COMMUNITY ASSOCIATED METHICILLIN-RESISTANT STAPHLOCOCCUS AUREUS

A PRACTICAL GUIDE FOR PRIMARY CARE PRACTITIONERS

Newfoundland Labrador

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Background

Since it was first described in 1961 methicillin resistant *Staphlococcus aureus* (MRSA) has been recognized as a hospital pathogen and referred to as healthcare-associated (HA)-MRSA. It is seen in patients who are quite ill, receiving long courses of multiple antibiotics, or who have had other medical interventions. During the past ten years MRSA strains have emerged that have increased in prevalence and become the dominant strain in communities referred to as community-associated (CA)-MRSA. The spread of CA-MRSA, like *S aureus* in general, is transmitted through direct contact between an infected person and an uninfected person or by indirect contact through touching contaminated objects or surfaces that are part of the infected person's environment.

The most frequently reported clinical manifestations of CA-MRSA are skin and soft tissue infections (SSTIs), specifically furuncles (abscessed hair follicles or boils), carbuncles, and abscesses. The skin lesions are frequently confused with spider bites by both patients and clinicians. The severity of SSTIs varies from mild superficial infections to deeper soft-tissue abscesses requiring hospital admission for surgical incision and draining and parenteral antibiotics. Reports suggest that recurrent MRSA skin infections and clustering of infections within a household are relatively common occurrences.

Factors that seem to influence outbreaks of MRSA in the community include the 6 C's:

- ***Crowding*** – crowding and poverty are risk factors
- ***Contaminated*** items in the environment - poor hand washing, uncovered wounds, sharing clothing or towels, and poor cleaning of surroundings lead to contamination of the environment
- ***Contact*** - close body contact can increase the risk of spreading CA-MRSA; outbreaks have occurred in contact sport teams such as wrestling/football
- ***Compromised*** skin – cuts and scrapes can become infected if not kept clean
- ***Cleanliness*** – lack of attention to basic hygiene
- ***Carelessness*** over the use of antibiotics

Management of CA-MRSA Infections

1. **General prevention recommendations**:

a) Clean, Cover and Contain:

- Encourage and **teach patients** the importance of **hand hygiene** practices and basic hygiene for the prevention of all infections
  - Regular soap and warm water is adequate
  - Alcohol based hand rubs may also be used if available
  - Antibacterial soaps are not recommended for general hygiene; overuse of antibacterial soaps may encourage antimicrobial resistance
- If a wound is draining the patient should be advised to cover it and contain the drainage to protect others from coming into contact with the infection
- Provide fact sheet to patient on CA-MRSA (Appendix A)

b) Reinforce infection prevention and control practices in the clinic for patients with draining wounds:

- Quickly triage the patient out of common waiting area; move to an examining room
- Hands must be washed before and after each patient contact
- Wear gloves for any contact with infectious secretions
- Do not self-inoculate, do not touch your nose or face when caring for patients
- Stethoscope should be cleaned with an alcohol swab between patients
- Clean environment surfaces after caring for a patient with a draining wound
- See Appendix B for basic infection control practices

c) Use antibiotics wisely:

- Particular attention should be paid to judicious use of antibiotics in outpatient settings to avoid an expanding spectrum of antibiotic resistance among strains of CA-MRSA and other organisms
- Treatment of viral infections with antimicrobials should be avoided
- Patients should be informed about the wise use of antibiotics to include:
  - Take the antibiotic on time
  - Take the antibiotics until it is finished; do not stop when feeling well
  - Do not share antibiotics with others

2. When to consider CA-MRSA:

- As a differential diagnosis when assessing abscesses, pustular lesions, boils and cellulitis; or if there is severe illness compatible with *S aureus* in cases of septicaemia, osteomyelitis, necrotizing pneumonia, septic arthritis or necrotizing fasciitis
- In areas where approximately 10 – 15% of community isolates of *S aureus* are methicillin resistant, CA-MRSA should be suspected in any patient who presents with an SSTI
- Suspect CA-MRSA when there is a poor response to beta-lactam therapy in individuals with presumed staphylococcal infection

3. When to obtain cultures:

- Specimens for culture of SSTIs should not be routinely obtained from all individuals presenting with minor skin infections and without previous CA-MRSA infection
- Cultures should be obtained from SSTIs as well as other sites where *S aureus* infection is suspected, that have not responded to initial therapy
- Culture recurrent furuncles or abscesses (two or more in six months)
- Obtain cultures in any severe presentation of the disease (should include blood culture)
- On consultation with the local Medical Officer of Health

4. Prescribing approaches:

- Warm soaks and compresses and/or incision and drainage are recommended for skin and soft tissues infections that are localized with no systemic symptoms
- Provide non-hospitalized patients with a follow-up plan to include instruction to return if their local symptoms worsen or if no improvement occurs in 48-72 hours
- Factors that may influence the clinical decision to supplement incision and drainage with antibiotic therapy include:
  - Severity and rapidity progression of the SSTI or the presence of associated cellulitis
  - Signs and symptoms of systemic illness
  - Associated patient co-morbidities or immune suppression
  - Extremes of age
  - Location of the abscess in an area that may be difficult to drain completely or that can be associated with septic phlebitis
  - Lack of response to initial treatment with incision and drainage alone
- When empiric antimicrobial therapy is provided, local susceptibility data should guide treatment
- If a positive MRSA report is received on a patient already started on an antibiotic, re-examine the patient before prescribing another antibiotic. In vitro sensitivities may not correlate with clinical response. If the infection is resolving, it may not be necessary to change the antibiotic.
- Decolonization is not recommended as there is no data to support efficacy in the community setting and there is concern of further development of resistance
- If you are admitting or referring a MRSA positive patient to a health care facility or agency, please advise the receiving facility. Patients positive for MRSA are placed on Contact Precautions in the hospital setting. All positive MRSA cultures are reported to Provincial Public Health through the healthcare-associated surveillance system.

5. Treatment guidelines:

Table 1: Management of suspected CA-MRSA skin and soft tissue infections for primary care practitioners

SSTI	Clinical Disease	Management	Antimicrobial choices [1,2]
Mild	Mild or early localized infections ▪ Infected scratches ▪ Insect bites	▪ Culture selectively ▪ Soak the infected area or apply warm compresses for 20 minutes 2-3 times per day until infection clears ▪ Cover draining lesions ▪ **Emphasize** personal hygiene ▪ Close follow-up ▪ Return if worsening	▪ Antibiotic therapy may not be recommended except for young or immunocompromised host
	▪ Abscesses	▪ Incision and drainage (repeat drainage may be needed)	
	▪ Impetigo-like lesions	▪ As above	▪ Topical therapy with fusidic acid (Fucidin) or mupirocin (Bactroban) may be considered[3]
Moderate	▪ Cellulitis ▪ Moderate abscesses	▪ Culture (blood if febrile, site if purulent) ▪ Drainage of abscess or needle aspiration (repeat drainage may be needed) ▪ Teach infection control measures ▪ Imaging for complications (case by case) ▪ Close follow-up ▪ Return if worsening	*If little MRSA in the community, consider standard S. aureus therapy*: ▪ Cloxacillin ▪ A first generation cephalosporin or ▪ Amoxicillin/clavulinic acid *If MRSA endemic in community(more than 15% of cultures):* ▪ Trimethoprim-suflamethoxazole (consider higher dose if more serious infections) ▪ Doxycycyline (if 9 years or older)[4] ▪ Clindaymycin[5]
Severe	▪ Extensive cellulitis ▪ Large or multiple abscesses ▪ Associated systemic features	▪ Culture (blood if febrile, site if purulent) ▪ Drainage of abscess ▪ Hospitalize ▪ Parental therapy ▪ Appropriate control measures ▪ Consult infectious disease expert ▪ Imaging for complications	▪ IV Vancomycin ▪ Oral vancomycin is not well absorbed and therefore ineffective for skin or systemic infections.

[1] If group A streptococcal (GAS) infection is suspected, oral therapy should include an agent active against this organism.

[2]Outpatient use of fluoroquinolones (e.g., ciprofloxin, levofloxacin, moxifloxacin, gatifloxacin) or macrolides (e.g., erythromycin, clarithromycin, azithromycin, and telithromycin) is not recommended for treatment of MRSA. Fluoroquinolones and macrolides are generally not recommended because of rapid development of resistance, even if initially sensitive.

[3]A relatively unique feature of CA-MRSA in Canada is that a high proportion of strains are mupirocin resistant. This is a characteristic of the strains isolated from northern Aboriginal communities in the prairies, where CA-MRSA has been present since 1980s.

[4] Doxycycline – In a small case series, the long-acting tetracyclines for the treatment of MRSA doxcycline and minocycline, appeared to be adequate for the treatment of MRSA SSTIs caused by tetracycline-susceptible isolates but not sufficient to support treatment for invasive infections.

[5] Isolates sensitive to clindamycin but resistant to erythromycin may have the potential to develop clindamycin resistance during therapy. With in vitro erythromycin resistance consider using TMP-SMX or doxycycline instead of clindamycin.

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METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS (MRSA) IN THE COMMUNITY

WHAT IS METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS (MRSA)?

Staphylococcus aureus is a germ that normally lives in the nose and on human skin. MRSA is a type of *Staphylococcus aureus* that is not killed by the usual antibiotics. It can cause common skin infections such as boils, abscesses and infected scratches.

HOW IS MRSA SPREAD?

Anyone can get an infection due to MRSA, which can be spread by touching someone or something that has the germ on it and then touching your skin or your nose.

ARE CERTAIN PEOPLE AT RISK OF GETTING COMMUNITY-MRSA?

Yes, over the past few years certain people have been found to have an increased risk of getting an infection due to MRSA including:

- People who have taken antibiotics frequently;
- Children, as they are less likely to wash their hands;
- Those involved in contact sports;
- Intravenous drug users sharing needles; and,
- People living in crowded conditions.

DOES EVERYBODY THAT COMES IN CONTACT WITH MRSA BECOME SICK?

No, sometimes the germ lives on the body without causing infection and does not require treatment. This is called colonization. If you have an infection with MRSA, you may not need an antibiotic. Your doctor or nurse will advise you on the best treatment for your infection.

HOW CAN WE STOP THE SPREAD?

Basic hygiene is the best prevention…

1. Frequent handwashing is the best way to prevent the spread of all germs, especially:

- After touching the nose or mouth, and areas on the skin such as cuts, boils or pimples;
- After touching body fluids such as urine, or things soiled with body fluids such as dirty tissues;
- After blowing your nose, coughing, sneezing or using the bathroom;
- Before preparing food, eating or drinking; and,
- When hands look dirty.

2. When house cleaning:

- Pay special attention to areas that are touched often such as door handles, telephones, etc.;
- Use regular household cleaner; and,
- Clean once a week and more frequently if someone is sick with an infection.

3. When sending children to daycare centres and/or schools, remind them to:

- Clean their hands before leaving and when returning home; and,
- Not share personal things like towels and clothing.

4. If participating in sports or athletic activities:
- Clothing and sporting equipment (e.g. mats) should be washed or wiped down after each use; and,
- Do not share personal items like water bottles, towels, clothing, uniforms, razors, etc.; and,
- Take a shower after each practice or game to prevent infection.

5. Remember the three Cs: CLEAN, COVER & CONTAIN
- Clean hands frequently;
- Cover mouth and nose when coughing or sneezing; and,
- Contain any illness by staying away from others.

How do I prevent the spread if I have an infection with MRSA?

Making sure family members do not come in contact with sores or fluid from the sores is the best way to prevent the spread of an infection with MRSA.
If an individual has an infected skin lesion, the person must:
- Clean his or her hands with soap and water after touching the lesion;
- Cover the lesion with a dressing to contain the drainage and wash hands afterwards;
- Seek medical care if required;
- If the dressing becomes wet with drainage it should be changed;
- The area used for changing the dressing should be cleaned with a household cleaner;
- Place the soiled dressing in a small bag and put it in the garbage;
- Do not share soaps, creams, lotions, makeup, and other personal products;
- Do not share personal items that come in contact with the skin such as razors, toothbrushes, towels, and nail files;
- Use a regular household cleaner when cleaning;
- Clothes and linens can be washed in the regular household laundry as routine laundry washing and drying destroys this germ;
- Dishes and cutlery can be washed in the usual manner with other household utensils using soap and water or the dishwasher;
- It is OK to have visitors and friends visit at home;
- If working, going to school or attending a daycare, ensure that the lesion is covered and hand are cleaned frequently.

Always remember: When going to the hospital or clinic, tell the doctor or nurse about any previous infection with MRSA in the past.

Newfoundland Labrador

APPENDIX B Infection Control in the Clinic or Doctor's Office

AT ALL TIMES

ROUTINE PRACTICES – These are practices to be observed at **all** times for **all** interactions with patients regardless of the diagnosis.

- **Hand Hygiene** – this is the single most important way to prevent the spread of infection
  - Wash hands before and after all direct contact with patients
  - Wash hands when visible soiled
  - Wash hands:
    - Before/after meals
    - After touching potentially contaminated equipment

- **Respiratory Hygiene/Cough Etiquette** – Applies to practices to be used by any person with signs of an influenza like illness (ILI) and includes:
  - Advice for the symptomatic person
    - Cover your mouth/nose with a tissue when coughing or cough into the crook of the arm
    - Promptly dispose of used tissues into the garbage
    - Wash hands
    - Keep 2 metres (6 feet) away from another person
  - Signage
    - Post signs to emphasize respiratory hygiene at entrances and in strategic places
  - Other items
    - Provide tissues and no-touch garbage bins for disposal of tissues
    - Provide sinks or waterless hand hygiene dispensers

- **Personal Protective Equipment**
  - Gloves
    - Wear gloves when contact with infectious materials is anticipated
    - Wash hands after removing gloves

- **Occupational Health**
  - Education for staff should include the following topics:
    - Routine practices
    - Respiratory Hygiene/Cough Etiquette
    - Personal protective equipment
    - Posters for office use
  - Immunization for staff:
    - Influenza vaccine every Fall
    - Hepatitis b (if direct contact with secretions is anticipated)
    - Tetanus & diphtheria (every 10 years)

- **Patient Placement**
  - Triage patients before the visit
    - Assess for fever and respiratory symptoms, rashes, draining wounds
    - Schedule those with infections for the end of day or at less busy time (if possible)

        - Advise patient to check in directly with receptionist
    - Patient with infections
        - Place in side room (if possible)
- **Environmental Control**
    - Cleaning
        - Identify reliable cleaning service
        - Determine cleaning schedule needs/method of auditing them
        - Daily cleaning recommended for:
            - Doctor's office or clinic room
            - Reception area
            - Toys
        - Non critical patient equipment (B/P, infant scales)
            - Clean after each use
    - Office Structure
        - Hand hygiene stations
            - Maintain handwashing access for staff/patients
            - Consider alcohol based hand dispensers
        - Seating
            - Place chairs to accommodate ILI patients
        - Receptionist's barrier
            - Plexiglass divider
            - Encourage staff to maintain 2 meters distance from ILI patients
    - Toy, magazines etc.,
        - Consider eliminating them from the waiting areas especially during ILI season
        - Common toys must be washable
    - Waiting room furniture
        - Use furniture that can be easily cleaned (wood, metal)
        - Consider replacing cloth chairs
    - Supplies
        - Hand hygiene products
        - An adequate supply of soap, paper towels
        - Gloves/surgical masks
        - Disinfectant wipes for easy cleaning of surface areas