MIT: Department of Athletics, Physical Education, and Recreation

Antibiotic Resistant Staph Infections – What you need to know

What is a staph infection?
- Staph infections are caused by the bacteria *Staphylococcus aureus*, they can cause infections in both humans and animals. Staph infections are one of the most common skin infections in the U.S, most infections are minor such as pimples or boils and are treated with antibiotics. Some staph infections can lead to serious infections of the bloodstream and infections of the lungs causing pneumonia.
  - Staph bacteria are commonly found on the skin, nose, and throat of healthy people; approximately 32% of the U.S. population is colonized with staph bacteria.

What is an antibiotic resistant staph infection, how is it different from a staph infection?
- Methicillin-Resistant *Staphylococcus aureus* (MRSA) is a type of staph bacteria that is resistant to some common antibiotics; in particular they are resistant to methicillin, oxacillin, penicillin and amoxicillin.
  - Less than 1% of the U.S. population is colonized with MRSA.

Is MRSA a recent development, it seems to be getting a lot of media attention?
- NO, when penicillin was first introduced in 1944 over 94% of staph bacteria were vulnerable to the antibiotic; but, by 1950, 50% were resistant. By 1960 hospitals were having outbreaks of MRSA. Rates of healthcare acquired-MRSA (HA-MRSA) have been increasing since its discovery in the 1950’s.
- The percentage of staph infections acquired in healthcare facilities that were caused by MRSA has been increasing significantly; in 1974 MRSA accounted for only 2% of staph infections, by 1995 MRSA counted for 22% and by 2004 this figure had shot up to 64%

Why is MRSA suddenly getting this media attention then?
- MRSA was originally found only in healthcare facilities until more recently when it was discovered among individuals with no recent contact with a healthcare facility. It was then discovered that this community-acquired MRSA (CA-MRSA) was a different strain than the HA-MRSA; there were two completely different evolutions happening simultaneously.
- There are approximately 94,000 persons each year who are infected with invasive MRSA and it is associated with around 19,000 deaths. Of these infections about 86% are healthcare-acquired and only 14% were community-acquired.

Where did CA-MRSA come from?
- It is unclear what led to this strain of CA-MRSA. One theory is the misuse of antibiotics. When people take antibiotics, they often feel better before they have finished all their pills, and figuring they are better, they stop taking them. Survival of the fittest means the remaining bacteria are the strongest; they were able to resist the antibiotics for the longest period of time. These “survivors” then reproduce creating an abundance of strong and resistant bacteria in the body.
- Another possible cause of these “super-bugs” is the over-prescription of antibiotics for colds and flues, which are mainly caused by viruses, not bacteria. The more bacteria are exposed to antibiotics, the faster they are able to adapt and become resistant.

If so many people are colonized with staph and MRSA, how does it turn into an infection?
- While staph bacteria are colonized on people, it only causes an infection when it gets into the body, most often through an open wound or blister. Staph and MRSA are spread by either direct skin to skin contact, or indirect touching of contaminated surfaces.
- There are 5 factors that make it easier for MRSA to be transmitted, they are referred to as the 5 C’s:
  1. Crowding
  2. Frequent skin to skin Contact
  3. Compromised skin (i.e. cuts or abrasions)
  4. Contaminated items and surfaces
5. Lack of Cleanliness

How do I know if I have MRSA, what are the symptoms?
• Staph infections generally start as small red bumps that resemble pimples, boils or spider bites. These can quickly turn into deep, painful abscesses that require surgical draining. The area may be swollen, red, hot, painful and pus-filled.

Are certain people at a higher risk for CA-MRSA than others?
• CA-MRSA is most prevalent among athletes, military recruits, children, Pacific Islanders, Alaskan Natives, Native Americans, men who have sex with men, and prisoners.

How is MRSA diagnosed, where on campus can I be tested?
• If you have any concerns about MRSA, you can schedule an appointment at MIT Medical by calling 617-253-4481 or go to Patient on Line.
• A swab of the infected wound, a sample of blood, or a urine sample is taken and the bacteria found in the sample are grown in a laboratory and identified. Unfortunately, these results are not immediate and may take several days to ensure accuracy.

How is MRSA treated?
• With a skin infection such as a boil or abscess, the treatment will likely be incision and drainage.
• If antibiotics seem to be necessary then this decision will be based on the susceptibility profile of the organism.

It is better to prevent than treat MRSA, so what can I do to prevent a MRSA or staph infections?
• Practice good hygiene:
  1. Keep your hands clean – wash thoroughly with soap and water or use an alcohol-based hand sanitizer (a hand sanitizer should be at least 60% alcohol)
  2. Keep cuts and scrapes clean and covered with a bandage until fully healed
  3. Avoid contact with other people’s wounds or bandages
  4. Avoid sharing personal items such as towels or razors
  5. Avoid whirlpools and swimming pools when you have an open wound
  6. During workouts clean equipment before use or use a towel as a barrier
  7. Shower immediately after exercise (do not share bar soap)
  8. If you are going to share goggles or sweatbands clean them between uses
  9. Clean surfaces with detergent-based cleaners or EPA–registered disinfectants

Bigger Picture, what can I do to slow the development of “super-bugs”?
• Wash your hands regularly and thoroughly.
• Use medications as recommended, take ALL antibiotic pills when they are prescribed. Do no take antibiotics without a prescription and medical supervision. Talk to your doctor about antibiotic resistant “super-bugs” if you have any further concerns.
• Get a flu shot before the flu season; a MRSA infection contracted during a flu can cause pneumonia.
• Cover all abrasions, cuts, scrapes and any opening of the skin until they are fully healed.

References:
MIT Medical Resource: http://web.mit.edu/medical/a-pressreleases.html
MRSA PowerPoint by the Kasser Sports Medicine Center: Scot Spak, Jessica Rooney-Gallagher, Jen LaFalce, and Brett Phelan