Preventing MRSA Transmission & Infection

Cal HQ Change Package 2026

About Cal HQ

California Alignment for Hospital Quality (Cal HQ) is a statewide collaboration focused on improving hospital quality through aligned action. The initiative is led by Covered California, CalPERS, and Cal Healthcare Compare, with oversight from steering committee members from state agencies, hospitals, health plans, improvement organizations, and patients to identify and advance a common set of hospital quality measures. The Cal HQ Steering Committee provides strategic guidance, ensures industry alignment, promotes Cal HQ's activities, and advises on statewide scaling and dissemination efforts.

Prevent 2,000 Infections over two years	34% overall reduction by 2027	Projected to potentially save approximately $64 million	Projected to potentially save 120 lives

About this Change Package

Change packages are tools to help health care improvement teams make patient care safer and improve outcomes. This change package, developed by a team of experts in patient safety and infection prevention, outlines evidence-based practices. It includes a menu of strategies, change ideas, and specific, actionable steps that your team can implement in your unique context.

All Cal HQ change packages are organized around a driver diagram, a tool to identify, organization, and prioritize improvement activities. Each primary driver has accompanying focus area (called secondary drivers) and change ideas, or specific actions that a hospital team can take to improve outcomes.

Use this change package as background information, a checklist, reference material or simply a place to start. Learn more about other Cal HQ resources on our website: www.calhq.calhospitalcompare.org.

Part 1: Definition and Scope

> ### What is MRSA?
> Methicillin-resistant Staphylococcus aureus (MRSA) is a multi-drug resistant organism that has the potential to cause serious and deadly infection. MRSA is spread through direct contact and is among the most common causes of device associated infections. Studies show that two in every 100 people are colonized, without illness, with MRSA, which increases the potential spread of the bacteria to others. [1,2]

Magnitude of the Problem

The CDC estimates that MRSA is responsible for more than 70,000 severe infections and 9,000 deaths per year. While healthcare facilities are making strides in preventing healthcare associated infections, there is more work to be done. Individuals colonized with MRSA are more likely to develop underlying disease and the development subsequent MRSA infection. The CDC considers MRSA a serious threat in healthcare facilities because it can lead to bloodstream infections, pneumonia, surgical site infections, sepsis and death. [1,2]

Part 2: Measurement

A key component in making patient care safer in your hospital is to track your progress toward improvement. Collecting data points at your hospital will guide your quality improvement efforts as part of the Plan-Do-Study-Act (PDSA) process. Tracking your data in this manner will provide valuable information needed to study your data across time and help determine the impact of your improvement initiatives on reducing patient harm.

Nationally Recognized Outcome Measures

- MRSA Bloodstream Infection Incidence Rate:
    - Numerator: Number of unique positive blood cultures
    - Denominator: Number of patient admissions x 100

Note: Hospitals may track both Healthcare Facility-Onset (HO) and Community-Onset (CO).

- Healthcare Facility-Onset (HO): MRSA blood culture specimen collected on or after Hospital Day 4, where Hospital Day 1 is day of admission.

- o Community-Onset (CO): MRSA blood culture specimen collected in an outpatient location or an inpatient location on Hospital Day 1 (day of admission), Hospital Day 2, or Hospital Day 3.

- MRSA Bloodstream Infection Standardized Infection Ratio (SIR)
  - o Numerator: Observed MRSA bloodstream infections
  - o Denominator: Predicted MRSA bloodstream infections
  - o Comment: SIR is calculated by NHSN and adjusted for several risk factors.
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Part 3: How to Improve

Investigate Your Problem and Implement Best Practices

Driver Diagrams

A driver diagram visually demonstrates the causal relationship between change ideas, secondary drivers, primary drivers and your overall aim. A description of each of these components is outlined in the table below. This change package is organized by reviewing the components of the driver diagram to (1) help your care team identify potential change ideas to implement at your facility and (2) show how this quality improvement tool can be used by your team to tackle new process problems.
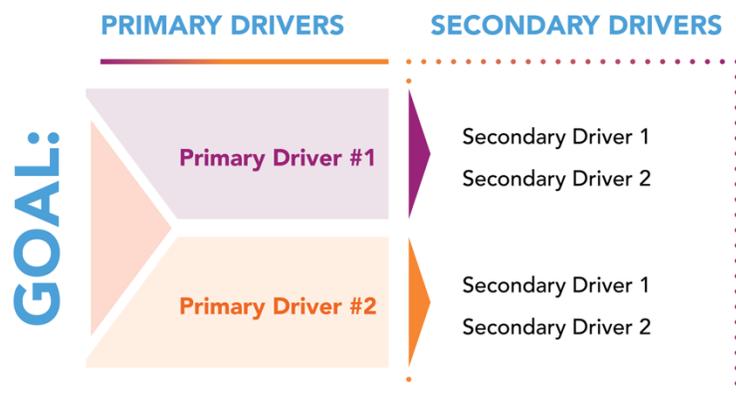
Suggested Bundles and Toolkits

Management of Multidrug-Resistant Organisms in Healthcare Settings, CDC, 2006

Practice Recommendation: Strategies to Prevent MRSA Transmission and Infection in Acute-Care Hospitals: 2022 Update, SHEA/IDSA/APIC
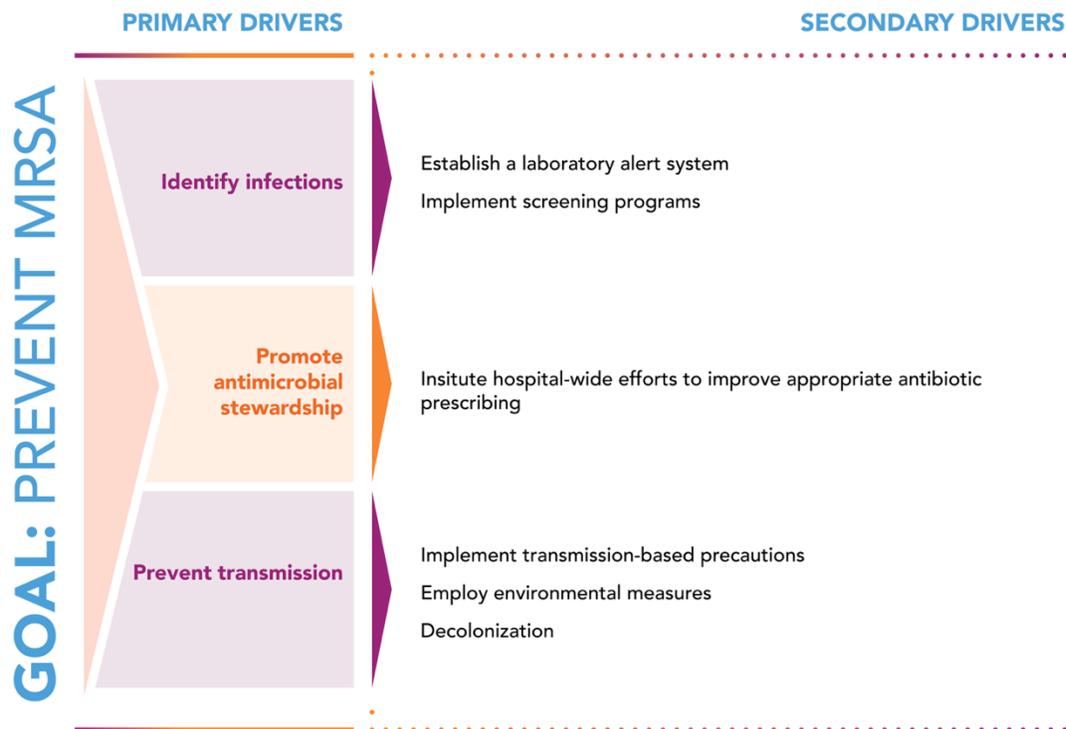
MRSA Prevention Toolkit, ICU & Non-ICUs, AHRQ

Drivers in this Change Package

AIM: A clearly articulated goal or objective describing the desired outcome. It should be specific, measurable, and time-bound.

PRIMARY DRIVER: System components or factors that contribute directly to achieving the aim.

SECONDARY DRIVER: Action, interventions, or lower-level components necessary to achieve the primary driver.

PRIMARY DRIVERS   **SECONDARY DRIVERS**

GOAL: PREVENT MRSA

Identify infections
- Establish a laboratory alert system
- Implement screening programs

Promote antimicrobial stewardship
- Institute hospital-wide efforts to improve appropriate antibiotic prescribing

Prevent transmission
- Implement transmission-based precautions
- Employ environmental measures
- Decolonization

Foundational Infection Prevention Practices

This change package builds on foundational infection prevention and control practices that are a crucial component of safe and quality health care delivery:

- Leadership support
- Health care personnel education and training
- Patient, family and caregiver engagement
- Surveillance
- Hand hygiene
- Environmental cleaning and disinfection

You can learn more about these practices in the **Foundational Infection Prevention Practices Change Package**: https://calhq.calhospitalcompare.org/wp-content/uploads/2026/02/CalHQ_FoundationalIPC_TOOLKIT.pdf

Driver 1: Identification

Identification of MRSA is an impactful component of the infection prevention program. More than half of patients colonized with MRSA that are admitted to the hospital will be undetected by testing clinical specimens. These patients may become carriers and a source of transmission for other patients in the hospital unless they are identified and cared for with additional transmission precautions.[3]

> **Secondary Drivers in this Section**
> 1. Establish a laboratory alert system
> 2. Implement screening programs

1. Establish a laboratory alert system

Monitoring laboratory results provides an important understanding in trends and measuring the effectiveness of prevention programs.[4]

Change Ideas

- Utilize surveillance definitions to trigger electronic alerts when MRSA is detected in a patient specimen.
- Implement a process to notify infection prevention, or designee, when MRSA is detected. This could be via page, email, phone or electronic notification.
- Establish a process to review clinical cultures to monitor transmission.
- Leverage laboratory results in the development of an antibiogram to monitor MRSA resistance patterns.

> **Suggested Measures for Your Tests of Change**
> - Incidence of MRSA laboratory results in specimens.

2. Implement screening programs

To develop effective MRSA prevention strategies, it is important to understand the prevalence of MRSA within the community and know where transmission occurs.[4] The primary body site for collection of screening cultures is the anterior nares because of accessibility and frequency of positive results.[5]

Change Ideas

- Establish a process to screen patients with increased risk factors for MRSA infection (for example, ICU patients or patients being admitted from long-term care facilities).
- Establish predetermined time for screening patients, such as at admission, a specific time during patient stay, and/or at discharge.
- Partner with supply management to procure appropriate screening supplies.
- Collaborate across disciplines (administration, nursing, laboratory) to plan for the staff time to collect screening specimens and laboratory time to process those specimens.
- Partner with local organizations to establish a communication system that notifies hospital infection prevention, or designee, of patients being admitted with MRSA.

Suggested Process Measures for Your Tests of Change
- Incidence of MRSA in screening cultures
- Number of patients that screen positive for MRSA upon admission (potential for detecting community onset cases)
- Number of patients that screen positive for MRSA at discharge (potential for detecting hospital onset cases)

Driver 2: Promote Antimicrobial Stewardship

Antibiotic stewardship aims to optimize the use of antibiotics to make sure they are utilized appropriately. Antibiotic exposure may increase the risk of a colonized individual developing a MRSA infection or the possibility of transmission to others.[1] With the relationship between antibiotic exposure and MRSA infection, studies have shown that the implementation of antibiotic stewardship programs were associated with a reduction in MRSA incidence.[5]

> ### Secondary Drivers in this Section
> 1. Improvement in antibiotic prescribing

1. Improvement in antibiotic prescribing

Antibiotic stewardship programs are an important component of efforts to reduce MRSA colonization and infection. The Centers for Medicare & Medicaid Services (CMS) and The Joint Commission both have requirements that hospitals have antibiotic stewardship programs. Partnership with your organization's required antibiotic stewardship program will ensure the successful implementation of activities to improve prescribing.[5]

Change Ideas

- Review data to identify antibiotics that are contributing to excess or inappropriate use. Review should consider targeting antibiotics that have an association with MRSA such as fluoroquinolones.
- Integrate review of antibiotic need into daily rounds.
- Implement electronic alerts to prompt documentation of indication of antibiotics.
- Develop scripted questions to confirm need for antibiotic. See Appendix II for considerations.
- Partner with interdisciplinary team to develop standard protocol for initiating antibiotics for patients with MRSA.

> ### Suggested Process Measures for Your Tests of Change
> - Antibiotic days of therapy for patients with MRSA
> - Percentage of patients in which daily antibiotic indication was documented

Driver 3: Prevent Transmission

MRSA can be transmitted primary through direct contact. This can occur through direct skin to skin contact with an infected or colonized person, or by contact with contaminated surfaces, items or equipment. Preventing transmission is important in reducing the spread of MRSA in a healthcare facility.[5]

> **Secondary Drivers in this Section**
> 1. Transmission based precautions
> 2. Environmental measures
> 3. Decolonization

1. Implement transmission-based precautions.

Contact precautions are intended to prevent the transmission of infectious disease that are transmitted by direct or indirect contact with a patient or the environment. Contact precautions should be utilized for patients with MRSA colonization and infection.[1] Contact precautions include the use of gloves and gowns when entering a patient's room regardless of whether or not patient contact will occur.

Change Ideas

- Utilize visual cues, such as signs or colored tape, to indicate the need for contact precautions.
- Implement a process to flag patients in the electronic health record, identifying the need for contact precautions.
- Establish a criteria-based approach for the discontinuation of contact precautions in partnership with infection prevention.
- Limit transport or movement of patient as much as possible.
- Ensure available and close proximity of supplies for personnel entering the patient's room.
- Establish protocols for cohorting MRSA patients if private rooms are limited or unavailable.

> **Suggested Measures for Your Tests of Change**
> - Compliance with use of personal protective equipment (gowns and gloves)
> - Utilization of contact precaution visual cues, including signage and designation in the electronic health record, for patients with MRSA

2. Disinfect environmental reservoirs

Environmental reservoirs play a role in the transmission of MRSA, including high-touch surfaces such as intravenous poles, bedrails and over-bed tables. If appropriate cleaning and disinfection does not occur, those high-touch surfaces serve as a reservoir for MRSA transmission.[5] A link to the disinfection products appropriate for preventing the spread of MRSA can be found on the Registered Disinfectants section of the Environmental Protection Agency website here: https://www.epa.gov/pesticide-registration/selected-epa-registered-disinfectants

Change Ideas

- Utilize disposable or dedicated patient-care equipment.
- Develop written protocols for daily and terminal cleaning of patient rooms.
- Review cleaning products utilized to ensure they prevent the spread of MRSA.
- Implement a program that assesses and monitors environmental cleaning effectiveness.
- Develop a recognition program to celebrate and acknowledge the efforts of environmental services team members.
- Prioritize cleaning the rooms for patients with MRSA.

> **Suggested Measures for Your Tests of Change**
> - Adherence to environmental cleaning processes.

3. Implement Nasal Decolonization

Decolonization is a proven strategy for preventing MRSA transmission in areas of the hospital where there are high bloodstream infection rates or high MRSA prevalence. This process aims to reduce MRSA on a patient's body which lowers the risk of the development of an infection or transmission of the bacteria. The main reservoir of MRSA is in a patient's nose. This process works by applying medication in an ointment in a patient's nose in conjunction with daily chlorhexidine gluconate bathing for a period of five days.[6,7]

Change Ideas

- Establish multidisciplinary team to develop a protocol and standardize care processes for decolonization.
- Partner with supply chain management and pharmacy team members to identify products for procurement.
- Ensure supplies are easily accessible for staff utilization.

Suggested Process Measures for Your Tests of Change
- Percent compliance with standard care processes for nasal decolonization

PDSA IN ACTION

Tips on How to use the Model For Improvement

Choice of Tests and Interventions for MRSAReduction

- There are many potentially effective interventions to reduce the transmission of MRSA. Improvement teams should begin their efforts by asking: "What is the greatest need at our facility? Where can we have the greatest impact?"
- Conduct small tests of change using the resources available and then upgrade the processes, equipment, and technology over time.

Implement Small Tests of Change

Test a System for Notification of Positive MRSA Laboratory Test

PLAN | Choose a protocol to adopt. Implement an email alert notifying infection prevention within 60 minutes of a laboratory detected MRSA specimen.

DO | Work with laboratory, information technology, and infection prevention to test an alert after one MRSA is detected.

STUDY | Ask infection prevention the following questions:

- Did you receive the alert?
- How long after the lab-identified MRSA was the alert received?
- Did the alert have enough information for appropriate follow up to occur?

ACT | Consider:

- What have we learned from this test?
- Are there steps that can be changed to make the next alert more timely or helpful?
- If this worked well, can we test alerts for a 24 hour period to see if this is a sustainable process?
- Plan the next small test of change. How soon can be tested?

Conclusion & Action Planning

MRSA prevention is multifaceted and cannot be accomplished in silos. Breaking down the approaches into the three primary drivers (identification, antimicrobial stewardship, and the prevention of transmission) can help organizations prevent transmission from different angles. Look at the secondary drivers and the change ideas. Build upon others' learnings. Gather small multidisciplinary groups of champion clinicians and administrators and design very small tests of change. Then take those learnings and design new tests. Quickly repeat this PDSA cycle, learning iteratively. Improvement cannot be made in a meeting room. Improvement happens while learning from doing, and small tests allow for quick learning cycles and more rapid achievement of improvement goals.

Part 5: Appendices

Appendix 1: MRSA Top Ten Checklist

> **Purpose of Tool:** A checklist to review current or initiate new interventions for MRSA prevention in your facility.

- ☐ Implement electronic alerts that will trigger when MRSA is detected in a patient specimen.
- ☐ Establish a process review culture to monitor transmission.
- ☐ Establish process to screening patients with increased risk factors for MRSA infection (for example: ICU patients or patients being admitted from long-term care facilities).
- ☐ Partner with local organizations to establish a communication system that notifies hospital infection prevention, or designee, of patients being admitted with MRSA.
- ☐ Partner with interdisciplinary team to develop standard protocol for initiating antibiotics for patients with MRSA.
- ☐ Implement electronic alerts to prompt documentation of indication of antibiotics.
- ☐ Utilize visual cues, such as signs or colored tape, to indicate the need for contact precautions.
- ☐ Utilize disposable or dedicated patient-care equipment.
- ☐ Implement a program that assesses and monitors environmental cleaning effectiveness.
- ☐ Establish multidisciplinary team to develop a protocol and standardize care processes for decolonization.

Appendix II: Antibiotic Decision Making

Agency for Healthcare Research and Quality (AHRQ)

Purpose of Tool: Examples of questions to consider when determining the need for antibiotics.

Examples of questions to ask when considering the initiation of antibiotics or reviewing the antibiotics patients are receiving.

1. Does the patient have an infection that requires antibiotics?
2. Have the appropriate cultures been ordered before starting antibiotics?
3. What empiric therapy should be considered?
4. What duration of therapy is needed for the patient's diagnosis?
5. Can current antibiotics be narrowed or changed from IV to oral therapy?
6. Are there side effects or drug interactions that should be considered?
7. Can the antibiotics be stopped?

Reference: AHRQ MRSA Prevention Toolkit: ICUS & Non-ICUs – Antibiotic Stewardship, https://www.ahrq.gov/hai/tools/mrsa-prevention/toolkit/antibiotic-stewardship.html

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