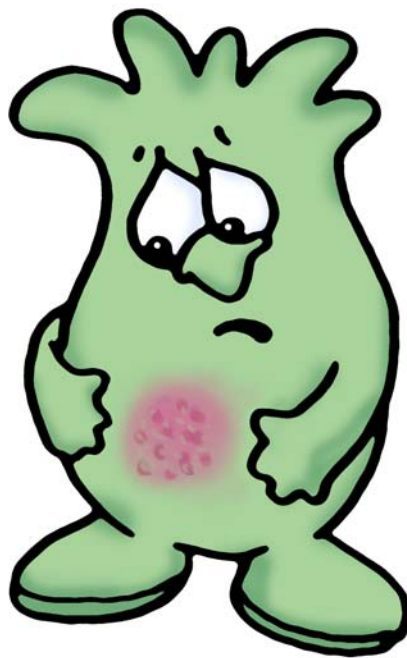


# What to do about MRSA

## Infection Control Manual



For  
Outpatient Clinics/Offices



Tacoma | Pierce County  
**Health Department**  
*Healthier. Safer. Smarter.*  
tpchd.org



## Table of Contents

Contact Precautions	2
Waiting room	
Hand hygiene	
PPE for workers	
Worker behaviors	
Wound Care Procedures-General	3
Instrument use and handling	
Prevention of cross-contamination	
Wound Culturing	4
Supplies	
Wound cleansing	
Culture method-swab technique	
Culture method-tissue aspiration	
Culture method-I&D	
Wound Irrigation	6
Supplies	
Principles	
Preparation	
Cleaning wound	
High pressure irrigation procedure	
Environmental Barriers for Wound Care	7
Environmental Cleaning	7
Choosing a disinfectant	
Cleaning and disinfecting	
Cleaning waiting rooms and examination rooms	
Laundry handling	
Disposal of contaminated materials	
Quick Reference for Environmental Cleaning	9
Patient Notification/Education	11
Infection Control Plan	11
Communication	11
Appendix A -Guide to Sterilization and Disinfection of Equipment and Surfaces	12

## Contact Precautions

Applies to ALL patients with open or draining lesions/wounds or with non-intact skin

### Waiting Rooms

When patients present with uncovered open lesions or wet dressings, take patient to the exam room immediately, if possible. Otherwise, provide clean, dry dressings and instruct the patient to cover the site.

### Hand Hygiene

Workers should wash their hands with soap and water or apply a 60% or greater alcohol-based hand sanitizer:

- Upon entering and leaving exam/treatment rooms or moving away from patient “zone”
  - Between all patient contacts
  - Between dirty & clean steps of procedure to prevent cross contamination
  - Just prior to setting up supplies for procedure or accessing supplies
  - Before and after gloving
  - Whenever hands are soiled (if visibly soiled, must wash with soap & water – alcohol gel not adequate)
  - After using the rest room (must wash w/soap & water – alcohol gel not adequate)
- ⇒ Use hand lotion (latex/chlorhexidine compatible) as needed for skin integrity between washings

### Personal Protective Equipment for Workers

Gloves: Use for contact with patient’s non-intact skin, wounds or mucous membranes. Change gloves between clean and dirty procedures.

Masks: Use for wound care to protect worker from possible splashing, splatter or aerosolization from wound, and to protect patient from possible worker shedding of respiratory/nasal droplets into wound site. (Refer to table, below, for use of eye protection.)

Gown/Fluid-Resistant, Protective Apron: Use during wound care and whenever worker’s clothing may have substantial contact with patient or environmental surfaces that have had contact with the patient.

⇒ Remove gloves and PPE after completion of procedure and perform hand hygiene

Procedure	Gloves	Isolation gown	Mask w/eye protection or full face shield	Mask w/o eye protection
MRSA (colonized or infected) wound care	X	X	X	
Wound irrigation	X	X	X	
Incision & drainage	X	X	X	
Debridement	X	X	X (with irrigation)	X (without irrigation)
Lengthy wound care procedure, complex/large wound	X	X	X (with irrigation)	X (without irrigation)

### Worker Behaviors

- Minimize the wearing of hand and wrist jewelry.
- Keep natural fingernails less than ¼” long and do not wear fingernail enhancements (artificial nails, tips, wraps, appliques, acrylics, gels or other items applied to the nail surface). The polymer properties of artificial nails and nail enhancements are attractive to bacteria. Several outbreaks in hospitals have been traced to artificial nail contamination.
- Avoid touching own face - especially the nose - while providing care, to prevent self-inoculation with MRSA or other organisms.

## Wound Care Procedures - General

### Instrument Use and Handling

- Use only sterile instruments and basins when performing wound care procedures.
- Use sterile scissors/HLD (not pocket) scissors to cut off dressings. Alcohol wipes are not adequate to disinfect scissors. Clean scissors in enzymatic detergent, rinse, dry and then immerse and soak in high level disinfectant (HLD) OPA for 12 minutes, rinse, dry, then ready for use.
- Wash instruments and basins in enzymatic detergent, rinse, air dry and package for autoclave after use. Keep instruments moist or submerged in water if unable to clean immediately.
- Transport contaminated instruments in a covered basin. Basins used only to receive and transport dirty instruments may be cleaned and wiped with disinfectant at the end of the day or more often if visible soil is present.
- Instruments and basins used for patient care must be sterilized after cleaning or disposable products must be used.

### Prevention of Cross-Contamination

- Establish a clean and dry area for supplies and equipment.
- Establish separate clean and dirty areas for use during procedure.
- Perform hand hygiene prior to assembling wound care supplies: tape, gauze, ointments, instrument packages, etc.
- Set up and open supplies immediately prior to procedure.
- Tear tape during procedure set-up to avoid contamination of clean supplies during actual procedure.
- Avoid ointment and cream contamination:
  - During procedure set-up, dispense needed amount into a small plastic or paper cup by lifting ointment, cream or gel, from tube/jar with sterile cotton applicator or tongue blade with clean, gloved hands.
  - Do not wipe bottle tips on skin (e.g., creams, ointments).
  - Do not handle tubes or jars with contaminated gloved hands.
- Plan your work so that you are not repeatedly entering and leaving "the patient zone". Do not rummage in drawers, cupboards or dressing cart with gloved hands. Prevent contamination by removing gloves, applying alcohol hand sanitizer, accessing needed supplies, then re-gloving and returning to "the patient zone."
- Store each individual patient's supplies in a separate, clean, labeled bag or container. Keep the supplies for those with MRSA or VRE apart from supplies of non-infected patients and separate from clean supplies.
- Discard any disposable cross-contaminated supplies even if unopened.
- Discard normal saline or sterile water within 24 hours of opening. Label bottles with the date and time opened. Consider using individual 30 cc NS plastic fish.
- Nu-gauze and other dressings are single use only (one patient use only).
- Discard expired supplies and dressings.
- Cover clean items in close proximity (3-5 feet) to wound with sheet or barrier during irrigation.
- Supplies should be kept in original packages or stored in small amounts in clean, covered containers. Clean and sterilize containers prior to refilling. Do not "top off" containers.
- Avoid use of dremels and water piks due to aerosolization of microorganisms, which results in environmental contamination.

## Wound Culturing

Applies to patients presenting with:

- Soft skin and tissue infections with open or draining lesions
- (Appearance of) insect/spider bite with necrotizing center, drainage & erythema
- Abscess - ulcer
- Infected laceration

⇒ Culture wound prior to initiation of antibiotics if signs or symptoms of infection are present. If Culture & Sensitivity (C&S) is obtained after antibiotics have been started, list the drug on the laboratory C&S request.

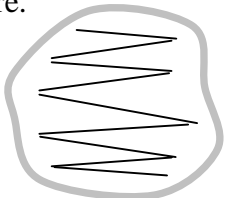
### Supplies

For swab culture	Additional supplies for aspiration culture
Supplies for cleaning/irrigating wound Gloves Biohazard plastic lab transport bag Culture collection/transport kit with gel for aerobic C&S Culture collection/transport kit without gel (for gram stain)	10ml sterile syringe 22gauge needle Syringe end cap Sterile gloves Skin antiseptic (betadine, etc)

**Wound Cleansing:** Wound must be thoroughly cleaned prior to culturing. Do not culture purulent or necrotic debris or drainage over hard eschar. See also Wound Irrigation Procedure.

Procedure	Comments
<ol style="list-style-type: none"> <li>1. Cleanse wound by removing excess debris from wound base with normal saline (pink saline fish or saline bullet).</li> <li>2. Thoroughly flush wound with sterile saline.</li> <li>3. Gently blot excess saline from wound bed with sterile gauze.</li> <li>4. Remove soiled gloves; apply hand sanitizer.</li> <li>5. Apply clean gloves.</li> </ol>	<p>Maintain aseptic environment.</p> <p>When flushing/irrigating wound wear gown and face protection – see PPE section above.</p>

### Culture Method – Swab Technique

Procedure	Comments
<ol style="list-style-type: none"> <li>1. Open sterile culture collection/transport kit containing Amies or Stuarts transport medium and remove swab.</li> <li>2. If wound is dry, moisten tip of swab with transport fluid at the bottom of the transport sleeve or sterile preservative-free saline (pink saline fish or saline bullet). If wound is moist (weepy) after cleaning, this might not be necessary.</li> <li>3. Without touching swab to surrounding wound edges or skin, rotate tip of swab over a 1 cm area of open wound for 5</li> </ol>	<p>Culture collection/transport kit contains a synthetic swab (rayon or Dacron). Cotton tip swabs are not recommended. Note: for a Gram Stain use a <i>non gel</i> culture collection kit.</p> <p>Apply sufficient pressure to cause tissue fluid to be expressed. It is the bacteria in the tissue fluid that is desired for culture.</p> <p><i>10-point culture of wound</i></p> 

<p>seconds (preferred method), or rotate the swab while making a zigzag pattern across the wound at 10 points.</p> <p>4. Place swab in culture transport sleeve. Make sure swab tip is in contact with the liquid transport medium at the base of the sleeve. Break ampule containing transport fluid if present in the collection kits being used.</p> <p>5. Label culture collection/transport kit with name, birth date, specimen source, date and time of culture.</p> <p>6. Place in lab biohazard transport bag.</p>	<p>Avoid contaminating outside of culture collection/transport kit.</p>
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<b>Culture Method – Tissue Aspiration Technique (MD, PA, ARNP responsibility)</b>	
<b>Procedure</b>	<b>Comments</b>
<ol style="list-style-type: none"> <li>1. Perform hand hygiene and apply sterile gloves.</li> <li>2. Face shield and gown may be necessary to avoid potential exposure to inadvertent wound spray.</li> <li>3. Cleanse <i>intact skin</i> with antiseptic and allow to dry.</li> <li>4. Expel all air from a 10ml syringe with a 22 gauge needle prior to aspiration. Insert needle into intact skin and apply suction (aspirate).</li> <li>5. Aspirate approximately 0.5ml of wound fluid.</li> <li>6. Discard needle, then cap syringe with sterile cap used for blood gases.</li> <li>7. Label syringe (see Swab Culture, above).</li> <li>8. After labeling syringe, place in lab biohazard transport bag and send aspirate immediately to lab.</li> </ol>	<p>Involves insertion of a needle into the tissue adjacent to the wound to aspirate tissue fluid. This is a sterile procedure.</p> <p><i>Intact skin</i> next to the wound is disinfected and allowed to air dry. Do not fan area to speed drying as it allows the organisms in environment to settle on the skin surface.</p> <p>The needle is moved backward and forward at different angles for 2-4 explorations.</p> <p>Remove needle with hemostat and place immediately in sharps container. Place end cap on syringe to prevent leakage.</p>
<b>Culture Method – Incision and Drainage (I&amp;D) (MD, PA, ARNP Responsibility)</b>	
<b>Procedure</b>	<b>Comments</b>
<ol style="list-style-type: none"> <li>1. Follow the clinic/office procedure for I &amp; D.</li> <li>2. Follow the procedure for swab culture technique (above).</li> </ol>	<p>Culture the drainage from the incision <u>regardless of appearance</u>.</p>

<b>Wound Irrigation</b>	
Purpose: to cleanse and debride the slough from the wound bed	
<b>Supplies</b>	
Gloves, face shield, gown Plastic bag Incontinence pads and waterproof drape for patient Sterile basin	Sterile normal saline Syringe 30-35ml 18-19 gauge angiocath or Combigard irrigation splash guard Gauze 4x4's
<b>Principles</b>	
<ul style="list-style-type: none"> <li>• Cleanse wounds initially and at each dressing change.</li> <li>• Use minimal mechanical force when cleansing the wound with gauze, cloth or sponges.</li> <li>• Use normal saline for irrigation – not skin cleansers or antiseptic agents (cytotoxic to normal tissue).</li> <li>• Use enough irrigation pressure to enhance wound cleansing without causing trauma to wound bed.</li> </ul>	
<b>Preparation</b>	
Procedure	Comments
<ol style="list-style-type: none"> <li>1. Perform hand hygiene and collect supplies.</li> <li>2. Place only those supplies to be used for the irrigation next to the patient. Set up so that irrigation spray will not contaminate supplies.</li> <li>3. Put on gown, gloves and mask with eye shield.</li> <li>4. Position patient so that irrigating solution will flow by gravity from upper end of wound to lower end.</li> <li>5. Place incontinence pad under wound site.</li> <li>6. Place waterproof drape over client.</li> <li>7. Position plastic bag or trash can.</li> <li>8. Remove old dressing.</li> </ol>	<p>Maintain aseptic environment by performing hand hygiene and wearing protective equipment.</p> <p>Protect environment, equipment and other supplies from contamination by irrigation spray aerosolization by covering or removing supplies, etc.</p> <p>Delivering fluid under pressure to the wound bed can cause aerosolization/dissemination of wound bacteria over a wide area, exposing the patient &amp; caregiver to contamination.</p>
<b>Cleaning Wound (Optional)</b>	
Procedure	Comments
<ol style="list-style-type: none"> <li>1. Clean wound from the center of the wound outward, using circular strokes.</li> <li>2. Use a new gauze/swab for each stroke.</li> <li>3. Assess the wound and drainage.</li> </ol>	<p>Use adequate force to remove debris without damaging healthy tissue or inoculating the underlying tissue with bacteria.</p>
<b>High Pressure Irrigation Procedure</b>	
Procedure	Comments
<ol style="list-style-type: none"> <li>1. Pour sterile saline for irrigation into sterile basin.</li> <li>2. Draw up sterile saline into 30-35ml syringe and attach a Combigard irrigation splash guard.</li> <li>3. Irrigate the surface of the wound by holding the end of the catheter close to wound and applying steady pressure to the syringe plunger.</li> <li>4. Use sterile gauze to gently absorb or remove fluid and debris.</li> <li>5. When wound is adequately cleaned, dispose waste in a plastic bag.</li> <li>6. Remove gloves and protective equipment.</li> <li>7. Perform hand hygiene.</li> </ol>	<p>A steady stream provides adequate force to remove debris without damaging healthy tissue or inoculating the underlying tissue with bacteria. Try to keep aerosolization at a minimum.</p> <p>Waterpiks are not recommended for wound irrigation as the pressure might damage tissue and increase aerosolization of bacteria.</p> <p>Prevent touching clean items with contaminated items.</p>

## Environmental Barriers for Wound Care

- When doing wound care, use blue incontinence pads (chux) or plastic bag as protective barrier to prevent environmental contamination from wound site and to make clean up easier.
- Saran wrap or plastic bag may also be used to protect equipment (BP cuff, Doppler) from wound or other non-intact skin.
- Use exam light sheath covers when available. Change sheaths between patients or disinfect exam light.
- Discard soiled dressings in plastic bag.
- Use disposable wound drainage canisters
- Remove, move or cover unnecessary furniture and equipment in room to prevent contamination and make clean up easier.

## Environmental Cleaning

### Choosing a Disinfectant

- Bacteria, including MRSA and VRE, can live on environmental surfaces for long periods of time (months) and be transferred to patients and health care workers who can become colonized and/or infected.
- Environmental disinfectants (low-level) should be EPA-approved for hospital use. This will ensure the death of germs you are trying to kill. The disinfectant may be a pop-up towelette, traditional germicide (concentrate that is diluted, or premixed) or a 1:500 bleach solution. Bleach must be mixed fresh daily. For other products, follow label instructions. (See Appendix A: *Guide to Sterilization and Disinfection of Equipment & Surfaces*)
- Alcohol gel is for HANDS, not surfaces.

### Cleaning and Disinfecting

- Gloves should always be used when using a disinfectant to prevent skin irritation.
- Successful disinfection requires a clean surface, an effective disinfectant and enough “wet contact” time to kill germs. Thorough wiping with a disinfectant physically removes organisms and provides a clean surface for disinfection.
  - *For visibly contaminated surfaces*, clean the surface with a disinfectant, then wipe it with another environmental disinfectant saturated cloth and allow to air-dry. Usually 30-60 seconds of wet contact time is adequate to disinfect an environmental surface.
  - *For visibly clean surfaces*, wipe surface thoroughly and let air dry a minimum of 30-60 seconds
- If spray disinfectants are used, spray until very wet, then wipe down. (Note: Sprays aerosolize the chemicals, which could cause inhalation exposure to workers. Disinfecting chemicals may not be evenly distributed when using sprays.)
- Surfaces must be moisture-resistant to be able to disinfect them. *Upholstered chairs, soft toys, etc. cannot be disinfected and their use is discouraged.*

## Cleaning Waiting Rooms and Examination Rooms

### Waiting Rooms

- Consider using washable or vinyl-covered seating in waiting rooms.
- Wipe down environmental surfaces that are touched by patients, using an EPA-registered disinfectant. Do this at least once, preferably twice a day, and when visibly soiled. Pay special attention to “hand-touch” areas like chair arms, doorknobs, elevator buttons, reception counter tops and phones, etc.
- Do not supply toys in your office (*preferred approach*). Think about providing videos instead. If you do provide toys, use only those that can be washed and sanitized. Avoid toys like crayons unless given to the child to keep. Develop a policy for daily cleaning and disinfection of toys. Recommended procedures are available in the TPCHD brochure, “Clean Toys Help Prevent Disease” or see AAP protocol in “Selecting Appropriate Toys for Young Children: The Pediatrician’s Role” found at <http://aappolicy.aappublications.org/cgi/content/full/pediatrics%3b111/4/911>

### Exam/Procedure Rooms

- Disinfect all equipment and environmental surfaces touched by patient and staff during the visit. This includes exam table, arm rests, drawer handles, lamp, keyboards, mouse, door knobs, etc. (Disinfection should be done between all patients, not just those with MRSA.)
- Clean and disinfect any area contaminated by body substances or wound drainage, *immediately*.
- Wash BP cuffs or wipe with approved environmental disinfectant between patients.
- Clean and autoclave non-disposable basins and instruments between uses. It is preferable to use disposable basins and instruments if possible.
- Clean and disinfect as detailed above. It is not necessary to close exam rooms after use for wound care. Cleaning prevents microorganism transmission.

### Laundry Handling

- Wear gloves for contact with contaminated linen and keep laundry away from worker’s own clothing.
- Bag soiled linen as close to the point of use as possible. No need to double bag linen unless leaking.
- Ask workers to add bleach to the detergent in the washer and then dry uniforms thoroughly in hot dryer, if they are responsible for washing their uniforms.

### Disposal of Contaminated Materials

- Place all contaminated items, including used wound dressings, into plastic bags, secure tightly and dispose in the regular trash.
- Place all items saturated with blood or bloody body fluids in red biohazard waste bags.

## ***Quick Reference Environmental Cleaning***

### **How to clean equipment and surfaces, when to clean, what to use**

**Visibly soiled surfaces must be cleaned with friction first then re-wiped. Non-visibly soiled surfaces may be wiped thoroughly with friction once. When using spray disinfectant, spray/saturate towel and wipe surface with friction. Spraying the surface and letting it dry is not adequate to clean and disinfect. Wear gloves.**

<b>Item to clean</b>	<b>Wipe down what?</b>	<b>When?</b>	<b>With what?</b>
Blood pressure cuff (Disposable preferred)	Cuff, tubing, bulb (if manual)	After each use	Wipe with low-level (LL) disinfectant; if visibly soiled, wash in soap and water, rinse and hang to dry.
Pulse ox probe (Disposable preferred)	Inside and outside of reusable probe, discard if disposable.	After each use	Wipe with 70% isopropyl alcohol (IPA) or low-level (LL) disinfectant.
Stethoscope	Bell and tubing	After each use	Wipe with IPA or low-level disinfectant.
Reflex hammer	Handle and head	After each use	Wipe with IPA or low-level disinfectant.
Otoscope speculae (Disposable preferred)	If reusable, wash and disinfect	All surfaces after each use	IPA may be used for non-disposable oto speculae, soak for 20 minutes.
Otoscope handle	Handle	All surfaces after each use	Wipe with LL disinfectant and air dry.
Nasal, vaginal and rectal specula (Disposable preferred)	If reusable, clean after each use.	After each use	If reusable, clean in enzymatic detergent. Then autoclave or soak in high-level disinfectant (HLD).
Metal basin (Disposable preferred)	Basin	After each use	Wash in enzymatic detergent and rinse well, then autoclave.
Flexible endoscopes	Scope	After each use	Wash in enzymatic detergent per manufacturer's instructions. Soak in HLD according to manufacturers instructions.
Vascular/Fetal Doppler	Head of doppler	After each use	Wipe with 70% isopropyl alcohol (IPA.).
Hyfrecator (Change the tip after each use)	Wand and controls on the unit	After each use	Wipe with low-level (EPA) disinfectant.
Cloth appliances-neck and arm traction, etc.	All cloth	After each use	Wash in laundry detergent in hot/warm water, rinse well and hang to dry.
Canes, walkers, crutches, wheelchairs, rehab equipment	Special attention to surfaces that come in contact with people	Between patients	If visibly soiled, clean first with friction. Then wipe down with low-level disinfectant.

## ***Quick Reference Environmental Cleaning***

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Exam tables, gurneys, papoose board, etc.	Top of table, other areas that came in contact with patient and/or bodily fluids	After each use	If visible soiled, clean first with friction. Then wipe down with low-level disinfectant.
Baby scale/changing table	Surfaces that come in contact with patient or staff	After each use	If visibly soiled, clean first with friction. Then wipe down with low-level disinfectant.
Toys  (Eliminating toys from office/clinic is preferred; use videos)	If have toys - Use only <u>washable</u> toys; OR Give child 3-4 crayons in a baggie with individual sheets of pictures to color and let child keep.	After each use - between patients	Wash “used” toys with dish soap and hot water, air dry.  May use dishwasher.
Door knobs, phones, keyboards, light switches and other “hand touch” items	Front door, inside and out, and “community” pen at the desk; Shared keyboards, counters, telephones, doorknobs, drawer pulls and other “hand touch” areas. (Avoid sharing pens, pencils)	At least twice daily	If visibly soiled, clean first with friction. Then wipe down with low-level disinfectant.  Disinfect keyboards for 5 seconds daily and when visibly dirty by wiping with LL disinfectant or IPA.
Waiting room: chairs, tables, etc.  (Vinyl furniture preferred)	All surfaces that can come in contact with patient	First thing in the morning (or at the end of the day) and at lunchtime	If visibly soiled, clean first with friction. Then wipe down with low-level disinfectant.
Patient restrooms	Doorknobs, faucets, toilet seat, handles, etc.	At least twice daily	Wipe with low-level disinfectant.

Note: Surfaces must be moisture-resistant to be able to disinfect them. *Upholstered furniture that is not vinyl covered, soft toys, etc. cannot be disinfected and their use is discourage.*

## Patient Notification/Education

- Notify patient of diagnosis if/when culture results come back positive for MRSA.
- Ensure that patient has been prescribed antibiotics that are sensitive to MRSA per culture and sensitivity testing results.
- Educate patients and family members on best practices for managing skin and soft tissue infections at home and in the community.
- Provide educational materials (e.g., “Living with MRSA,” available at [tpchd.org/arpubs](http://tpchd.org/arpubs) or Q&A on MRSA at [www.cdc.gov](http://www.cdc.gov)).

WAC 246-101-105 (7): Health care provider shall... (7) Provide adequate and understandable instruction in disease control measures to each patient who has been diagnosed with a case of communicable disease, and to contacts who may have been exposed to the disease...

## Infection Control Plan

Develop a written infection control policies and procedures, including the following:

- Identification of staff members responsible for overseeing, reviewing and approving the tracking plan and overall infection control program.
- Consideration of strategies for identification of patients who have medical history of previous skin and soft tissue infection (SSTI) infection/colonization caused by resistant pathogens such as MRSA or VRE.
- Written procedures regarding culturing, patient care, environmental cleaning and utilization of educational materials for patients/families.
- Planning for regular training of staff.
- Reporting of communicable diseases (as required by law).

## Communication

- When patients with MRSA or VRE are referred to or admitted to another health care facility, notify the receiving facility.
- Patients with MRSA, VRE or other important pathogens should have an alert attached to their chart (paper and electronic) so that each time the patient is seen the provider is aware of this history.
- Provide *Living with MRSA*, an educational booklet, to the patient and family members. Explain what MRSA is and how the booklet will help them take care of the infection and avoid transmission to others. The booklet may also be used as an educational tool for a patient with any wound infection to help them avoid infection transmission.

Note: Although MRSA and other antibiotic resistant organisms are of special concern, any **bacteria that causes a skin and soft tissue infection can be transmitted to another person**. These infection control recommendations may be followed regardless of the bacteria causing the skin and soft tissue infection.

**Appendix A**

<b>Guide to Sterilization and Disinfection of Equipment &amp; Surfaces</b>																
You <b>MUST</b> thoroughly clean items to remove all visible soil before disinfecting or sterilizing																
<b>Intended Use</b>	<b>Level of Process Required</b>	<b>Products*</b> *Brand names are used as examples only, no endorsement is implied.														
<b>Critical</b>  Intended Use: Objects that enter normally sterile tissue, the vascular system or through which blood flows should be sterile ( <i>instruments</i> )	<b>Sterilization</b>  (Steam, gas, hydrogen peroxide plasma, or chemical sterilization)	<b>For Chemical Sterilization:</b>  Glutaraldehyde ( $\geq 2.0\%$ ) (Cidex, Metricide) Hydrogen peroxide – HP (7.5%) (Sporox) Peracetic acid – PA (0.2%) HP (1.0%) & PA (0.08%) HP (7.5%) & PA (0.23%) Glut (1.12%) & Phenol/phenate (1.93%) ( <i>Exposure time on all per manufacturers' recommendations</i> ) HP is NOT your clinic wound cleaning product!														
<b>Semi-critical</b>  Objects that touch mucous membranes or skin that is not intact require an HLD process ( <i>scissors, flexible scopes</i> )	<b>High Level Disinfection (HLD)</b>  (FDA regulates products)	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><b>Germicide</b></th> <th style="text-align: left;"><b>Concentration</b></th> </tr> </thead> <tbody> <tr> <td>Glutaraldehyde</td> <td><math>\geq 2.0\%</math></td> </tr> <tr> <td>Ortho-phthalaldehyde (OPA) (<i>12 min</i>)</td> <td>0.55%</td> </tr> <tr> <td>Hydrogen peroxide (HP)</td> <td>7.5%</td> </tr> <tr> <td>HP and paracetic acid (PA)</td> <td>1.0%/0.08%</td> </tr> <tr> <td>HP and PA</td> <td>7.5%/0.23%</td> </tr> <tr> <td>Hypochlorite (free chlorine)*</td> <td>650-675ppm</td> </tr> </tbody> </table> <p>*May cause cosmetic and functional damage                      (<i>Exposure time <math>\geq 12</math> min to 30 min @ 20° C, see manufacturers' recommendations</i>)</p>	<b>Germicide</b>	<b>Concentration</b>	Glutaraldehyde	$\geq 2.0\%$	Ortho-phthalaldehyde (OPA) ( <i>12 min</i> )	0.55%	Hydrogen peroxide (HP)	7.5%	HP and paracetic acid (PA)	1.0%/0.08%	HP and PA	7.5%/0.23%	Hypochlorite (free chlorine)*	650-675ppm
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<b>Non-critical</b>  Objects that will not come in contact with mucous membranes or non-intact skin (e.g., environmental surfaces) require a low level process that kills vegetative bacteria, fungus and some viruses (Hepatitis B, C, MRSA and HIV).	<b>Low Level Disinfectant (LLD)</b>  (EPA regulates hospital-level products)	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><b>Germicide</b></th> <th style="text-align: left;"><b>Concentration</b></th> </tr> </thead> <tbody> <tr> <td>Ethyl or isopropyl alcohol</td> <td>70-90%</td> </tr> <tr> <td>Chlorine</td> <td>100ppm (1:500 dilution) **</td> </tr> <tr> <td>Phenolic</td> <td>*</td> </tr> <tr> <td>Iodophor</td> <td>*</td> </tr> <tr> <td>Quaternary ammonium (quat)</td> <td>*</td> </tr> </tbody> </table> <p>*Use manufacturers' recommendations for concentrations                      **5.25-6.15% household bleach diluted 1/500 provides &gt; 100ppm available chlorine                      (<i>Exposure time <math>\geq 1</math> min</i>)</p> <p>EPA registered, pop-up towelettes are usually quat and are effective low-level disinfectants.</p>	<b>Germicide</b>	<b>Concentration</b>	Ethyl or isopropyl alcohol	70-90%	Chlorine	100ppm (1:500 dilution) **	Phenolic	*	Iodophor	*	Quaternary ammonium (quat)	*		
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Note: Intermediate level disinfectants - usually used for therapy or whirlpool tubs.