To dine, encourage residents with MRSA to sit with other residents who are also MRSA positive if these residents socialize on a regular basis. If residents sit with others who are not positive with MRSA, ensure hand hygiene occurs upon entering and leaving the dining area. Hands should also be cleansed before they leave their room for the meal.
- Eliminate any shared items at the dining table (i.e., salt and pepper packages or containers).
- Ask visitors who visit several residents’ rooms to schedule the resident with MRSA as the last visit, wash hands, and then leave the facility.
• Ask individuals who porter several residents to assist the resident with MRSA individually, and to perform hand hygiene before and after contact (gloves and gowns are not required).
• Ask individuals who porter several residents to a larger event to include the resident with MRSA with other residents. However, resident’s hands must be washed before they leave their room and the porter must also be washed after taking the resident to the event and after returning the resident to their room.
• Residents who are positive with MRSA may be bathed or showered at any time. Occasionally facilities delay the bathing of these residents to the end of the day, which is permissible, but not necessary because all tubs should be disinfected as per manufacturer’s recommendations.

7. Resident Care Equipment

• Remove unnecessary items by limiting the amount of supplies taken into the room to avoid unnecessary waste at resident’s discharge.
• Dedicate noncritical resident care equipment to a single resident (i.e., stethoscope, blood pressure cuff, tourniquet, vacutainer, laundry hamper stand, walker and commode).
• Any equipment that comes in direct contact with the resident shall be wiped with a hospital grade disinfectant.
• If sharing of equipment is unavoidable, clean and disinfect between residents.
• Dietary trays from residents on Contact Precautions or Droplet and Contact Precautions can be placed on tray carts. Dietary transport carts are washed after each use.
• Gloves should be worn for pickup of dietary trays of residents on additional precautions.

8. Visitors

• Instruct visitors regarding hand hygiene before and after resident contact and/or entering or exiting the resident room.
• Gowns and gloves are not required unless the visitor provides direct care (i.e., feeding, bathing, toileting, transferring, etc.). If resident is MRSA sputum positive, visitors must wear a mask/face shield within 2 meters of resident.
• Refer to the information handout – Contact Precautions – Long Term Care Family and Visitor Information or Droplet & Contact Precautions – Long Term Care Family and Visitor Information.

9. Resident and Family Teaching

• Residents should understand the nature of their infectious process and the precautions being used, as well as the prevention of transmission of MRSA to other residents, family and friends. Provide the resident information handout - Contact Precautions – Long Term Care Family and Visitor Information or Droplet & Contact Precautions – Long Term Care Family and Visitor Information.
• Infection Prevention & Control may be called to assist with education on MRSAs.
• Refer to MRSA Fact Sheet.

10. Environmental Cleaning

• Room cleaning is performed while wearing PPE for additional precautions.
• Following discharge or discontinuation of precautions:
  o Contact Precaution signs or Droplet and Contact Precaution signs shall remain in place and Environmental Services will remove sign once cleaning completed.
  o Wear PPE for Contact or Droplet and Contact Precautions.
A precaution clean is performed for all residents who are on additional precautions.

11. Cultures

**MRSA positive residents: Testing for Clearance:**
- **Three** consecutive sets of negative samples from all colonized/infected body sites; (in most cases this would be nares and groin swab), taken a week apart are required to remove from precautions. Refer to Appendix A - Retesting Process to Clear MRSA Positive Status.
- After a resident has tested positive for MRSA, we generally wait for at least 3 months before testing.
- Residents who have had cultures done within the previous month do not require repeat cultures unless a new infection is present, the person’s health has changed, or at the discretion of Infection Prevention & Control.
- Follow up cultures should be assessed on an individual basis in consultation with the Infectious Disease Physician and/or Infection Prevention & Control.
- After the resident has been deemed negative, swabs will be repeated monthly for up to six months as long as the resident remains in hospital.

**Other Considerations:**
- It may be inappropriate for some residents to have their groin swabbed. In that case their axilla instead of the groin can be swabbed.
- Residents must be off antibiotics to which the MRSA is susceptible for at least 48 hours prior to swabbing. The usual antibiotics are Trimethoprim/Sulfamethoxazole (Cotrimoxizole, Bactrim, Septra), Clindamycin, Vancomycin, Linezolid, Daptomycin, Mupirocin, Fusidic Acid, Bacitracin, Rifampin, Telavancin, Tigecycline.
- The use of antibacterial soaps (i.e., Chlorhexidine) should be avoided for at least 48 hours prior to swabbing so as not to interfere with culture results.
- Cultures are to be taken from the nares and groin area as well as any other documented positive sites (i.e., wounds)
- When urine is the original positive site, always obtain a groin swab, not urine.

**Contacts of newly identified MRSA residents:**
- Two consecutive sets of negative samples one week apart (nares and groin) are required or as directed by Infection Prevention & Control.

**Admission Screening Cultures:**
- Admission screens are not required, unless directed by Infection Prevention & Control.

**Specimen Collection:**
- See 60-30 Appendix C – Specimen Collection Guide

12. Bioload Reduction

All residents over the age of two (2) months identified to be colonized or infected with MRSA should bath/shower daily with Chlorhexidine Gluconate (CHG) 2% liquid soap (SKU # 201605) or pre-moistened disposable washcloths (SKU # 212127). The use of CHG 2% soap decreases the number of bacteria on the skin and thus the risk of transmitting the bacteria in the environment.
- Do not use on mucous membranes (including perineal area), head, face, eyes, ears or mouth. Wounds which involve more than superficial layers of skin should not be routinely treated.
- Compatible body lotions may be used to prevent excessive drying of the skin.
• If irritation or a reaction lasts for longer than 72 hours it may be a sign of serious condition, discontinue treatment.
• With liquid CHG 2% soap, a polyester cloth, having a relatively tight weave, has been found in one study to be more efficient at exfoliating the skin. However, cotton cloths may be used as well.
• Hand hygiene should be performed with liquid CHG 2% soap. Hand hygiene should be completed every 4 – 6 hours. Assist residents as needed.
• Daily change of clothing.
• Bedding needs to be changed after each CHG 2% bed bath or shower.
• Regular hair shampoo can be used.
• A physician’s order is not required to employ these strategies.

Antibacterial Shower:
• Showering with liquid soap, thoroughly rinse area to be washed, apply minimum amount of antibacterial soap directly to body surfaces paying special attention to skin folds at armpits, under breast and groin.
• Ensure the soap is left on the skin for one minute, then rinse well to remove all soap residues to prevent skin irritation.

Bed Bathing:
• CHG 2% liquid soap use:
  o Thoroughly rinse the area to be washed, apply minimum amount of antibacterial soap directly to body surfaces paying special attention to skin folds at armpits, under breasts and groin.
  o Ensure the soap is left on the skin for one minute, then rinse well to remove all soap residues to prevent skin irritation.
• CHG 2% pre-moistened washcloth use:
  o See Appendix D - CHG 2% Pre-moistened Disposable Washcloth Protocol.

13. Decolonization

• Decolonization may be considered for residents who meet the criteria using Appendix B – MRSA Decolonization Criteria Algorithm.
• Important: Prepare two requisitions (one may be photocopied) and specify “decolonization” on both.
• Any licensed nurse or physician can initiate review of the decolonization criteria for any resident who is MRSA positive.
  o If the criteria are met the nursing unit will have the physician order MRSA surveillance swabs to have the MRSA tested for sensitivities to antibiotics.
  o The physician is responsible for ordering the antimicrobial nasal cream that the MRSA is sensitive to.
• Residents with the following criteria are excluded:
  o sputum positive
  o open wounds greater than 1 cm
  o indwelling devices
  o living with family or close contacts who are MRSA positive
  o cognitively impaired
  o inadequate resources
  o Mupirocin and Fusidic Acid resistance
  o continued use of antibiotics
• If the resident meets the criteria in Appendix B – MRSA Decolonization Criteria Algorithm, use Appendix C - MRSA Decolonization Protocol.
References


• Contact your Infection Control Practitioner (ICP) to determine when the retesting process can begin. Certain conditions may lead to delayed testing for clearance as they present a risk for continued colonization of the antibiotic resistant organism (ARO).

• **Wait at least 3 months (from the last positive date)** before retesting for MRSA, VRE or ESBL.
  - Ensure all treatment for infection (i.e., Urinary tract infection, pneumonia, etc.) is complete at least 48 hours before retesting process begins.

• Ensure the client is taking **no IV or oral antibiotics, or using antibacterial soaps (i.e., Chlorhexadine soap)** 48 hours before each set of cultures, so as to not interfere with culture results.

• Required Testing Sites (See the Specimen Collection Guide for appropriate method of collection):
  - Three sets of cultures from all documented positive sites as well as the usual screening sites for the organism are required.
    - If testing for MRSA, also take three sets of cultures from ANY wound* or device site**, even if it has not been positive in the past.
    - If a urine culture or blood culture was a positive site, swab for MRSA, VRE or ESBL using their usual screening sites.

<table>
<thead>
<tr>
<th>One set of cultures NEGATIVE from all required sites.</th>
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<tr>
<td>Obtain two more sets of cultures from all required sites at least one week apart.</td>
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<tr>
<td>If any site is POSITIVE</td>
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<tr>
<td>Repeat cultures in 3 months.</td>
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<tr>
<td>If three negative sets of cultures from all required sites.</td>
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<tr>
<td>Fax results to Infection Prevention &amp; Control (306-655-6142). IP&amp;C will notify you once client has been cleared and can be removed from precautions.</td>
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  **LTC/RENAI SERVICES:** Repeat testing of ALL required sites monthly x 6 months (monthly x 12 months for Renal Services). Renal Services will continue screening annually.

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*Wound sites – include draining or open wounds/incisions

**Device sites – swab opening surrounding device
**NOTE:** Any licensed nurse or physician can initiate a review of the criteria for any resident who is MRSA positive.

### Step 1 - Are any of the following exclusion criteria present?

- Sputum positive
- Open wounds greater than 1cm
- Indwelling devices (i.e., IV, Catheter, etc.)
- Living with family or close contacts who are MRSA positive
- Inadequate resources to carry out decolonization process
- Mupirocin or Fusidic acid resistant
- Continued use of antibiotics

**No**

**Yes**

### Step 2 - Does the resident have Wandering Behaviour?

Decolonization may be still be considered for residents with wandering behavior **if** staff can ensure hand hygiene with only liquid soap or alcohol-based hand rub (do not use the Chlorhexidine gluconate (CHG) 2% liquid soap solution) 48 hours prior to screening swabs being collected.

**No**

**Yes**

### Step 3 – Compliance

Residents must also be compliant with daily bathing routine, which may include the use of CHG wipes.

**No**

**Yes**

1. Physician/MRP to order nares/groin surveillance for MRSA.
2. Send the specimen to the lab. **Important:** Prepare two requisitions (one may be photocopied) and specify “decolonization” on both. Staple the requisitions together and send with the sample. The lab will test for sensitivity to Mupirocin or Fusidic acid.
3. When sensitivity result is back, have the physician order the appropriate nasal ointment/cream from pharmacy. Then continue to 40-115 MRSA – LTC: Appendix C – Decolonization Protocol.
40-115 Appendix C - MRSA Decolonization Protocol - LTC

*Any licensed nurse or physician can initiate a review of the criteria for any resident who is MRSA positive.

**Seven Day Protocol**

<table>
<thead>
<tr>
<th>Day 1 to 7</th>
<th>Antimicrobial nasal cream applied to each nostril (Mupirocin 2% or Fucidic Acid 2%)</th>
<th>AM</th>
<th>PM</th>
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<tr>
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<td>End date:</td>
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- Obtain physician order
- **Apply ointment twice daily for 7 days:**
  - Place a small amount of ointment (size of a match head) onto a cotton tipped swab.
  - Massage gently around the inside of the nostril, making sure not to insert it too deeply (no more than 2-3 cm).
  - Repeat on other side.

**CARE**

- **Daily changes** of clean clothes, pyjamas and linens (bed linens as often as possible) including towels. Daily cleaning of room.

**Day 1 & 7 Mornings**

<table>
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<tr>
<th>Day 1:</th>
<th>Shower or bath Chlorhexidine 2% liquid soap solution</th>
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<td>Day 7</td>
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- Wet hair and body.
- Apply CHG 2% liquid soap solution to all body surfaces.
- Pay special attention to skin folds at armpits, under breasts, groin and perineum areas.
- Ensure the CHG product is left on skin and hair for one minute, then rinse well to remove all soap residues.
- Body lotions may be used to prevent excessive drying of the skin.
- Regular shampoo may be used in addition to CHG product if preferred.
- Do not allow this product to come in contact with your eyes, ears, mouth and mucous membranes.
Retest to determine success of process

Wait 48 hours after decolonization protocol is completed i.e., the resident must be treatment-free (i.e., no anti-staphylococcal antibiotics (see policy), CHG 2% products or ointment in use) before collecting screening swabs.

- 3 consecutive negative swabs from the **nares and groin**, each one week apart, without intervening antibiotics or CHG soaps/ointments, are required for a decolonization to be declared successful.

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<tr>
<th>Culture # 1 Date</th>
<th>Culture # 2 Date</th>
<th>Culture # 3 Date</th>
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Two decolonization attempts can be tried if necessary. Residents who still test positive after two attempts will be considered chronic carriers.

**How to collect nares and groin swab:**

Please see 60-30 Appendix C – Specimen Collection Guide
Use 1 clean washcloth to prep each area of the body in order as shown in steps 1 to 6 (see diagram). Complete the top part of the body; cover lightly the move to lower part of the body. Wipe each area in a back-and-forth motion. Be sure to wipe each area thoroughly.

- **First Cloth**: Wipe the chin, neck, chest and stomach.
- **Second Cloth**: Wipe both arms starting each with the shoulder and ending at the fingertip. Be sure to thoroughly wipe the underarms.
- **Third Cloth**: Wipe the first leg starting at the thigh and ending at the toes.
- **Fourth Cloth**: Wipe the other leg, starting at the thigh and ending at the toes.
- **Fifth Cloth**: Wipe the back starting at the base of the neck and ending at the waist line. Cover as much area as possible.
- **Sixth Cloth**: Wipe the right and left hips, then groin and buttocks. Be sure to wipe folds in the stomach and groin areas.

- Do not rinse, apply lotions, moisturizers or makeup immediately after application.
- Discard disposable washcloths in the garbage (do not flush in toilet).
- Allow client’s skin to air dry.
- Dress in clean sleepwear.