UTAH DEPARTMENT OF HEALTH

Report Immediately

Vancomycin-Resistant *Staphylococcus aureus* (VRSA)

Disease Plan

Quick Links

Last updated: 01/26/2021 by Maureen Vowles.

Questions about this disease plan?

Contact the Utah Department of Health Bureau of Epidemiology: 801-538-6191.

✓ CRITICAL CLINICIAN INFORMATION

Clinical Evidence
Signs/Symptoms • Vancomycin-resistant *Staphylococcus aureus* (VRSA) are *Staphylococcus aureus* (*S. aureus*) bacteria that are resistant to vancomycin, an antibiotic used in the treatment of serious gram-positive infections. • This infection may occur in patients with underlying health conditions, catheters, previous infections with methicillin-resistant *Staphylococcus aureus* (MRSA), and recent exposure to vancomycin. • *S. aureus* is a gram-positive bacterium commonly found on the skin and in the nasal tract of about 30% of individuals, causing no symptoms. • *S. aureus* bacteria cause a wide range of infections including skin and wound infections, bacteremia, pneumonia and osteomyelitis.
Period of Communicability • N/A
Incubation Period • N/A
Mode of Transmission • *S. aureus* bacteria can be easily passed from person-to-person in closed quarters, or through contaminated shared medical equipment, or through poor hygiene and PPE use in healthcare settings. • VRSA isolates can have the same transmission pattern as MRSA/MSSA. • VRSA transmissions from person-to-person has not been documented.
Laboratory Testing
Type of Lab Test/Timing of Specimen Collection • MIC or disk diffusion of pure isolate of *S. aureus*
Type of Specimens • Nares, wound or blood samples for culture
Treatment Recommendations
• Treatment for each case varies, depending on antibiotic susceptibility.
Contact Management
Isolation of Case • Case should be placed on strict Contact Precautions.
Management of Contacts • The decision to decolonize those exposed should be made by occupational health services, the infection control (IC) team, the healthcare worker, public health, and the worker's personal physician. • **Priority should be given to identifying contacts that have had extensive interaction with the VRSA patient during a defined period before the VRSA positive culture date.**
Infection Control Procedures
Notifications and IC practices should occur while waiting for VRSA confirmatory testing.

✓ WHY IS VRSA IMPORTANT TO PUBLIC HEALTH?

Vancomycin continues to be an important antimicrobial agent for treating infections caused by *Staphylococcus aureus* (*S. aureus*) strains that are resistant to methicillin and other antimicrobial agents. The reduced susceptibility of vancomycin intermediate *Staphylococcus aureus* (VISA) and vancomycin-resistant *Staphylococcus aureus* (VRSA) bacteria to antimicrobial therapy leaves clinicians with relatively few options for treating these infections. Proper treatment, as well as documentation of VISA or VRSA cases, is necessary to prevent further emergence of antibiotic resistant strains. Only the recovery of VRSA are reportable in Utah.

✓ DISEASE AND EPIDEMIOLOGY

Clinical Description

S. aureus can cause a variety of skin and soft tissue infections, as well as invasive disease including bacteremia, endocarditis and toxic shock syndrome. Staphylococci produce a variety of extracellular pathogenic factors that are responsible for many disease manifestations, including toxins (poisons), leukocidins (ability to destroy white blood cells), and hemolysins (the ability to destroy red blood cells), as well as the ability to produce biofilms and capsules on catheters and ports (which help bacteria evade the immune system).

Causative Agent

S. aureus is a gram-positive cocci (bacteria). VRSA and VISA are bacteria that have acquired resistance (complete or intermediate resistance) to a glycopeptide antibiotic known as vancomycin.

Differential Diagnosis

Vancomycin and teicoplanin are glycopeptides antibiotics. If *S. aureus* is resistant to both of these antibiotics, it would be known as glycopeptides-resistant/intermediate *S. aureus* or GRSA/GISA.

Laboratory Identification

The following algorithm demonstrates the appropriate laboratory identification schema. Additional information can be found at: http://www.cdc.gov/HAI/organisms/visa_vrsa/visa_vrsa.html.

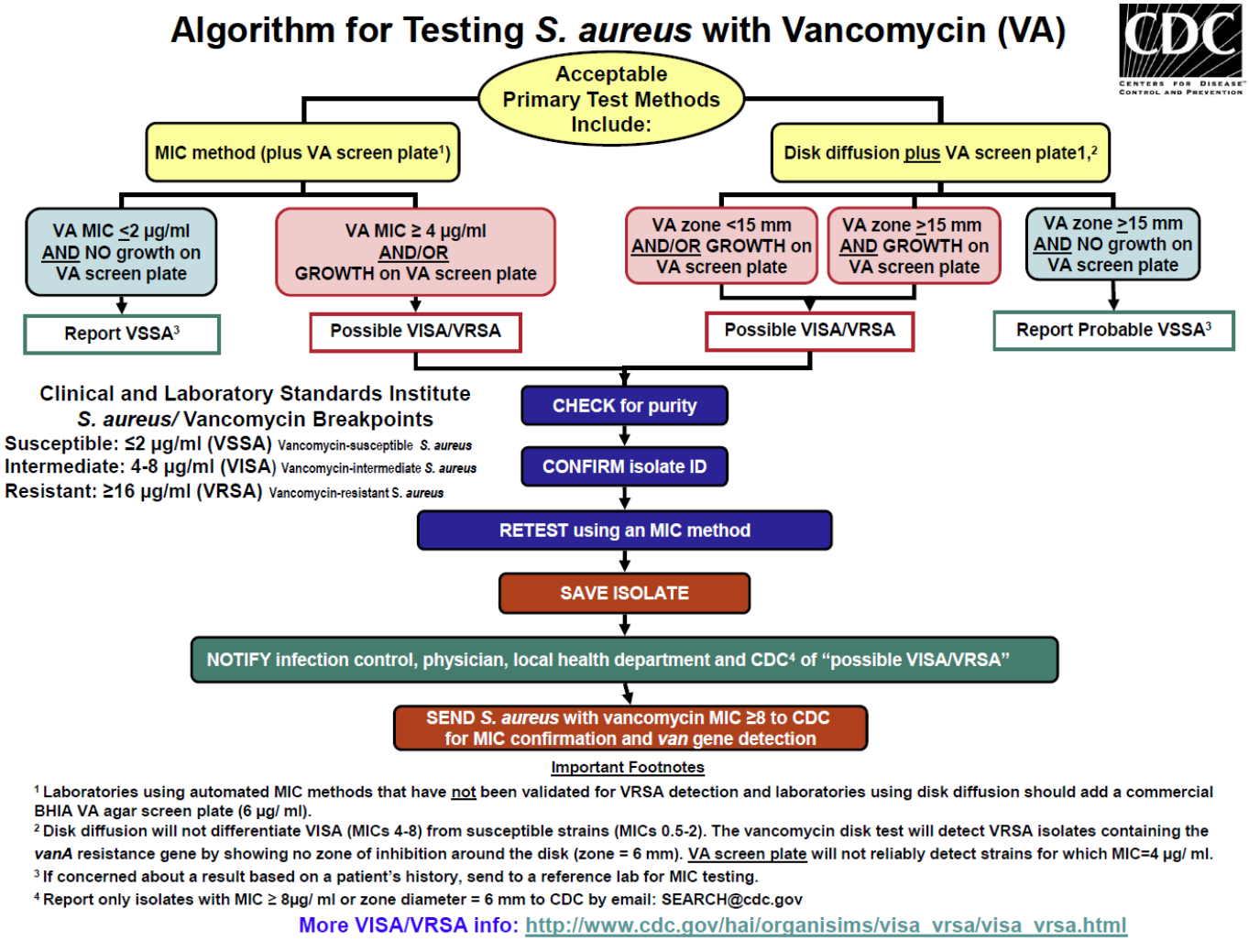
It is important to recognize that automated testing methods commonly located in laboratories may not reliably detect this organism. However, all automated susceptibility testing (AST) systems currently approved for use in the United States (U.S.) can reliably detect VRSA.

The breakpoints for classifying *S. aureus* isolates with reduced susceptibility to vancomycin are defined by the Clinical and Laboratory Standards Institute (CLSI) as the following minimum inhibitory concentration (MIC) levels:

Antimicrobial Agent	MIC Interpretive Criteria		
	S	I	R
Vancomycin	≤2	4-8	≥16

(S = susceptible; I = intermediate; R = resistant)

*MIC tests should be performed to determine the susceptibility of all isolates of staphylococci to vancomycin. The disk test does not differentiate vancomycin-susceptible isolates of *S. aureus* from vancomycin-intermediate isolates. These standards were last updated in 2009.



In addition to automated systems, VRSA isolates are detected by reference broth microdilution, agar dilution, gradient diffusion, and vancomycin screen agar plates [brain heart infusion (BHI) agar containing 6 µg/ml of vancomycin]. Disk diffusion is not recommended for testing vancomycin susceptibility in *S. aureus* for reasons described below.

Laboratories that utilize disk diffusion for primary susceptibility testing should incorporate the vancomycin agar screen plate when testing all *S. aureus*. Alternatively, the screening may be limited to methicillin-resistant *S. aureus* (MRSA) isolates, since all VRSA reported worldwide as of March, 2015 were also MRSA.

The use of a purity plate is essential to ensure that the organism is not mixed with another organism which provides a false reading of the MIC.

Testing Algorithm

In addition to knowing the appropriate testing methodologies, all laboratories should develop a step-by-step problem-solving procedure or algorithm for detecting VRSA specifically for their laboratory.

All *S. aureus* strains for which the vancomycin is MIC ≥4 µg/ml are unusual and should not be discarded until the MICs have been confirmed. In addition to confirming vancomycin susceptibility, laboratories should ensure that the strain is in pure culture and reconfirm the genus and species of the organism; then, repeat the susceptibility test for vancomycin using a validated method. If retesting confirms a vancomycin MIC ≥4 µg/ml, laboratories should notify facility infection control. If retesting confirms an MIC ≥8 µg/ml, laboratories should inform the local and/or state health department, as well as the Division of Healthcare Quality Promotion at the Centers for Disease Control and Prevention (CDC) by sending an email to haioutbreak@cdc.gov. The isolate should be sent to the Utah Public Health Laboratory (UPHL) and CDC for confirmatory testing. If the isolate is confirmed by CDC to have reduced susceptibility to vancomycin (MIC ≥ 8 µg/ml), CDC will work with the public health department and infection control personnel to address any local infection control issues, and the health department to address broader public health implications.

CDC will confirm *S. aureus* isolates with a vancomycin MIC of 16 ug/ml or higher. If VRSA (vancomycin MIC ≥16 µg/ml) is suspected or confirmed, CDC requests that all VRE and VRSA isolates from the patient be saved to allow characterization of the VRSA precursor organisms. After confirmation of VRSA, these organisms should be shared with public health partners, including CDC.

Treatment

Treatment for each case varies, depending on antibiotic susceptibility. To date, all cases of VRSA/VISA have been susceptible to other licensed antibiotics. There is concern, however, about the possibility that an extremely drug-resistant bacteria could emerge from a case of VRSA/VISA.

Case Fatality

If the organism is susceptible to other licensed antibiotics, the case fatality should approximate that of non-VRSA/VISA organisms. If the organism is resistant to licensed antibiotics, then case fatality rate could rise.

Reservoir

To date, VRSA has only been isolated in humans.

Transmission

S. aureus is transmitted by close physical contact with infected persons or materials that may carry the organism (e.g., soiled bandages).

Susceptibility

While all people are susceptible to staphylococcal infections, individuals who have had long-term antimicrobial therapy for multiple resistant organisms (especially vancomycin-resistant enterococci) are at highest risk of developing this infection. Additionally, individuals with underlying health conditions (e.g., diabetes or kidney disease) and those with medical devices going into their bodies (e.g., catheters) may be at higher risk for this type of infection.

Incubation Period

The incubation period for VISA/VRSA is unknown.

Period of Communicability

VISA/VRSA is communicable until the patient has completed appropriate therapy, and until respiratory and skin isolates are proven to be no longer present.

Epidemiology

In May 1996, the first documented infection with vancomycin-intermediate *S. aureus* (VISA; minimum inhibitory concentration [MIC] = 4-8 µg/ml) was reported in a patient in Japan. Subsequently, infections with VISA strains have been reported in patients from the U.S., Europe, and Asia. To date, all VISA isolates examined have had non-transferable resistance mechanisms, which is not maintained in the absence of vancomycin. Furthermore, expression of the VISA phenotype appears to have substantial fitness costs for the organism. For these reasons, VISA is considered less of a public health threat than VRSA.

As of March 2015, 14 VRSA have been reported among patients in the U.S. Geographic clustering has been observed among U.S. VRSA patients, with 8/10 VRSA documented from 2002 to 2009 occurring in patients from Michigan, and all four (4) VRSA infections since 2010 occurring in patients from Delaware. This may be due to a higher prevalence of VRSA precursor organisms in some areas. No VRSA transmission has been documented. All VRSA described to date have acquired the vanA vancomycin-resistance gene and operon, commonly found in vancomycin-resistant enterococci (VRE). VRSA is thought to result from specific precursor organisms: MRSA containing a pSK41-type plasmid and VRE containing vanA encoded on an Inc18-like plasmid.

✓ PUBLIC HEALTH CONTROL MEASURES

Public Health Responsibility

When VRSA is identified in a clinical laboratory, the patient's primary caregiver, patient-care personnel, and infection control personnel should be notified immediately so that appropriate infection control precautions can be initiated promptly. It is also important to notify local and state public health departments. These notifications should occur while waiting for VRSA confirmatory testing.

- Investigate all suspect cases of disease and complete and submit appropriate disease investigation forms.
- Provide education to the general public, clinicians, and first responders regarding disease transmission and prevention.
- Identify clusters or outbreaks of this disease.
- Identify sources of exposure and stop further transmission.
- Contact the laboratory performing testing to ensure test results are correct. The sample should be sent to the UPHL who will send it to CDC for confirmation if MIC ≥16 µg/ml.

Prevention

The likelihood of acquiring this disease is minimized by judicious use of antibiotics when treating individuals with severe infections, along with appropriate handwashing and other infection control measures.

Chemoprophylaxis

The decision to decolonize a healthcare worker should be made by occupational health services, the infection control team, the healthcare worker, public health, and the worker's personal physician.

The decision to decolonize non-healthcare worker contacts should be made by the contact, their primary care physician, and public health authorities.

Vaccine

No vaccine is available

Isolation and Quarantine Requirements

Isolation: Cases will be strictly isolated. See Case Investigation.
Hospital: Hospitals will institute strict infection control policies. See Case Investigation.
Quarantine: Quarantine measures for colonized individuals are possible. See Case Investigation.

✓ CASE INVESTIGATION

Reporting

VISA: No longer reportable in Utah.

VRSA: Report any isolation of *S. aureus* from any site that has a MIC ≥16 µg/ml to vancomycin, as detected and defined according to the CLSI 2009 approved standards and recommendations.

Report any person whose healthcare record contains a diagnosis of *S. aureus* infection/ colonization that is resistant to vancomycin.

Report any person whose death certificate lists *S. aureus* infection resistant to vancomycin as a cause of death, or a significant condition contributing factor to death.

Other recommended reporting procedures

- Report all cases of *S. aureus* infection/colonization with resistance to vancomycin.
- Reporting should be ongoing and routine.
- VRSA is immediately reportable.

Table of criteria to determine whether a VISA/VRSA case should be reported to public health authorities

Criterion	Reporting
Clinical Evidence	
Healthcare record contains a diagnosis of *S. aureus* infection with intermediate susceptibility to vancomycin	S
Death certificate lists *S. aureus* infection with intermediate susceptibility to vancomycin as a cause of death or a significant condition contributing to death	S
Laboratory Findings	
Isolation of *S. aureus* from any body site	N
Intermediate resistance of the *S. aureus (VISA)* to vancomycin (Minimum Inhibitory Concentration [MIC] 4-8 µg/ml)†	N
Resistance of the *S. aureus (VRSA)* isolate to vancomycin (Minimum Inhibitory Concentration [MIC] ≥16 µg/ml)†)	N

Notes:
S = This criterion alone is sufficient to report a case.
N = This criterion in conjunction with all other "N" criteria in the same column is required to report a case.
† = detected and defined according to Clinical and Laboratory Standards Institute approved standards and recommendations (CLSI 2006).

Case Definition

S. aureus can produce a variety of syndromes with clinical manifestations including skin and soft tissue infections, empyema, bloodstream infection, pneumonia, osteomyelitis, septic arthritis, endocarditis, sepsis, and meningitis. *S. aureus* may also colonize individuals who remain asymptomatic. The most frequent site of *S. aureus* colonization is the nares.

Laboratory Criteria

VRSA

- Isolation of *S. aureus* from any body site.

  AND

- *S. aureus* isolate resistant to vancomycin, detected and defined according to Clinical and Laboratory Standards Institute (CLSI, formerly NCCLS) approved standards and recommendations (Minimum Inhibitory Concentration [MIC] ≥16 µg/ml).

Case Classification

VRSA

- Confirmed: A case of vancomycin-resistant *S. aureus* that is laboratory-confirmed (MIC ≥16 µg/ml for VRSA).

Classification Table
Criteria for defining a case of VISA/VRSA

Criterion	Confirmed VISA	Confirmed VRSA
Laboratory Findings		
Isolation of *S. aureus* from any body site	N	N
Resistance of the *S. aureus* isolate to vancomycin (Minimum Inhibitory Concentration [MIC] ≥16 µg/ml)†		N
Intermediate resistance of the *S. aureus* isolate to vancomycin (Minimum Inhibitory Concentration [MIC] 4–8 µg/ml)†	N	

Notes:
N = This criterion in conjunction with all other "N" criteria in the same column is required to report a case.
† = detected and defined according to Clinical and Laboratory Standards Institute approved standards and recommendations (CLSI 2006).

Case Investigation Process

VRSA

Full case investigations for VRSA cases should be implemented. These include confirmatory testing of suspected isolates, evaluation of the facility's infection control measures, and assessment of transmission risk to contacts and healthcare workers to determine need for testing of contacts. The following steps will guide the investigation.

Immediately notify UDOH and the Infection Preventionist at the local healthcare facility.

- All further steps of the case investigation will be carried out with representatives from the CDC, UDOH, Local Health Department (LHD), and hospital.
    - Develop a written plan to determine infection control actions that will be taken with all individuals whether colonized or infected. This plan must include treatment protocols, follow-up cultures (how and when to obtain), when carriers will be considered free of colonization, and quarantine protocols for carriers. This plan should be written and agreed upon prior to any culture workups of contacts.
- Collect surveillance cultures from patients colonized or infected with VRSA:
    - Culture multiple sites (minimum, two to three sites per patient). Frequently colonized sites such as anterior nares, throat, axilla, groin, or perirectal area, and clinically relevant sites such as wounds and drains, should be selected.
    - Consider collecting specimens from sites to determine colonization with vancomycin-resistant enterococci (VRE) carriage status (e.g., rectal, peri-rectal). Any VRE recovered may be of laboratory interest and should be saved for further testing.
    - Any VRSA, MRSA or VRE that are isolated should be saved for further evaluation.
- Persons having extensive interaction (see contact management below) with colonized/infected patient:
    - Culture multiple (e.g., two to three) frequently colonized sites, such as anterior nares, throat, groin, axilla, or peri-rectal area, plus any skin lesions (e.g., abscess or dermatitis, open wounds).
- Persons with moderate or minimal interaction (see contact management below):
    - Decisions about culturing those with moderate or minimal interactions should be made in consultation with public health authorities. In general, those with minimal interactions

do not require screening unless there is substantial transmission among the other groups.
    - Consider culturing the anterior nares, additional body sites (groin, axilla, or peri-rectal area), and skin lesions (e.g., abscess or dermatitis, open wounds).
    - If no one in this group is identified as colonized with VRSA, do not continue with surveillance cultures for individuals with moderate or minimal interaction.
- If VRSA colonization of contacts is identified OR until the case is no longer colonized or infected:
    - Culture the nares of contacts with extensive interaction (weekly) to assess the efficacy of infection control precautions.
- Place a log book at the entrance of the patient's room to identify and track patient contacts.

Infection Control

State and/or local public health authorities should notify all healthcare settings attended by the patient during the potential transmission period of the patient's VRSA colonized/infected status. Below is a checklist of important infection control recommendations. However, these may need to be customized for special healthcare settings (e.g., dialysis, home healthcare). Infection control precautions should remain in place until a pre-defined endpoint (e.g., patient has been culture-negative three times during a period of three weeks or the patient's infection has healed). This endpoint should be determined in consultation with public health authorities.

Acute Care Settings

1. Isolate the patient in a private room.
2. Minimize the number of persons caring for the patient (e.g., assign dedicated staff to care for VRSA patient).
3. Implement the appropriate infection control precautions during patient care.
    a. Use Standard and Contact Precautions (gown and gloves for room entry).
    b. Wear mask/eye protection or face shield if performing procedures likely to generate splash or splatter (e.g., wound manipulation, suctioning) of VRSA contaminated material (e.g., blood, body fluids, secretions, and excretions).
    c. Perform hand hygiene using appropriate agent (e.g., alcohol-based hand sanitizer or hand washing with plain or antimicrobial soap and water) before entering patient room and upon leaving the room.
    d. Dedicate non-disposable items that cannot be cleaned and disinfected between patients (e.g., adhesive tape, cloth-covered blood pressure cuffs) for use only on the patient with VRSA.
    e. Monitor and strictly enforce compliance with Contact Precautions.
4. Educate and inform the appropriate personnel about the presence of a patient with VRSA and the need for Contact Precautions.
5. Facilities should flag the patient's chart to indicate infection/colonization with VRSA.
6. Consult with the local and/or state health department and CDC before transferring the patient or discharging the patient. Ensure that the patient's VRSA status and required infection control precautions are communicated at transfer by use of the Interfacility Infection Control Transfer Form (http://health.utah.gov/epi/diseases/HAI/resources/Interfacility_Transfer_Form.pdf).

Dialysis Settings

To date, four (4) of the 14 U.S. VRSA patients have been hemodialysis patients. Hemodialysis clinics are expected to follow Standard precautions and additional infection control recommendations specific to hemodialysis settings. Providers should pay particular attention to the following precautions when caring for a VRSA patient.

1. Wear disposable gown and gloves when caring for the patient or touching the patient's equipment at the dialysis station; carefully remove and dispose of gown and gloves and perform hand hygiene when leaving patient station.
2. If available, use a separate room that is not in use for hepatitis B isolation for patient treatment. If a separate room is not available, dialyze the patient at a station with as few adjacent stations as possible (e.g., at the end or corner of the unit).
3. Items brought into the dialysis station should be disinfected after use. Items that cannot be disinfected should be discarded.
4. Thoroughly disinfect the dialysis station (e.g., chairs, beds, tables, machines) between patients. Information specific to disinfection in dialysis facilities is available at http://www.cdc.gov/dialysis/PDFs/collaborative/Env_notes_Feb13.pdf and http://www.cdc.gov/dialysis/PDFs/collaborative/Env_checklist-508.pdf.
5. Educate and inform the appropriate personnel about the presence of a patient with VRSA and the need for Contact Precautions.
6. In the event the patient needs to be admitted or referred to another facility, the receiving facility must be notified of the patient's VRSA status by use of the Interfacility Infection Control Transfer Form (http://health.utah.gov/epi/diseases/HAI/resources/Interfacility_Transfer_Form.pdf).

Other Outpatient Settings (primary care physician, wound clinic, etc.)

1. Healthcare providers in outpatient settings should generally follow the same VRSA precautions as hospital-based healthcare providers.
    a. Use Standard Precautions with strict adherence to hand hygiene.
    b. Use Contact Precautions (gown and gloves) to enter room/care area if extensive contact is anticipated or contact with infected areas is planned (e.g., debridement or dressing of colonized or infected wound).
    c. Wear mask and eye protection or face shield if performing procedures likely to generate splash or splatter (e.g., wound manipulation, suctioning) of VRSA contaminated material (e.g., blood, body fluids, secretions, and excretions).
    d. Perform hand hygiene using appropriate agent (e.g., alcohol-based hand sanitizer or hand washing with plain or antibacterial soap and water) before entering or leaving the patient's room.
    e. Dedicate non-disposable items that cannot be cleaned and disinfected between patients (e.g., adhesive tape, cloth-covered blood pressure cuffs) for use only on the patient with VRSA.
2. Minimize the number of persons who care for the VRSA colonized/infected patient (e.g., dedicate
a single staff person).
3. Ensure meticulous cleaning of the room/patient care area at the end of each visit with an EPA approved agent as described in the Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008 (http://www.cdc.gov/hicpac/pdf/guidelines/Disinfection_Nov_2008.pdf).
4. Educate and inform the appropriate personnel about the presence of a patient with VRSA and the need for Contact Precautions.

5. In the event the patient needs to be admitted or referred to another facility, the receiving facility must be notified of the patient's VRSA status by use of the Interfacility Infection Control Transfer Form http://health.utah.gov/epi/diseases/HAI/resources/Interfacility_Transfer_Form.pdf).

Home Healthcare Settings

1. Home healthcare providers should generally follow the same VRSA precautions as hospital-based healthcare providers.
    a. Wear gown and gloves upon entering the area of house where the patient care will be provided.
    b. Wear mask and eye protection or face shield if performing procedures likely to generate splash or splatter (e.g., wound manipulation, suctioning) of VRSA contaminated material (e.g., blood, body fluids, secretions, and excretions).
    c. Perform hand hygiene using appropriate agent (e.g., alcohol-based hand sanitizer or hand washing with plain or antibacterial soap and water) before entering patient area and upon leaving the area.
2. Minimize the number of persons with access to the VRSA colonized/infected patient (e.g., dedicate a single staff person to care for this patient).
3. Dedicate non-disposable items that cannot be cleaned and disinfected between patients (e.g., cloth-covered blood pressure cuffs) for use only on a single patient.

Outbreaks

An outbreak is defined as a single case of VRSA in Utah. VISA cases will be investigated as outbreaks if there is suspicion that transmission has occurred.

Identifying Case Contacts

Contacts should be categorized based on their level of interaction (e.g., extensive, moderate, or minimal) with the colonized or infected patient. **Priority should be given to identifying contacts that have had extensive interaction with the VRSA patient during a defined period before the VRSA positive culture date.** The length of this period depends on recent culture results, the setting in which the patient received healthcare, and the clinical assessment. For patients with multiple recent cultures, the time from last vancomycin-susceptible culture to first vancomycin-resistant culture can be considered the period from which contacts should be identified.

Contacts defined as having <u>extensive interaction</u> with a VRSA patient

A. Patients who:
- Share the VRSA patient's room.

B. Nursing or patient-care providers involved in direct patient care who:
- Clean/bathe/rotate/ambulate the patient or have other prolonged contact.
- Change dressings.
- Make frequent visits (>3 visits per shift).
- Handle secretions and body fluids, including respiratory secretions.
- Manipulate intravenous lines.

C. Physicians who:
- Care for wound dressings or perform debridement (outside of Operating Room).
- Conduct extensive exams on the VRSA patient.

D. Ancillary staff who:
- Have prolonged physical patient contact, including physical therapy or rehabilitation personnel, dialysis or respiratory technicians, and home health aides.

E. Family members or household contacts who:
- Provide primary care.
- Had/have close physical contact with patient or their immediate environment (e.g., sleep in the same bed or same room).

Contacts defined as having <u>moderate interaction</u> with a VRSA patient

A. Patients who:
- Share patient care areas and healthcare providers for extended periods with the VRSA patient (e.g., patients receiving dialysis on same shift as VRSA patient or hospitalized in a different room, but with same providers while patient is not in Contact Precautions).

B. Nursing or patient-care providers who:
- Deliver medications.
- Cross-cover patient only.

C. Physicians who:
- See patient on daily rounds, without conducting extensive exams.
- Perform surgical or invasive procedures where sterile barriers or aseptic techniques are used.

D. Ancillary staff who:
- Have limited interactions (e.g., radiology technicians).

Contacts defined as having <u>minimal interaction</u> with a VRSA patient

A. Patients who:

- Are on same ward, but for short periods of time or while patient is in Contact Precautions.
- Visited the same outpatient clinic on same day as patient.

B. Nursing or patient-care providers who:

- Work on the same floor without formal cross-coverage of patient.
- Perform predominately administrative duties.

C. Physicians who:

- Consult infrequently without extensive exam.
- Visit during teaching rounds only.

D. Ancillary staff who:

- Monitor patient-care equipment without handling secretions.
- Provide dietary or maintenance services and do not interact directly with the patient.

Case Contact Management

Contact investigations during an outbreak will follow VRSA contact investigation steps. VRSA strains [vancomycin MIC ≥16 µg/ml] are characterized by expression of vanA acquired from an *Enterococcus* spp; therefore, this resistance is potentially transferable to susceptible strains or other organisms. Contact investigations for VRSA cases are recommended.

For complete CDC recommendations, including VRSA decolonization recommendations, refer to CDC document: http://www.cdc.gov/hai/pdfs/VRSA-Investigation-Guide-05_12_2015.pdf.

✓ REFERENCES

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✓ VERSION CONTROL

V2 12.7.2015: Updated reported case numbers. Updated case and contact investigation procedures. Updated formatting.

V3 1.26.2021: Disease plan name changed from (VRSA/VISA) to VRSA and references to submission, reporting and testing of VISA isolates removed to reflect changes in Utah Communicable Disease Rule. Plan was updated in the new BOE template and added the Critical Clinician Information.

✓ UT-NEDSS (EpiTrax) MINIMUM/REQUIRED FIELDS BY TAB

Demographic
- First name
- Last name
- Age
- Date of birth
- Date of death
- Phone number
- Area code
- County
- Birth gender
- Race
- Street
- City
- State
- Zip Code

Clinical
- Admission date
- Clinician first name
- Clinician last name
- Clinician phone
- Date diagnosed
- Died
- Date of death
- Diagnostic facility
- Disease
- Health facility
- Hospitalized
- Onset date

Laboratory
- Collection date
- Lab
- Organism
- Result value
- Specimen source
- Test result
- Test type
- Units

Epidemiological
- Date of exposure
- Exposure city
- Exposure name
- Exposure place type
- Food handler
- Group living
- Healthcare worker
- Imported from
- Other Data 1
- Other Data 2

Investigation
- Had a fever and pneumonia
- Other relevant details:
- Date patient admitted to reporting facility?
- Was patient transferred from another facility?
- Transferred from where?
- Type of facility patient was transferred from
- Date of transfer
- Was this infection healthcare facility acquired?
- Has the healthcare facility taken measures to prevent further spread of organism, if warranted?

Contacts
- NA

Reporting
- Date first reported to public health

Administrative
- LHD investigation/intervention started
- Outbreak-associated
- Outbreak name
- State case status

✓ VANCOMYCIN-RESISTANT *STAPHYLOCOCCUS AUREUS* (VRSA) RULES FOR ENTERING LABORATORY TEST RESULTS

The following rules describe how laboratory results reported to public health should be added to new or existing events in UT-NEDSS (EpiTrax). These rules have been developed for the automated processing of electronic laboratory reports (ELR), although they apply to manual data entry, as well.

Test-Specific Rules

Test specific rules describe what test type and test result combinations are allowed to create new morbidity events in UT-NEDSS (EpiTrax) , and what test type and test result combinations are allowed to update existing events (morbidity or contact) in UT-NEDSS (EpiTrax).

Test Type	Test Result	Create a New Event	Update an Existing Event
Culture	Resistant (AST)	Yes	Yes
	Susceptible (AST)	No	Yes
	Intermediate (AST)	No	Yes

Whitelist Rules

Whitelist rules describe how long an existing event can have new laboratory data appended to it. If a laboratory result falls outside the whitelist rules for an existing event, it should not be added to that event, and should be evaluated to determine if a new event or Client Medical Record (CMR) should be created.

Vancomycin-resistant *Staphylococcus aureus* (VRSA) Morbidity Whitelist Rule: Never a new case.
Vancomycin-resistant *Staphylococcus aureus* (VRSA) Contact Whitelist Rule: Never added to contact.

Graylist Rule

We often receive laboratory results through ELR that cannot create cases, but can be useful if a case is created in the future. These laboratory results go to the graylist. The graylist rule describes how long an existing event can have an old laboratory result appended to it.

Vancomycin-resistant *Staphylococcus aureus* (VRSA) Graylist Rule: If the specimen collection date of the laboratory result is 30 days before to 7 days after the event date of the morbidity event, the laboratory result should be added to the morbidity event.

Other Electronic Laboratory Processing Rules

- If an existing event has a state case status of “not a case,” ELR will never add additional test results to that case. New labs will be evaluated to determine if a new CMR should be created.