Identification and Prevention of MRSA Transmission

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STRIVE
States Targeting Reduction in Infections via Engagement

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Learning Objectives

Identify strategies that can be used in acute care settings to reduce the transmission of methicillin-resistant *Staphylococcus aureus* (MRSA)

Recognize the advantages of horizontal infection control strategies

Explain the importance of adherence to recommended infection control interventions

Outline

Identification of MRSA

Hand hygiene

Personal protective equipment

Environmental cleaning and disinfection

How to educate our patients

Patient Identification

Facilities need a system in place to alert health care personnel about patients with MRSA

Lab alert systems can notify staff of newly positive MRSA results

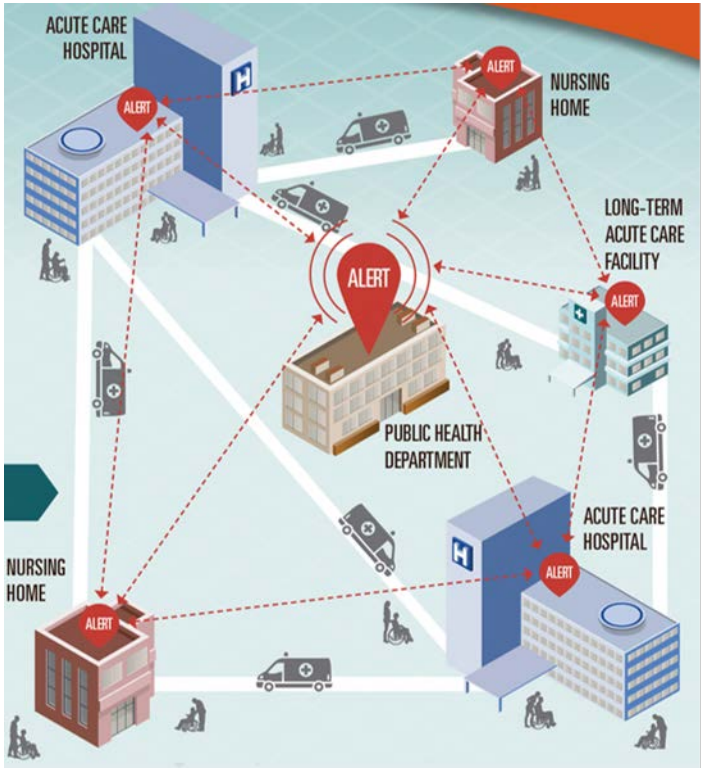
Early identification of patients with MRSA allows for early placement of patients on Contact Precautions

Staff Communication

Intra- and inter-facility communication is important for alerting health care personnel of a patient's MRSA status

- e.g., when transferring patients to other health care facilities

Facilities can develop electronic systems to identify or "flag" patients with MRSA at readmission to quickly institute Contact Precautions



(Image Source. Slayton RB, CDC MMW, 2015)

Actionable Feedback

Include hospital-onset MRSA bloodstream infections as well as other MRSA rates

Engage hospital leadership and health care personnel with feedback regarding their facility's or unit's MRSA rates and trends

Identify areas of improvement and motivate health care personnel and leadership to reduce rates of MRSA at their institution or in their unit

(Image adapted from Hysong S, Implementation Science, 2006)

Hand Hygiene

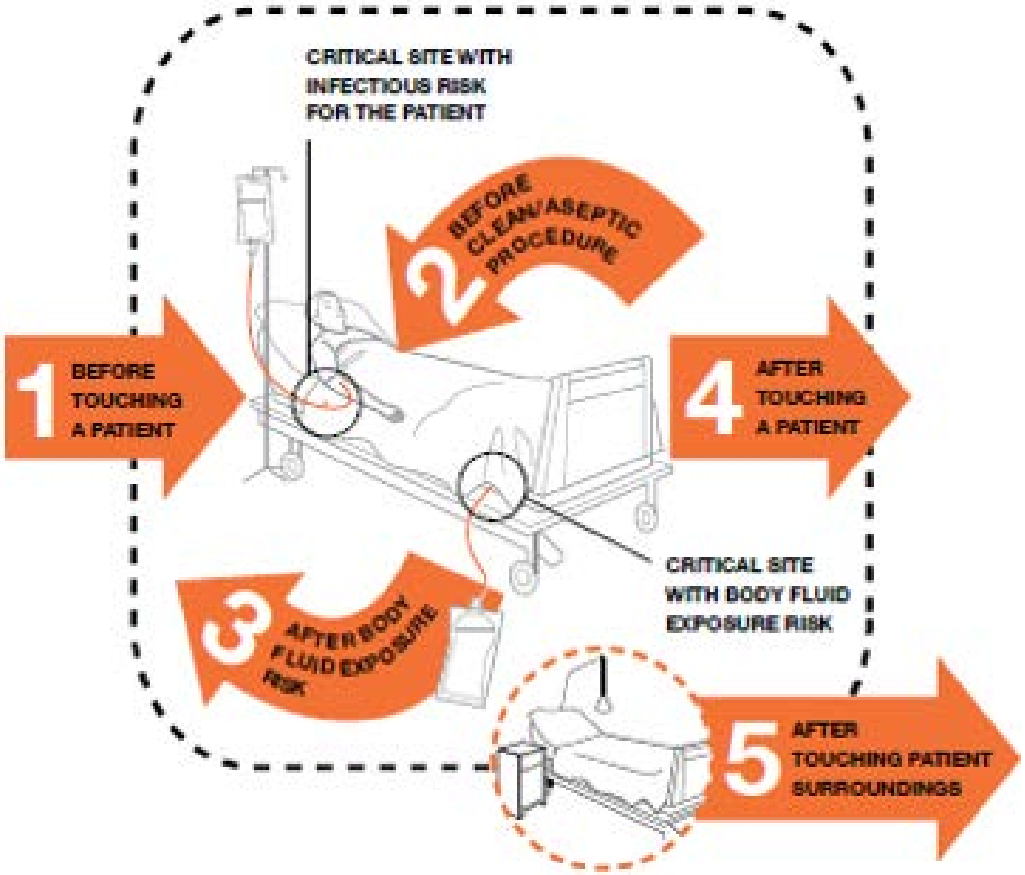
- Soap and water or alcohol-based hand-rub
- Before and after patient contact or contact with the patient care environment

Increased hand hygiene adherence has been associated with:

- Decrease in MRSA transmission
- Decrease in healthcare-associated infections

(Pittet D, Lancet, 2000)

5 Moments for Hand Hygiene



1. Before touching a patient
2. Before providing a clean/aseptic procedure
3. After direct contact with a body fluid
4. After touching a patient
5. After touching surfaces around a patient

(Image Source. Your 5 Moments for Hand Hygiene, WHO, 2006. Boyce JM, Am J Infect Control 2002; WHO, 2009)

Hand Hygiene

Adherence to hand hygiene can be poor

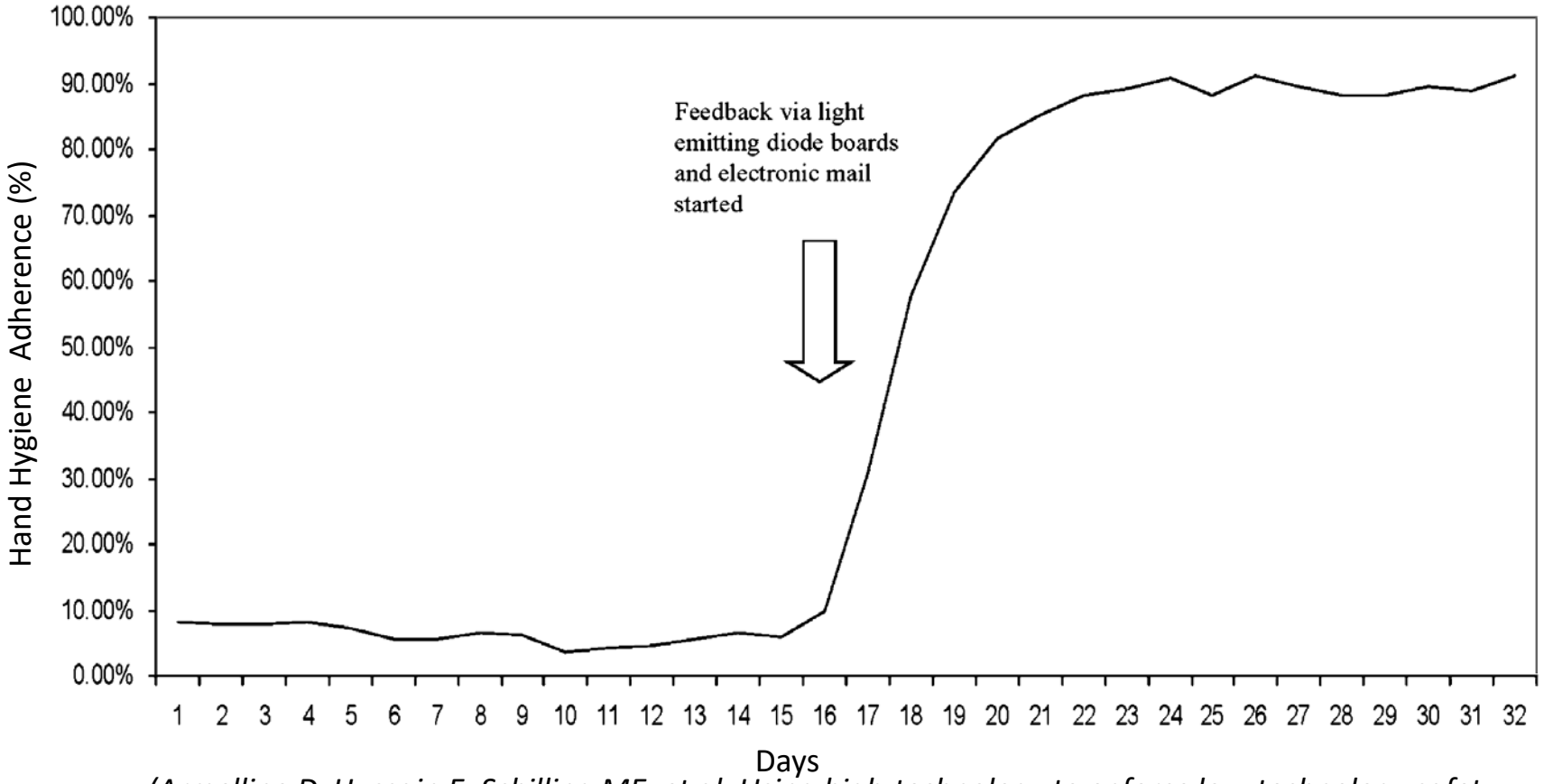
Minor lapses in hand hygiene can lead to cross-transmission of MRSA, especially in settings with high carriage rates of MRSA

Hospitals need programs to promote hand hygiene as well as mechanisms to monitor staff adherence

- Trained personnel to monitor
- Electronic methods

(Boyce JM, Am J Infect Control, 2002)

Impact of Feedback on Hand Hygiene Adherence



(Armellino D, Hussain E, Schilling ME, et al. Using high-technology to enforce low-technology safety measures: the use of third-party remote video auditing and real-time feedback in healthcare. Clin Infect Dis. 2012; 54:1-7.)

Personal Protective Equipment (PPE)

Patients colonized or infected with MRSA may be placed in private rooms or cohorted with similar patients to reduce the spread of MRSA

Contact Precautions (gloves and gowns) are used during clinical encounters with patients who are colonized or infected with MRSA

Contact Precautions may help reduce the spread of MRSA in the hospital

(Calfee D, Infect Control Hosp Epidemiol, 2014)

PPE: Current Controversies

Universal glove and gown use?

Universal glove use instead of Contact Precautions?

Are there adverse effects to patients who are placed on Contact Isolation?

<u>Adherence to the intervention is critical</u>

(Morgan DJ, Infect Control Hosp Epidemiol, 2015)

Environmental Cleaning and Disinfection

- MRSA can survive on hospital surfaces
- Contaminates patient's environment
  - e.g., over-bed tables, bedrails

- Contaminates patient care equipment
  - e.g., stethoscope, blood pressure cuff

There should be dedicated medical equipment for a single patient with MRSA

Shared equipment should be cleaned and disinfected before using it with another patient

Environmental Cleaning

Environmental cleaning reduces opportunities for contamination of health care worker hands

Environmental services is an important component of the infection control team

Process for monitoring environmental cleaning and disinfecting adherence and thoroughness

(Calfee D, Infect Control Hosp Epidemiol, 2014)

Horizontal Infection Control Strategies

Strategies that are NOT pathogen specific

These interventions can reduce transmission of MRSA to other patients

These interventions have the additional benefit of reducing transmission of other potential pathogens including other multidrug-resistant organisms (MDROs)

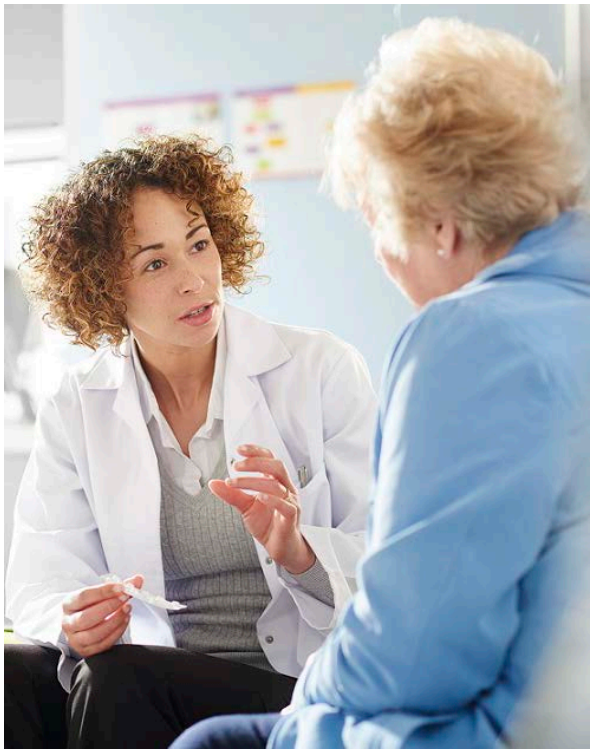
How to Educate Our Patients

Explain what colonization with MRSA means

Explain how people can get MRSA infections

Discuss with patients what hospitals are doing to prevent MRSA infections

- Hand hygiene, environmental cleaning, Contact Precautions
- Empower the patient to ensure that their health care providers are performing hand hygiene



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Infection Control After Hospital Discharge

If you are prescribed an antibiotic for a MRSA infection, complete the full course of antibiotics
Perform frequent hand washing, particularly before and after changing a wound dressing or bandage
Hand hygiene for people who live with the patient
Keep wounds clean and change bandages as instructed
Avoid sharing personal items such as towels or razors
Wash clothes and bed linens according to the recommendation on the labels
After hospital discharge, for future care inform health care providers about MRSA status

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(MRSA Information for Patients, CDC, 2016)

Take-Home Points

Adherence to the recommended infection control strategies is essential

Horizontal infection control strategies can impact MRSA and other multidrug-resistant organisms

Programs are needed to educate health care personnel and patients, promote the importance of various interventions and to improve adherence with the recommended strategies

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Speaker Notes

Speaker Notes: Slide 1

Welcome to the third module of the methicillin-resistant *Staphylococcus aureus*, or MRSA, Tier 1 course, titled "Identification and Prevention of MRSA transmission". This module will discuss the importance of identifying and implementing strategies to prevent MRSA transmission.

Speaker Notes: Slide 2

This module was developed by national infection prevention experts devoted to improving patient safety and infection prevention efforts.

Speaker Notes: Slide 3

By the end of this module, you will be able to:

- Identify strategies that can be used in health care settings to reduce the transmission of methicillin-resistant *Staphylococcus aureus*, also called MRSA;
- Recognize the advantages of horizontal infection control strategy, which are infection control interventions that are NOT pathogen specific; and
- Explain the importance of adherence to recommended infection control interventions.

Speaker Notes: Slide 4

The following infection control interventions can be used to reduce the transmission of MRSA: hand hygiene, personal protective equipment and environmental cleaning and disinfection. This presentation will build on the content and interventions discussed in the Foundational Infection Prevention Strategies courses.

Speaker Notes: Slide 5

First, an important component of preventing MRSA transmission is early identification of patients with MRSA. Facilities need to establish a prospective MRSA monitoring program, which alerts health care personnel about patients with MRSA. Some facilities may choose to enhance their MRSA monitoring program by instituting a lab alert system to notify staff of newly positive MRSA results. This early identification of patients with MRSA is crucial, because it allows for placement of these patients on Contact Precautions early in their hospitalization.

Speaker Notes: Slide 6

Once patients with MRSA are identified, this information needs to be effectively communicated. There needs to be both intra- and inter-facility communication about a patient's MRSA status. An example of a time when inter-facility communication would be highly valuable is when a patient is being transferred to a long-term care facility. Effective intra-facility communication can help hospitals identify MRSA in readmitted patients. Electronic systems can be used to identify or "flag" patients with MRSA at readmission so Contact Precautions can be quickly instituted.

Speaker Notes: Slide 7

Implementing a MRSA monitoring program will also help hospitals and units identify trends and changes in their MRSA infections over time. Feedback on infection rates can include hospital-onset MRSA bloodstream infections as well as other MRSA rates. Hospital- and unit-level MRSA rates can be used to better engage hospital leadership and health care personnel. This feedback can be used to identify areas of improvement as well as to motivate health care personnel and leadership to make changes to further reduce the rates of MRSA. It is important that feedback about MRSA be actionable.

Speaker Notes: Slide 7 Continued

Refer to the Foundational Infection Prevention Strategies that in order for feedback to lead to actionable change, it should be timely, individualized, non-punitive and customizable. For more information about data that may be useful to assess or include in your MRSA monitoring program, review module 102 of this course.

Speaker Notes: Slide 8

Effective hand hygiene is important for preventing the transmission of all healthcare-associated infections (HAIs), including MRSA. Refer to the Foundational Infection Prevention Strategies course, hand hygiene involves health care personnel using either soap and water or an alcohol-based hand gel on their hands before and after patient contact or after contact with the patient care environment. Studies have demonstrated that increased hand hygiene adherence in hospitals is associated with a decrease in MRSA transmission as well as a decrease in other HAIs.

Speaker Notes: Slide 9

As a reminder, the World Health Organization cites five moments of hand hygiene for all health care personnel. These include before touching a patient, before clean and aseptic procedures, after body fluid exposure or risk, after touching a patient and after touching patient surroundings.

Speaker Notes: Slide 10

The major problem with hand hygiene is health care personnel adherence to hand hygiene can be poor. This is problematic because even minor lapses in hand hygiene can lead to the spread of MRSA, particularly in health care settings with high carriage rates of MRSA. Therefore, hospitals need programs in place which can promote hand hygiene as well as monitor the adherence of health care personnel to hand hygiene before and after patient contact. Some institutions use trained personnel to monitor adherence to hand hygiene.

Speaker Notes: Slide 10 Continued

Other hospitals have used novel methods such as electronic alerts, video recording and performance feedback to improve hand hygiene adherence rates of health care staff. For more information about hand hygiene monitoring strategies, please review the second module for the Hand Hygiene course titled, Hand Hygiene 102: Education, Monitoring and Feedback.

Speaker Notes: Slide 11

In this study by Armellino and colleagues, cameras were placed in a 17-bed medical intensive care unit to record hand hygiene of health care personnel. During the study, performance feedback was provided on electronic boards in the hallway and via email. As shown in this figure, following the introduction of performance feedback, there was a significant increase in the adherence of health care personnel to hand hygiene.

Speaker Notes: Slide 12

Personal protective equipment, or PPE, is another important horizontal strategy to reduce transmission of MRSA. As mentioned, Contact Precautions recommend the use of gloves and gowns by healthcare personnel during clinical encounters with patients who are colonized or infected with MRSA. Contact Precautions are widely used in acute care settings for patients with various multidrug-resistant organisms (MDROs) and may help reduce the spread of MRSA in the hospital. Additionally, patients colonized or infected with MRSA may be cohorted with similar patients or placed in private rooms to reduce the spread of MRSA. For more information about Contact Precautions and cohorting, please review the foundational course on Personal Protective Equipment (PPE 101).

Speaker Notes: Slide 13

However, PPE use for patients with MRSA is not without a few controversies. Current guidelines from the CDC Society for Healthcare Epidemiology of America and the Infectious Diseases Society of America recommend the use of Contact Precautions for patients who are colonized or infected with MRSA. However, several studies have suggested alternative approaches for controlling the spread of multidrug-resistant organisms (MDROs)in the hospital.

Speaker Notes: Slide 13 Continued

Universal glove and gown use for all patients who are in the intensive care unit, irrespective of MRSA status, has been proposed. Others have suggested that universal glove use could be effective in reducing the transmission of MRSA. Conversely, other experts have suggested that there may be adverse effects to placing patients on Contact Precautions, although there is still conflicting data on this issue. As you can see more research in this area is still needed. Regardless of any PPE strategy that your hospital chooses to use to prevent MRSA transmission, it is essential that adherence is monitored and reinforced. PPE use for preventing MRSA transmission will be further addressed in the MRSA Tier 2 modules.

Speaker Notes: Slide 14

A final strategy presented in this module for reducing the spread of MRSA in hospitals is environmental cleaning and disinfection. MRSA can survive on hospital surfaces and can contaminate the patients' environment such as the over bed tables and bed rails. In addition, MRSA can contaminate patient care equipment such as stethoscopes and blood pressure cuffs. Because of this, there should be dedicated medical equipment for a single patient with MRSA or alternatively, equipment should be cleaned and disinfected before using it on another patient.

Speaker Notes: Slide 15

Thorough environmental cleaning reduces the opportunity for health care personnel to contaminate their hands with MRSA and other potential pathogens. Therefore, environmental services personnel should be viewed as important members of the infection control team. This includes having a mechanism in place for monitoring quality and thoroughness of environmental cleaning. Additional information about environmental cleaning can be found in the Environmental Cleaning course.

Speaker Notes: Slide 16

Each strategy discussed so far is considered a “horizontal,” or “foundational” infection control intervention, in that it is NOT pathogen or infection-type specific. For example, we just talked about environmental cleaning, which helps to decrease all types of pathogens in the environment and thereby contributes to prevention of many types of infections in addition to ones caused by MRSA. It is considered a horizontal infection prevention strategy.

Speaker Notes: Slide 16 Continued

In contrast, “vertical” infection control strategies are those that target a specific pathogen or type of infection. For example, ensuring a urinary catheter is placed using aseptic technique is a vertical strategy designed specifically to prevent catheter-associated urinary tract infections. It’s ability to prevent other types of infections is very limited.

So, horizontal strategies can reduce the transmission of MRSA to other patients, but in addition, have the added benefit of reducing transmission of other multidrug-resistant and non-resistant pathogens as well.

Speaker Notes: Slide 17

One last measure to help prevent MRSA transmission is the education of patients and their families. It is important to educate our patients and their family members about MRSA. Providers can explain what colonization with MRSA means and how people can get MRSA infections. In addition, providers can discuss with patients the specific strategies hospitals are using to prevent MRSA infections. These include the strategies discussed in this module: hand hygiene, environmental cleaning and Contact Precautions.

Speaker Notes: Slide 17 Continued

Providers can also empower the patient and family members to ensure that their health care providers are performing hand hygiene before and after they are caring for them. It is important for a hospital to have a process in place for identifying who will communicate with the patient and their family members.

Speaker Notes: Slide 18

A common question patients and their family members have is what infection control strategies should they use after hospital discharge and the patient is at home. The CDC has an excellent website that reviews these recommendations.
Recommendations for patients include:

- If you are prescribed an antibiotic for a MRSA infection, complete the full course of antibiotics
- Perform frequent hand washing, particularly before and after changing a wound dressing or bandage
- Hand hygiene for people who live with the patient

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Speaker Notes: Slide 18 Continued

- Keep wounds clean and change bandages as instructed
- Avoid sharing personal items such as towels or razors
- Wash clothes and bed linens according to the recommendation on the labels
- After hospital discharge, for future care inform health care providers about MRSA status

Speaker Notes: Slide 19

There are several take-home points to keep in mind:

- First, adherence to the recommended infection control strategies is essential to reduce MRSA transmission and infection rates.
- Second, horizontal infection control strategies can impact MRSA transmission as well as other multi-drug resistant organisms.
- Finally, to reduce the spread of MRSA in hospitals, ensure that facility training programs educate health care personnel and patients, promote the importance of various recommended strategies and improve adherence with the various interventions.

Speaker Notes: Slide 20

No notes.