

MRSA

Antibiotic resistant staph infection

Simple scrapes, cuts, and abrasions are common when kids play, whether it is during athletic activities, at recess, or simply during playtime. However, recent news of infection and even fatality related to antibiotic-resistant staph infection, known as MRSA, has shed light on the need for good hygiene and appropriate care for minor injuries to reduce the risk of infection.

Doctors have been seeing an increasing number of patients with skin infections caused by *Staphylococcus aurea* ('staph') bacteria that are resistant to many antibiotics (drugs that kill bacteria), also called methicillin-resistant *Staphylococcus aureus* - MRSA.¹ "Until recently, people

most often got MRSA infections in hospitals and nursing homes."² "These infections are, however, becoming more common among people who do not have medical problems, including children.... We are now seeing more people with MRSA infections in the community, who have not had any contact with hospitals or medical facilities."²

There have been an increasing number of reports of MRSA from local and regional health departments, physicians, the public, schools, and daycare facilities.³ "Outbreaks of skin infections caused by antibiotic-resistant bacteria [once only found in medical facilities, such as hospitals and nursing home facilities] have been reported in sports teams including wrestling, volleyball, and most frequently, football teams."⁴ A recent study published in the *Journal of the American Medical Association* estimates that MRSA infections occurred in nearly 95,000 Americans in 2005 with an estimated 18,650 people dying due to their MRSA infections.⁵ Although most of these cases occurred in hospitals, about 15 percent were picked up in public settings.⁶

The "healthy person in the community - like the high school student - generally is going to be able to be treated adequately without adverse outcome; but

the infected individual must seek treatment, cover open cuts or lesions, and avoid direct skin contact with others."⁵ If the infection is left untreated, MRSA can "pose a significant health threat."⁴

This issue of *HealthHints* will look at MRSA in our schools, daycare facilities, and homes, addressing how it may be prevented and treated.

What is Staph?

How staph bacteria exist

Staph is a type of bacteria. MRSA is a particular type of bacteria that has become resistant to a specific group of antibiotics called beta-lactams, including penicillin, amoxicillin, oxycillin, and others.

So, where do staph bacteria come from? People actually carry staph bacteria on their skin and in their nose without being infected. In fact, 25-30 percent of people are carriers of some staph bacteria, while about 1 percent are carriers of MRSA.

Staph bacteria can enter the skin through a cut or scrape or even through a break in dry skin. "Staph and MRSA infections in the community are usually manifested as skin infections, such as pimples or boils, and occur in otherwise healthy people."⁷ If left uncared for, however, staph and MRSA can lead to more serious problems, infecting blood and bones.⁸



Why Antibiotic Resistance?

How staph bacteria resist medication

Antibiotic resistance occurs when some bacteria have figured out how to outsmart antibiotics.⁹

“When an antibiotic is taken unnecessarily or improperly, some bacteria can survive. The surviving bacteria develop ways to become stronger and drug resistant.

Resistant bacteria can transfer this strength to other more dangerous bacteria.”¹⁰ Bacteria inside the body exchange, share, or copy genes that allow them to resist antibiotic treatment.¹⁰ **The major concerns surrounding antibiotic use are: overuse and misuse.**

Overuse. Antibiotics only kill bacteria – NOT viruses. Only a doctor can tell if you have a bacterial or viral infection. Many people have come to believe that an antibiotic will make them feel better when they are sick, regardless of the illness. Actually, however, it is sometimes good to allow the body to fight off an infection on its own, which builds your body’s immunity to that virus. Strep throat is the only kind of sore throat that can be helped with antibiotics; sinus infections, though they share similar symptoms with colds, are the only cold-like infection that can be helped with antibiotics. Antibiotics will not usually help a common cold, sore throat, or bronchitis.⁹

Misuse. Misuse occurs when patients do not follow directions for use of their antibiotics. Often, a person will stop taking his/her medication as soon as he/she starts to feel better. Unfortunately, this practice allows the hardest bacteria to survive and reproduce. Another misuse occurs when a person shares his/her antibiotics or uses left-over pills at the first sign of an illness later on. If the

antibiotics are not the right type for the infection or are not needed, resistance can develop.¹⁰ Again, not using the full dose can allow the hardest bacteria to survive and resist future antibiotic use.

Proper use of antibiotics is crucial in reducing your risk for antibiotic-resistant infections.

Symptoms of Staph & MRSA What to watch for

Because we are seeing more outbreaks of MRSA in community settings, it is becoming increasingly important that we recognize signs and symptoms of staph infection and know how to prevent, handle, and treat such infections. Of particular concern for many parents, teachers, and care providers are the increasing reports of MRSA in schools and daycare facilities. For this reason, we must learn and teach our children how to have good hygiene and deal with cuts, scrapes, and exposed wounds of any kind.

Staph bacteria, including MRSA, most often cause skin infections that may look like one of the following:

- sores that look and feel like spider bites (MRSA, however, is not caused by spider bites);
- large, red, painful bumps on the skin (called boils);
- a cut that is swollen, hot, and filled with pus; or
- blisters filled with fluid (called impetigo).¹¹

Most staph infections are minor and may be easily treated.¹² MRSA, however, can be more difficult to treat and may recur.¹³ A staph infection of any kind that starts as a skin infection can worsen and cause more serious problems such as pneumonia and infections of the blood stream.¹²

For an idea of what staph/MRSA infections may look like, see the following resources: [MRSA and Staph: What Does It Look Like?](#) and [A Good Offense is Still the Best Defense.](#)

How Do You Get Staph/MRSA?

Contracting the infection

Anyone can get a staph/MRSA infection.¹² You are more likely to get a staph/MRSA infection if you have:

- skin-to-skin contact with someone who has a staph/MRSA infection;
- contact with items and surfaces that have staph/MRSA on them;
- openings in your skin such as cuts or scrapes from injuries, dry skin, etc.;
- crowded conditions, particularly crowded living conditions; or
- poor hygiene.¹²

Skin-to-Skin Contact. Although staph bacteria are carried on the skin *and* in the nose, staph infection is not usually transmitted through droplets in the air.³ People often catch a cold when someone sneezes and the virus is transmitted to them through tiny droplets in the air. With staph/MRSA, however, the primary mode of transmission is through **direct skin-to-skin contact** with someone who has a staph/MRSA infection.^{7,12} Staph/MRSA infections can rub off the skin of an infected person onto the skin of another person during skin-to-skin contact.



Contact with Items & Surfaces.

Staph/MRSA can also be transmitted through **contact with**

an inanimate object (e.g., clothing, linens, furniture) that is soiled with drainage from a staph/MRSA-infected wound. In fact, staph/MRSA can live on surfaces and objects for months.¹¹

Openings in the Skin. Staph/MRSA infections often begin with an injury to the skin.¹ Direct physical contact of the staph bacteria with a **break in the skin** (e.g., cut, scrape, or other abrasion) is one reason athletes and children



involved in physical activity – where there is a lot of direct skin-to-skin contact and minor open injuries – are of particular concern. Even cracks from dry skin can become a site for bacteria to enter.

Crowded Conditions. Antibiotic-resistant skin infections are often found in places where there are **crowds of people**, such as schools and gyms. Crowded living conditions, including jails, are also places where staph/MRSA is of particular concern.

Poor Hygiene. Not keeping your body and your environment clean increases your risk for contracting infection. In fact, **keeping your body and environment clean** is one of the best ways to prevent infection.

What Can I Do?

Preventing staph/MRSA infection

There is a lot you can do to prevent and manage staph/MRSA infections. Most of the guidelines for prevention are not hard to do, but they are very important. One of the keys for prevention will be getting this importance across to kids so they will make every effort to follow these guidelines.

Guidelines for Prevention:

Personal care & hygiene. Wash your hands with warm water and soap. **Handwashing is the single most important behavior in preventing staph/MRSA.** (See [How to Wash Hands](#) for important information on this topic.)

- Carry or provide alcohol-based hand sanitizer for when soap and water are not available.
- Shower or bathe daily with soap and water...and as soon as possible after all direct contact sports or activity. Dry using a clean towel.
- Keep fingernails trimmed short (no longer than the tip of the finger).
- Use moisturizer to prevent dry, cracked skin.
- Do NOT share personal care items including towels (not even on the sidelines of a game), soap, razors, ointment, etc.
- Do NOT wear artificial nails.
- Do NOT share antibiotics.
- Do NOT take antibiotics as a preventative measure for avoiding infection.^{3, 4, 11}

Cleaning & laundry

- Use isopropyl alcohol (available at pharmacies and grocery stores) to disinfect reusable materials, such as scissors or tweezers.
- Prewash or rinse items that have been grossly contaminated with body fluids; then, wash clothes for a full cycle in hot water and ordinary detergent, and dry on the hottest cycle. Inform parents of these laundry precautions if laundry is sent home. *Note:* Laundry should be sent home in an impervious, waterproof container or plastic bag if not done at the facility (e.g., school or daycare).
- Wash towels, uniforms, scrimmage shirts, and any other laundry used in athletics.

- Do clean daycare facilities and items used by children at least daily using a commercial disinfectant (look for the word *disinfectant* on the product label) or a fresh (mix daily) solution of 1 part bleach to 100 parts water (1 tablespoon bleach in 1 quart of water). (See [EPA-registered products effective against MRSA.](#))
- Do clean athletic areas and sports equipment at least weekly using a commercial disinfectant (look for *EPA-approved, hospital-grade germicide* on the product label) or a fresh (mix daily) solution of 1 part bleach to 100 parts water (1 tablespoon bleach in 1 quart of water). (See [EPA-registered products effective against MRSA.](#))^{3, 4, 11}

Policy & decision-making

- Unless directed by a physician, students with MRSA infections should not be excluded from attending school. Exclusion from school and sports activities should be reserved for those with wound drainage (“pus”) that cannot be covered and contained with a clean, dry bandage and for those who cannot maintain good personal hygiene.¹⁴
- Schools should introduce policy in which students must inform the school and particularly athletic trainers if they have a skin infection and in which students will not participate in contact activities until approved by the trainer. Have students and parents sign a release to that effect.
- Daycare facilities should introduce policy in which parents inform daycare providers of any skin infection their child may have.
- Do NOT allow employees with draining wounds or infections to have physical contact with children.^{3, 4, 11}

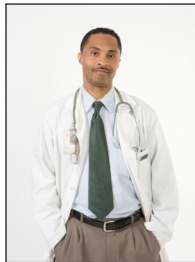
To answer any further questions you might have about MRSA and schools, see [Questions and Answers about MRSA in Schools](#) from the Centers for Disease Control.

When You Suspect a Skin Infection

Get treatment!

Even when precautions are taken to prevent infection, sometimes infection is not avoided. If you suspect a skin infection, the first step to take is to see your doctor immediately.

“Early treatment can help prevent the infection from getting worse.”¹¹



If you or a family member has an MRSA infection, you will need to take special steps at home. (See [Caring for MRSA at Home](#).) Always follow your doctor’s instructions. Your provider may also choose one or more of the following treatments:

- Drain the infection.
- Give antibiotics.
- Reduce the amount of bacteria on your skin or in your nose.¹¹

Draining the Infection. In an effort to get rid of the infection, your provider may recommend draining the pus/fluid from the infected area. You should not drain an infection on your own. Poking or squeezing the infection can push the bacteria deeper into the skin and make the infection worse. Draining an infection should only be done by a trained health care provider.

Your provider will open the sore and drain it of fluid; then you must keep it covered until it heals. You

will likely be asked to come back for a check-up and to have the dressing changed; or you may be given instructions for changing the dressing at home. (See [Caring for MRSA at Home](#).) A follow-up visit is usually needed to make sure the area is healing well. Some skin infections will heal after your health care provider has drained the pus out. You may not need antibiotics.¹¹

Taking Antibiotics. If you have a MRSA infection, the treatment may be more complicated than a simple staph infection. Methicillin is an antibiotic that represents a group or class of antibiotics. MRSA cannot be treated with antibiotics in this class, such as amoxicillin, penicillin, oxacillin, Augmentin, dicloxacillin, and others including cephalosporins.

Depending on antibiotic resistance patterns, however, alternative antibiotics, such as trimethoprim/sulfamethoxazole (e.g., Bactrim, Septra) minocycline, clindamycin, or newer antibiotics may be considered.³ These alternative antibiotics may be able to make the MRSA infection go away;¹¹ however, they may also be rendered ineffective through the development of antibiotic resistance³ if antibiotics are misused.

Thus, MRSA treatment may be longer, more expensive, more complicated, and infections can reappear frequently.¹⁵ That’s why it is so important to take your antibiotics as directed by your provider – completing the full dose to kill the hardest bacteria and reduce your risk for antibiotic resistance of these newer classes of antibiotics. **“If your provider gives you antibiotics, take them exactly**

as prescribed. Do not stop early, even if you feel better. The last few pills kill the toughest germs. Never take antibiotics without a prescription from your health care provider [emphasis added].”¹¹

Reducing the Bacteria. To decrease the amount of bacteria on the skin and in the nose, antibacterial soaps and antibiotic ointments may be recommended to prevent further spread of the infection to others. Though antibacterial soaps are **not recommended on a regular basis**, in some instances, your provider may recommend their use for a **short time** to reduce the amount of bacteria on your skin. Additionally, your provider may recommend using a small amount of antibiotic ointment in the nostrils for a few days.¹¹ **Neither of these options should be used without the consent and specific instructions of your provider.**

Seek further medical care if:

- you have new symptoms during treatment,
- your infection does not get better,
- your infection gets worse, or
- your infection comes back.¹¹

Whether at home or in public places, staph and MRSA infections should be treated carefully to reduce the risk of spreading the infection and increase chances for healing with fewer complications.

There are many excellent resources available if you need more information. Take a look at these [resources](#) (English and Spanish) for more help regarding MRSA and antibiotic-resistant staph.

To view the references used in this newsletter, go to:
<http://fcs.tamu.edu/health/healthhints/2007nov/mrsa-ref.php>

This document is meant for educational purposes only and is not intended to replace the advice of your doctor or other health care provider.

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Proper Use of Antibiotics: Do's & Don'ts

Don't ask your doctor for an antibiotic when you aren't feeling well.¹

Not all illnesses require antibiotics. (Remember, antibiotics kill bacteria, not viruses.) Studies show that patients will drop their physician if he/she won't prescribe antibiotics that the patient believes he/she needs. According to the Centers for Disease Control, 20-50 percent of antibiotics prescribed each year are unnecessary.²

Do complete all antibiotics prescribed by your doctor, as directed.

If you stop taking your medication, you will only kill the weak bacteria. Your infection may come back, or the hardest bacteria may survive and develop the ability to resist antibiotics. In other words, you may develop antibiotic resistance.^{1,2}

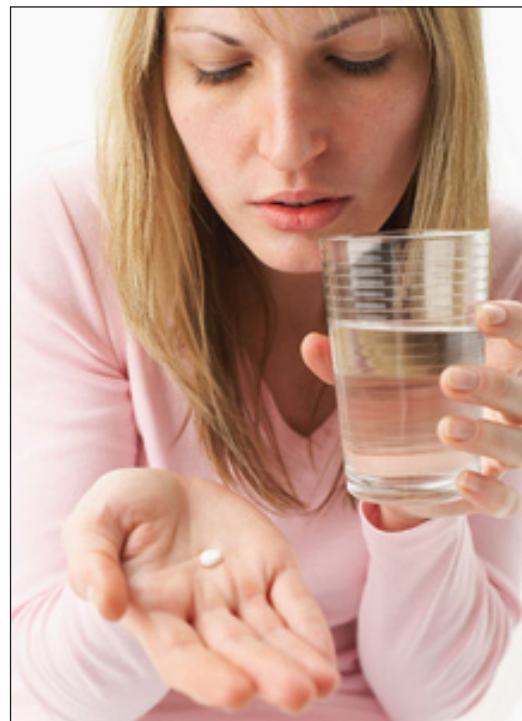
Do ask questions.¹

If you have questions about your medication, ask your doctor. Call your doctor's office if you have questions once you return home.

Don't share your antibiotics.¹

Sharing antibiotics can create problems for both parties. Your infection may return, or you may develop antibiotic resistance if the antibiotic is incorrectly used or unnecessary for your particular illness.

Do call your doctor if you don't start to feel better after a few days of antibiotic use.¹



Sources:

1. Texas Department of State Health Services (2006). Antibiotic use do's and don't [on-line]. Retrieved October 5, 2006. From http://www.dshs.state.tx.us/idcu/health/antibiotic_resistance/educational/AntibioticUse_Dos_%20Donts_Edu_Flyer.pdf.
2. Texas Department of State Health Services (2006). Antibiotic resistance – Questions and Answers [on-line]. Retrieved October 5, 2006. From http://www.dshs.state.tx.us/idcu/health/antibiotic_resistance/educational/AntibioticResistanceOA_%20Edu_Flyer.pdf.

How to Wash Hands

Washing your hands is especially important in the fight against infection. It is particularly important to teach athletes and children correct handwashing. **Handwashing is the single most important behavior in preventing infectious disease like staph/MRSA.**

Handwashing and cleanliness should be emphasized:

- before touching your eyes, nose, mouth, or any cut or scrape on the skin;¹
- before and after close contact with another person;
- before and after assisting a child on the toilet or with diaper changing;
- after using the toilet;
- after sneezing, blowing, or touching your nose or assisting a child with his/her nose; and
- after arriving home from daycare, school, or other activities.²

Hands should be washed with soap and water, or an **alcohol-based hand sanitizer** may be used as a supplement or substitute when soap and water are not available. Look for a hand sanitizer with at least 60 percent alcohol in it.³ Follow the manufacturer's directions. Generally, directions for hand sanitizers require placing enough hand sanitizer in the palm of your hand to thoroughly cover your entire hand and rubbing hands together until dry.²

Provide and encourage the use of alcohol-based hand sanitizers to wash hands immediately if your child or

athlete comes into contact with any body fluid on the playing field or at other places where handwashing facilities are not available.¹

Note: **Plain soap** and water are best. **Antibacterial soaps are NOT needed.** Antibacterial soaps may contain triclosan, a chemical that kills both bad and good bacteria. While bad bacteria can make you sick or cause infection, good bacteria can help you. The triclosan in antibacterial soaps may change the balance of bacteria on your skin and may even make bacteria harder to kill.⁴

Steps for Hand Washing:

1. Use warm water.
2. Wet hands and wrists.
3. Use a bar or liquid soap.
4. Work soap into a lather, and wash between fingers, up wrists, and under fingernails for at least 15 seconds. For young children, have them sing the alphabet (abc) song; twinkle, twinkle little star; or twice through the happy birthday song.² If no hot water is available, wash longer.
5. Dry using a clean cloth towel or paper towel.^{1,2}



Note: It is a good idea to turn off the faucet with a paper towel since you have to turn it on before cleaning your hands. A paper towel is preferable in environments where cloth towels would be shared. Be sure to dispose of the paper towel properly.

Sources:

1. Texas Department of State Health Services (2006). Information on staphylococcal infections for school athletic departments. Retrieved October 5, 2006. From http://www.dshs.state.tx.us/idcu/health/antibiotic_resistance/mrsa/mrsaathleticdepartment.pdf.
2. Texas Department of State Health Services (2006). Information on staphylococcal infections for day care administrators and care givers. Retrieved October 5, 2006. From http://www.dshs.state.tx.us/idcu/health/antibiotic_resistance/mrsa/mrsa_daycareadmin.pdf.
3. Texas Department of State Health Services (2006). Antibiotic resistance – Questions and answers [on-line]. Retrieved October 5, 2006. From http://www.dshs.state.tx.us/idcu/health/antibiotic_resistance/educational/AntibioticResistanceQA_%20Edu_Flyer.pdf.
4. Tacoma-Pierce County Health Department (2006). What should I use to wash my hands? Retrieved October 6, 2005. From <http://www.tpchd.org/files/library/12b59c64cf77a8a0.pdf>.

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Caring for MRSA at Home

Preventing the spread of infection to your family

Taking necessary precautions at home is important to reduce the chances of spreading MRSA among family members. Washing your hands appropriately (see [How to Wash Hands](#)) and following the guidelines for prevention (see [What Can I Do?](#)) are important for personal care and the care of others. In the home, there are some specific precautions and special care requirements to be taken, including appropriately changing bandages or dressings, handling laundry, and overcoming house-cleaning concerns.

Bandages/Dressings

If your provider instructs you to change bandages or other dressings, follow his/her specific guidelines. Generally, changing dressings will require the following steps:



- 1 Wash hands with soap and water.
- 2 Put on disposable gloves.
- 3 Remove the old dressing.
- 4 Put the old dressing in a plastic bag.
- 5 Take off the gloves, and put them in the plastic bag, too.
- 6 Wash and dry your hands.
- 7 Put on a new, clean pair of disposable gloves.
- 8 Apply the new dressing. If sore is leaking, extra dressings will be required to keep the drainage from leaking out.
- 9 Take off the second pair of gloves and put them in the plastic bag. Seal or tie the bag, and throw it away in your regular trash.
- 10 Wash and dry your hands.¹

Laundry

MRSA can spread from dirty clothes and bedding. When doing laundry, you will want to follow some precautions:

- Change towels and linens daily.
- Have a separate, impervious laundry hamper (e.g., solid plastic container, NOT one with ventilation holes or made of canvas or wicker) for the family member with the MRSA infection.
- Handle laundry that comes in contact with the infection separately from other household laundry.
- When collecting dirty laundry, hold it away from your body to prevent getting bacteria on your clothes, preferably in a plastic bag or container.
- Wear disposable gloves to handle laundry that is soiled with body fluids, like drainage from a sore, urine, or feces.
- Put the laundry in the washer immediately, or store it in a plastic bag until it can be washed.
- Wash with hot water and regular detergent – use bleach when possible.
- Dry on the hot setting, and make sure clothes are completely dry.
- Wash hands after handling dirty laundry and before handling clean laundry, even if you have been wearing gloves.
- Throw gloves away after taking them off, and do not reuse them.^{1,2}



House Cleaning

MRSA can live on surfaces for days, weeks, or even months.¹ When cleaning your house:

- Pay special attention to items that are frequently touched – light switches, door knobs, phones, toilets, sinks, tubs, kitchen counters, cell phones, pagers, computer keyboards, etc.
- Wipe the surface or object with a disinfectant, and let it dry. Choose commercial, phenol-containing disinfecting product. The EPA provides a list of [EPA-registered products effective against MRSA](#). You can also use a mix of 1 tablespoon bleach to 1 quart of water (using a fresh mix each day you clean).
- Use a phenol-containing spray to disinfect any cloth or upholstered surface.
- Have a designated chair or area for sitting for the family member with the MRSA infection. Use a hard surface or an easily cleaned plastic cover for easy disinfection. No one else should sit there until the infection has healed.
- Clean utensils and dishes in the usual manner with soap and hot water or using a standard home dishwasher.^{1,2}



Note: If body fluids or pus get onto surfaces, you need to follow these steps:

1. Put on disposable gloves.
2. Wipe up the fluids with a paper towel.
3. Throw the paper towel in a plastic bag-lined trashcan.
4. Clean the surface thoroughly with disinfectant and a paper towel.
5. Throw the paper towel in the plastic bag-lined trashcan.
6. Then wipe the surface again with disinfectant, and let it dry for at least 30 seconds.
7. Throw the paper towel in the plastic bag-lined trashcan.
8. Remove the gloves, and throw them in the trash.
9. Wash and dry your hands.¹



Sources:

1. GroupHealth Cooperative, Tacoma-Pierce County Health Department, & Washington State Department of Health (2006). Living with MRSA. Retrieved October 6, 2006 [on-line]. From <http://www.tpchd.org/files/library/3550750db4a81b14.pdf>.
2. Texas Department of State Health Services (2006). Information on staphylococcal infections – School athletic departments: Instructions for the athlete [on-line]. Retrieved October 5, 2006. From http://www.dshs.state.tx.us/idcu/health/antibiotic_resistance/mrsa/mrsa_athlete.pdf.

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English and Spanish Resources on Antibiotic-Resistant Staph & MRSA

What You Need to Know about Staph/MRSA Skin Infections

English: <http://fcs.tamu.edu/health/mrsa/DSHS-MRSA-FactSheet.pdf>

Spanish: <http://fcs.tamu.edu/health/mrsa/DSHS-MRSA-FactSheet-Spanish.pdf>

What to Do about Your Skin Infection

English: <http://fcs.tamu.edu/health/mrsa/TxDSHS-skin-infec-poster-English.pdf>

Spanish: <http://fcs.tamu.edu/health/mrsa/TxDSHS-skin-infec-poster-Spanish.pdf>

Living with MRSA

English: <http://www.tpchd.org/files/library/72640dd923f76e37.pdf>

Spanish: <http://www.tpchd.org/files/library/02de4ef82888fa9a.pdf>

Taking Care of Wounds that Are Draining or Have Not Healed

English: http://www.dshs.state.tx.us/idcu/health/antibiotic_resistance/mrsa/Taking_care_wounds.pdf

Spanish: http://www.dshs.state.tx.us/idcu/health/antibiotic_resistance/mrsa/ESpanish_Takingcare_wounds.pdf

DSHS Issues Staph Infection Prevention Guidelines

English: <http://www.dshs.state.tx.us/news/releases/20071017.shtm>

Questions and Answers about Methicillin-Resistant *Staphylococcus aureus* (MRSA) in Schools

English: <http://cdc.gov/Features/MRSAinSchools/>

Prevention and Containment of Staphylococcal Infections in Communities

English: http://www.dshs.state.tx.us/idcu/health/antibiotic_resistance/mrsa/Prevention.pdf

Information on Staphylococcal Infections – School Athletic Departments: Instructions for the Athlete

English: http://www.dshs.state.tx.us/idcu/health/antibiotic_resistance/mrsa/mrsa_athlete.pdf

Athletes – What to Do about Your Skin Infection

English: http://www.dshs.state.tx.us/idcu/health/antibiotic_resistance/educational/MRSA_Fact_Sheet_Athletes2.pdf

Information on Staphylococcal Infections – Day Care Facilities: Instructions for the Parents

English: http://www.dshs.state.tx.us/idcu/health/antibiotic_resistance/mrsa/mrsaparents.pdf

Unlock Your Skin's Health

English: http://www.dshs.state.tx.us/idcu/health/antibiotic_resistance/mrsa/skinhealthplacard.pdf

Germs, Your Skin & Your Health: Do Not Spread Germs in the Laundry

English: http://www.dshs.state.tx.us/idcu/health/antibiotic_resistance/mrsa/laundryplacard.pdf

Germs, Your Skin & Your Health: Taking Care of Wounds that Are Draining or Have Not Healed

English: http://www.dshs.state.tx.us/idcu/health/antibiotic_resistance/mrsa/woundplacard.pdf

Resistencia Bacteriana a los Antibióticos

Spanish: http://www.dshs.state.tx.us/idcu/espanol/resistencia_bacteriana/