

# **COMMUNICABLE DISEASES GUIDELINES FOR FIREFIGHTERS**

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# Objectives

- Be aware of communicable diseases that firefighters are susceptible to
- Take home SOPs for the above
- Practice what learned in case studies
- Disseminate best practices: Code 90
- Be knowledgeable about the latest on MRSA and firefighters

Group question: what exposed to?

# Communicable Diseases: Mutating rapidly

*Can't catch it from a person:*

Anthrax

*Person to person:*

- Meningococcal meningitis
- Hepatitis A, B, C
- Measles
- Chicken pox
- HIV/AIDS
- Tuberculosis
- Vancomycin/methicillin resistance (MRSA, VRE)
- SARS
- West Nile
- Avian Flu

# Bird Flu: The next major epidemic?

- H5N1 similar to the 1918 Spanish Flu that killed 75 million worldwide
- If transmits human to human same impact?
- No human has any immunity to H5N1
- 2<sup>nd</sup> generation vaccine “close counts?” by Glaxo
- Antivirals (tamiflu) ineffective
- Older amantidine may work certain subtypes
- [www.pandemicflu.gov/plan/tab3/html](http://www.pandemicflu.gov/plan/tab3/html)

# Tale of two cities

- Spanish Flu
  - Dartmouth v Princeton
- Low tech can work
- Can it today with modern transportation?
- Rapidly mutating H5N1 virus (avian flu)
  - Two cases of human to human

# Measles a rehearsal of Avian Flu

“Ego eats brains”

- Public health emergency
- Panic
  - Fire station shut down
  - Even though FF most protected
- Punishment – 28 doses
- What happens with avian flu?

# Mail call at work

- What do you see?



# Hamilton Township



# Suspicious envelope/package

- Excess postage
- Handwritten or poorly typed
- Incorrect titles
- Title, no name
- Misspelling
- Oily stain, discoloration, odor
- No return address or doesn't match postmark
- Lopsided or uneven
- Personal or confidential
- Wires, extra tape or security

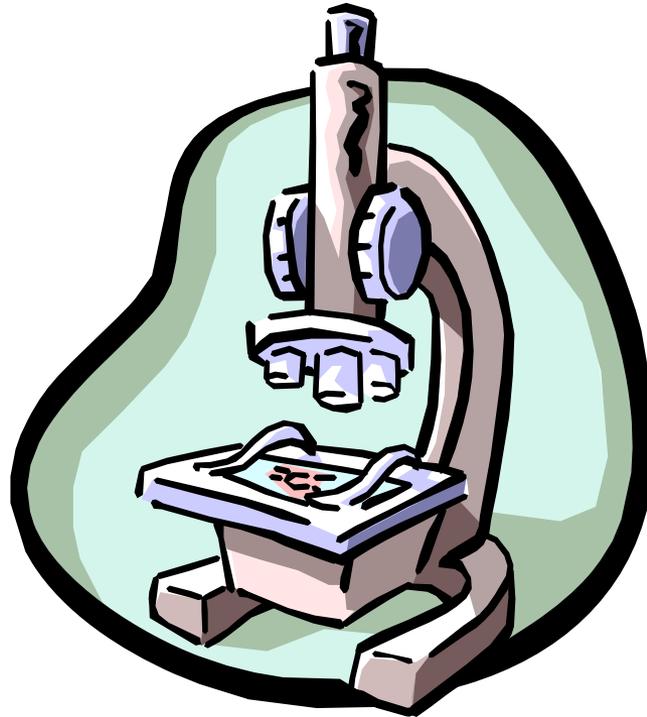
# Anthrax

- \*Inhaled, eaten or rubbed into abraded skin
  - \*Not spread person to person
  - \*Prevention by early antibiotics
  - \*Vaccines: 6 dose series military and animal/product workers
  - \*Initial symptoms
    - Skin:pimple to blister to black
    - Lung:flu-like,cough blood,chest pain, chest X-ray mediastinal widening
- \*\*\*Beware if 80% with “flu” die in 3 days!\*\*\*

# Anthrax SOPs

## Six “Cs”

- Cover
- Cordon
- Clean
- Count
- Call
- Cure



# SOP: Suspicious Letter

- Don't shake or open
- Place in a plastic bag or other container
  - Or cover with anything
- Leave room, close off area
- Wash hands with soap and water
- Report
- List all people in area

# SOP: Anthrax spill

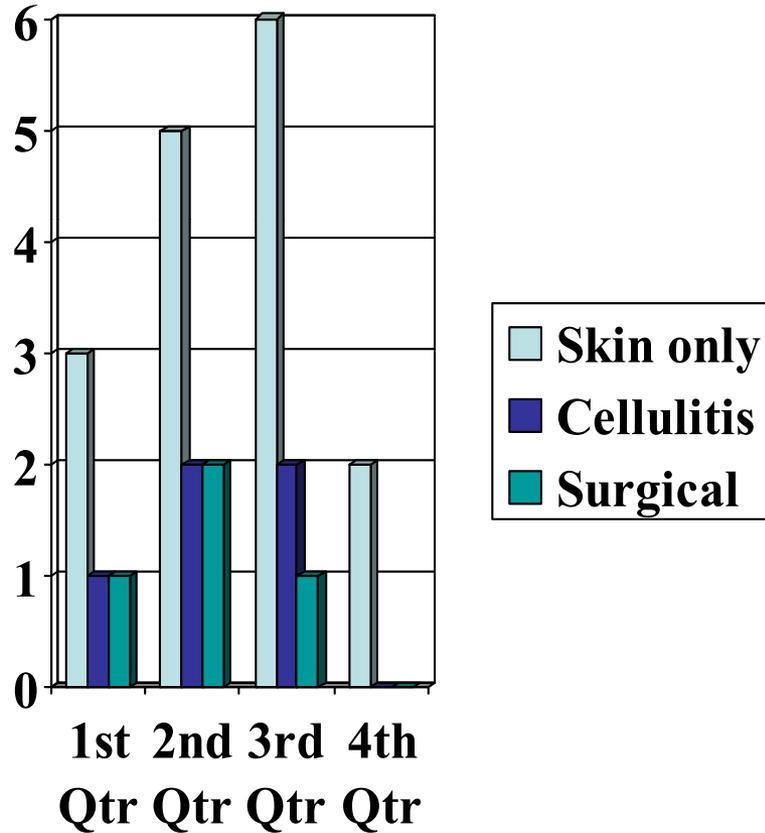
- Cover the spill with anything
- Section off area
- Wash hands to prevent spread to face
- Remove contaminated clothing ASAP and place in plastic bag
- Shower with soap and water
- List all people in area for follow-up.

# SOP Anthrax in air

What if some was sucked into local air handler?

- Turn off fans and ventilation
- Leave area immediately
- Close doors and section off area
- Shut down air handler
- List people in area for follow-up

# MRSA



- Previously seen in ICU and nursing home patients
- In 2007-8 appears in healthy firefighters

# What causes MRSA?

- *Staphylococcus aureus* (Staf-lo-coc-cus aw-ree-us ( staph) lives in the noses and on the skin of healthy people
- Spreads from person to person on contaminated
  - hands,
  - skin,
  - objects
- Most infections caused by staph are skin infections,
- Can also cause more serious infections such as
  - blood
  - joint infections
  - pneumonia.

# CA- MRSA

- Once found almost exclusively in healthcare settings
- *Staphylococcus aureus* resistant to beta-lactam antibiotics (MRSA)
  - Increasingly common cause of skin and soft tissue infections
  - In those who have no health care contact :
    - Referred to as “community-associated MRSA”
    - or CA-MRSA

# CA-MRSA

- MRSA infections used to occur
  - Invasive medical devices (urinary catheters)
  - Recently hospitalized/surgery
  - Long term care
  - Dialysis
- CA-MRSA occurs in healthy athletes, firefighters, etc.
  - Red bump may be mistaken for a spider bite
  - Also presents as boils, abscesses
  - MRSA pneumonia and
  - Whole body infections or sepsis can occur

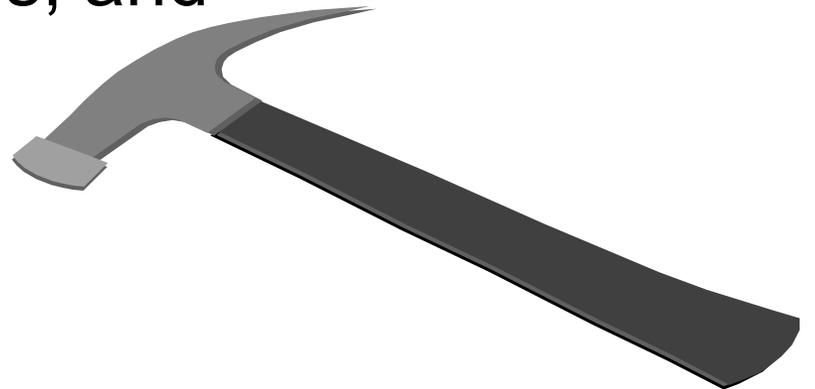




**POST-OP VASCULAR SURGERY LEG  
WOUND INFECTION**

# MRSA Causes

- Factors associated with the spread of MRSA:
  - close skin-to-skin contact,
  - openings in the skin such as cuts or abrasions,
  - contaminated items and surfaces,
  - crowded living conditions, and
  - poor hygiene.



# Why are firefighters with MRSA/staph aureus at work?

- 32% of Americans are carriers
  - 1/3 unemployed if didn't allow MRSA at work
- For those with MRSA infections:
  - per CDC you can work if keep wounds dry and covered
- Respiratory MRSA issues

# SOP: MRSA prevention

- Keep your hands clean by washing well
  - soap and water
  - or an alcohol hand gel.
  - Especially after changing a bandage or touching wound
- Keep cuts and scrapes clean and covered with a bandage until healed.
- Avoid contact with other people's wounds or bandages.

# SOP:More prevention

- Avoid sharing personal items such as
  - towels, washcloths, razors, clothing, or
  - uniforms that may have had contact with the infected wound or bandage.
- Wash soiled sheets, towels, and clothes with water and laundry detergent.
- Dry clothes in a hot dryer
  - rather than air-drying.
  - Helps kill bacteria in clothes.

# SOP: When to wash:

- Wash hands after:
  - touching blood, body fluids, secretions, excretions, and contaminated items
  - whether or not gloves are worn
  - immediately after gloves are removed
  - between patient contacts

# SOP: Gloves

- Wear gloves (clean nonsterile gloves are adequate) when touching blood, body fluids, secretions, excretions, and contaminated items
- put on clean gloves just before touching mucous membranes and non-intact skin
- Remove gloves promptly after use
- before touching non-contaminated items and environmental surfaces
- 
- before going to another patient,
- and wash hands immediately to avoid transfer of microorganisms to other patients or environments

# SOP: Masks

- Wear a mask and eye protection or a face shield to protect mucous membranes of the eyes, nose, and mouth
  - during procedures such as intubation
  - that are likely to generate splashes or sprays of blood, body fluids, secretions, and excretions.

# SOP: Gowns

- Wearing a gown when entering the room if you anticipate that your clothing will have
  - substantial contact with the patient, environmental surfaces, or items in the patient's room
  - or if the patient is incontinent, or has diarrhea, an ileostomy, a colostomy
  - or wound drainage not contained by a dressing
  - If soiling of clothing wear gown

# SOP: Appropriate device handling

- Handle used patient-care equipment soiled with blood, body fluids, secretions, and excretions in a manner that
- prevents skin and mucous membrane exposures, contamination of clothing
- and transfer of microorganisms to other patients and environments
- Ensure that reusable equipment is not used for the care of another patient until it has been
  - appropriately cleaned and reprocessed
  - and that single-use items are properly discarded.

# SOP Laundry

- Handle, transport, and process used linen soiled with blood, body fluids, secretions, and excretions in a manner that
- prevents skin and mucous membrane exposures, contamination of clothing
- and transfer of microorganisms to other patients and environments.

# SOP: Equipment cleaning

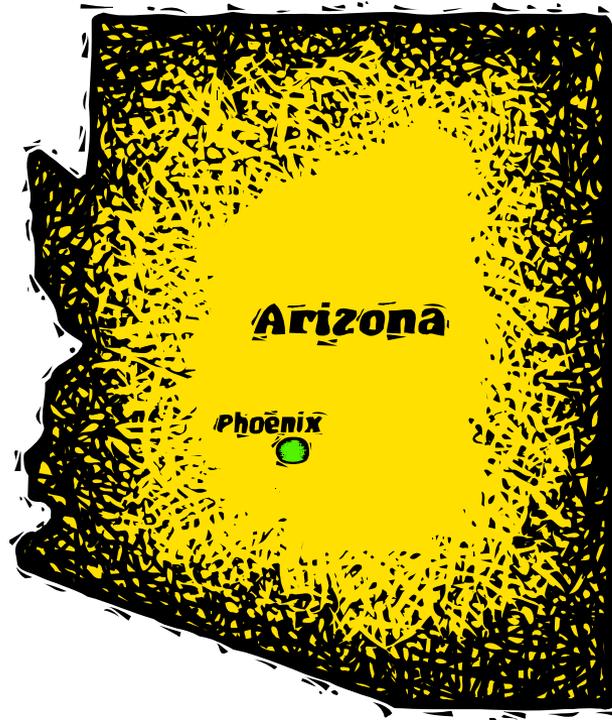
- Ensure that patient-care items, equipment, and frequently touched surfaces receive daily cleaning
- Adequately clean and disinfect them before use on another patient
- Stethoscope wipe with alcohol

# SOP: treatment

- If bump on skin red and size of a dime seek treatment
- Multiple antibiotics may be necessary
- Most can return to work if receiving treatment and area covered
- And don't share razor, towel.
- Consult with your dept. clinician

# Latest and Greatest

- Finding MRSA in the firehouse research findings – Later in session.
- Legislation efforts with AZ Professional Firefighters

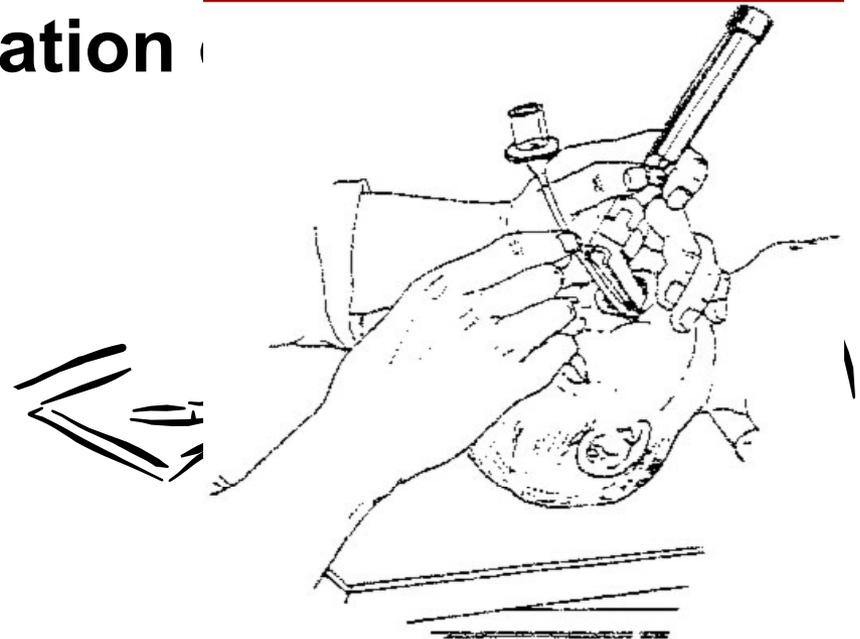


# Meningococcal meningitis

## Significant exposure:

Direct contact with secretions such as

- during mouth-to-mouth,
- endotracheal intubation
- airway suctioning.



# SOP: Meningococcal meningitis

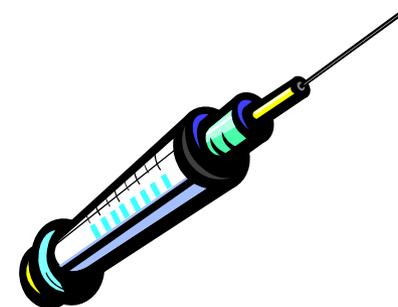
## Incubation:

2-10 days-give coordinates if leaving town

## Prophylaxis

- Rifampin 600 mg 2 times day for 4 days
- Ciprofloxacin 500 mg - 1 pill

# SOP: Measles



- Before vaccine:
  - 100,000 cases,
  - 3000 deaths in children every year
- Cases still occur:
  - Percent of parents who exempt kids increases 6%/yr
  - 2.5 fold increase from 1991-2004
  - Some religious exempt (Amish)
  - Others philosophical don't like (next car seats?)
- Those born after 1/1/57 or later need
  - measles titer or vaccinations (usually MMR)
  - Should have two immunizations at least 30 days apart.
- Born before 1/1/57 need clinician documented case or 1 immunization or titer

# SOP: Measles

- Those without proof of immunization who are exposed to measles should have a serum antibody test.
- If the test indicates no protection, MMR can be given if within 72 hours of exposure.
- If more than 72 hours, measles immune globulin is recommended followed in 3 months by MMR.
- If exposed and refuse above remove from work for 21 days

# Hepatitis A



# SOP: Hepatitis A

- Vaccine indicated for travel to endemic areas: 2 doses 6-12 months apart or
- TWINRIX (includes Hep B) doses at 0, 1,6 month
- Require for:
  - USAR (urban search and rescue) teams advised vaccination because of possibility of foreign travel.
  - Special operations personnel, mainly those in swift water rescue require vaccine.

# SOP: Bloodborne pathogens

- Call ASAP



# Bloodborne pathogens

- Pathogenic microorganisms that are present in human blood
- Can cause disease in humans.
- Pathogens include, but are not limited to:
  - Hepatitis B virus (HBV)
  - Hepatitis C virus (HCV)
  - Human immunodeficiency virus (HIV).

# SOP:OSHA Bloodborne pathogens

◆29CFR 1910.1030, published 1991

Covers employers at any facility with workers who handle, or have the potential to contact:

- blood
- other bodily fluids which may contain bloodborne pathogens,
- contaminated items

# SOP: Bloodborne pathogens standard

- ◆ Exposure control plan
- ◆ Methods of compliance
- ◆ Training
- ◆ Vaccinations,
- ◆ post-exposure evaluations,
- ◆ medical follow-up
- ◆ Warning labels and signs
- ◆ Record keeping

# SOP: Universal precautions

- All human blood and certain human body fluids are treated as if known to be infectious for:
  - Human Immunodeficiency Virus
  - Hepatitis B Virus
  - Hepatitis C Virus
  - Other bloodborne pathogens
- Use appropriate PPE

# Hepatitis B

*Who is at risk?*

- By age 50 - 7% of middle class Americans infected
- hospital workers 22%.
- Incubation period 30-180 days.

*What about rechecking titers of Hepatitis B antibody?*

- Evidence is that levels drop with time,
- but once levels are “protective”
- protection is long term, even though levels drop.

# SOP:Hepatitis B

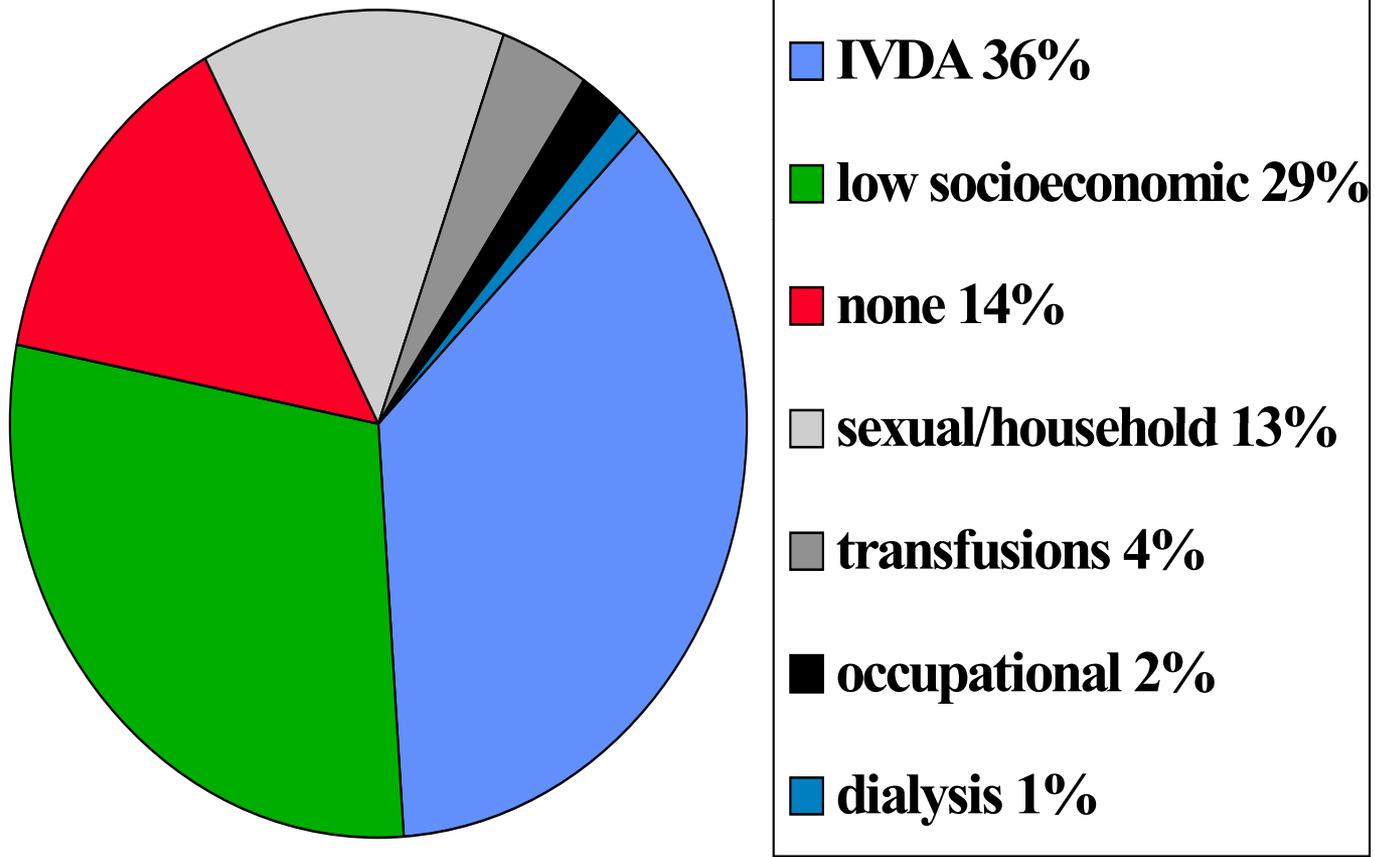
*What about booster immunization?*

- CDC still has no recommendation
- Some departments administer booster at 7-10 years after original series
- check titers after a booster if work exposure (and dialysis patients)

# Hepatitis C (HCV)

- Prevalence in general population is 1%
- but 50% of “infectious” hepatitis in U.S. now
- Similar to hepatitis B in transmission.
- Higher in those with transfusion before 1992
- Much higher risk of chronic liver disease 50-70%
- Risk to first responders/paramedics.
- 3-10% risk from needle-stick

# Hepatitis C Virus



# HCV: Infection rates

- ◆ 3% with needlestick exposure to blood containing anti-HCV antibodies
- ◆ 10% with needlestick exposure to blood containing HCV RNA
- ◆ Not detected in urine, feces, saliva, vaginal secretions, or semen
- ◆ Low risk of transmission through sexual contact

# Hepatitis C (HCV)

- Evaluation includes positive hepatitis C antibody,
- Positive(ELISA) 8-12 weeks after infection,
- then HCV RNA/PCR testing.
- Incubation period 15-150 days.
- Liver biopsy may be indicated,
- especially if transaminases (liver function tests) abnormal.
- Treatment:
  - Acute: Interferon 97% cure
  - Chronic: Interferon alpha may be indicated in combination with other antivirals.

# SOP: HCV: Post-exposure prophylaxis

- ◆ Test for infection after exposure
- ◆ and at 6-9 months
- ◆ Immune globulin not shown to be protective
- ◆ Interferon alpha unknown prophylactic effect
- ◆ Do not ignore exposures:
  - ◆ Chronic hepatitis develops in >50% of infected adults,
  - ◆ 20-25% cirrhosis

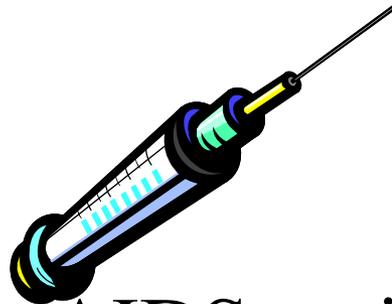
# SOP:HIV: What to do if exposed?

- Call clinician ASAP
- Depending on extent and type of exposure
- May need to start HIV prophylaxis per CDC guidelines ([cdc.gov](http://cdc.gov))
- Get rapid HIV test on source patient
- If negative may not need HIV drugs for firefighter.
- Test firefighter's blood for HIV for six months after exposure (0, 6, 12 weeks, 6 months)



# HIV: Infection rates

- ◆ 0.3% with percutaneous exposure



- ◆ Exposures to AIDS patients higher risk than
  - ◆ to asymptomatic HIV positive patients
  - ◆ Mucocutaneous (mouth, nose, eyes) exposure 0.1% infection rate
  - ◆ No infections with exposure to intact skin

# SOP: HIV: Post-exposure recommendations

- ◆ During first 6 months (especially 12 weeks)
  - No blood, semen, organ donation
  - Protection during sexual intercourse
  - No breast feeding if suitable alternative
  - Look for acute illness,
    - particularly fever, rash, myalgia, fatigue, malaise, lymphadenopathy
- ◆ Report symptomatic new cases to your health dept

# Tuberculosis

- 18,000 TB cases/year (1992-1997 a 6% increase in foreign born)
- Drug resistant strains in 43 states Rifapentine: 1st new drug in 25 years
- San Francisco Fire Department has 12% prevalence of positive PPD tests after 2 years of testing
- New York City Fire Department has estimated 7.9%
- No development of active TB.

# Tuberculosis

- INH 300 mg/day if recent conversion PPD.
- Side effects = Hepatitis, drug fever, rash
- more frequent if over 35 years
- Obtain baseline liver function profile
- If over 35 years give INH only if
  - immunocompromised,
  - silicosis,
  - diabetes,
  - abnormal chest x-ray.

# SOP: Tuberculosis

- TB was the HIV of the 1600s
- 2 billion worldwide
- Multi-drug resistance increasing.
- Positive skin tests positive 3.6% - 12.5%
- Only takes one microbe to infect you.
- If firefighter exposed get baseline TB skin test if haven't had in past month,
- Then repeat in 12 weeks.
- If skin test positive get chest x-ray.

# SOP TB

- If chest x-ray positive = active TB, get Rx
- If negative:
  - Watchful waiting
  - 10% of positive skin test turn active
  - Can give INH medication to prevent
    - Medication given for 6 months
    - Liver damage from INH more common if over 35
    - Get liver function blood tests
- TB symptoms: night sweats, cough, bloody sputum, fever, chills, weight loss

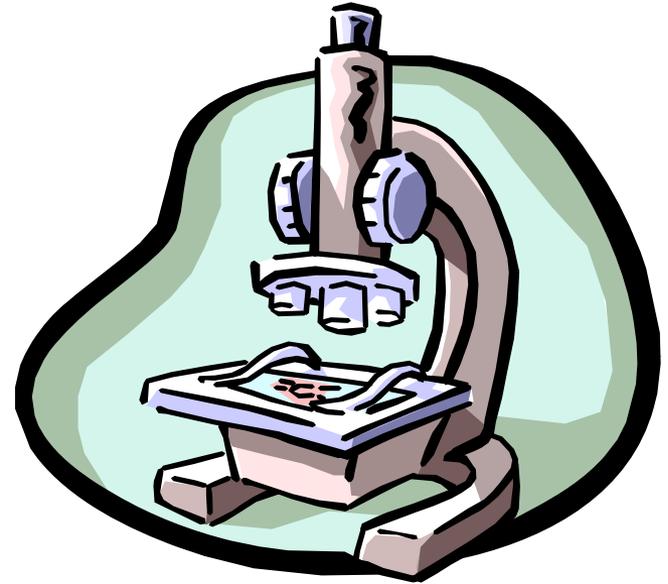
# End of skin tests soon?

New blood test available

Quantiferon

More accurate

No cross reactivity to other TB-like organisms



# VRE

- Vancomycin Resistant Enterococci
- Enterococci are part of the normal flora of the gastrointestinal and female genital tracts,
- Most infections with these microorganisms have been attributed to the patient's endogenous flora.



# SOP: SARS (severe acute respiratory syndrome)

- Cough, SOB, hypoxia, pneumonia
- Fever more than 100.5 F
- Close contact with SARS case
- Suspect if patient travel to China, Vietnam, Singapore within 10 days of onset
- Hand washing, masks, gloves, N 95
- Patient isolation

# SOP: West Nile Virus

- Mosquito feeds on infected bird, bites us
- Symptoms: 3-14 days post bite
  - No symptoms 80%,
  - 20% fever, head and back ache, swollen glands, and central rash
  - 1/150 High fever, headache, neck stiff, tremors, coma
- No treatment or vaccine for humans
- Fire dept prevention: 5 Ds
  - drain standing water,
  - Apply DEET
  - Wear long duds
  - Disinfect fountains (Mosquito dunks)
  - Avoid dusk – dawn (not practical for firefighting)

# Cases:

- Tuberculosis
- Meningococcal meningitis
- HIV
- Hepatitis B, C, etc.
- Vancomycin-resistant enterococcus
- Methicillin-resistant staph aureus
- Anthrax

# Case 1

Tuberculosis: Paramedic unit receives a call for a 35-year-old male with difficulty breathing and severe coughing.

On the scene he is warm to touch, face is flushed, respirations are 24/minute, appears emaciated, and has frequent deep coughing productive of whitish sputum.

The spouse states that he has had tuberculosis, but has not been taking medication “for a while”.

What should you do?



# Recommendations:

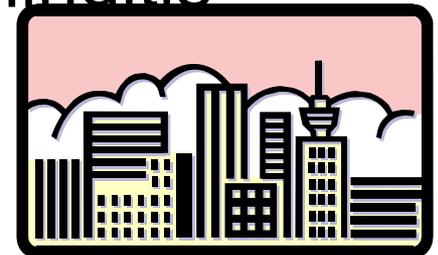
1. For those who have not had a past positive PPD or history of tuberculosis:  
Skin test baseline and in 10-12 weeks.  
Also have them report to the doctor immediately if fever, chills, night sweats, weight loss, sputum production, bloody sputum, especially, coughing.
2. For those with a past positive PPD, baseline chest x-ray if they have not had one within the past six months. Repeat in 10-12 weeks.  
  
Similar recommendations if having any of the symptoms described above.
3. If skin test positive consider isoniazid (INH) prophylaxis for 6 months (longer if child or HIV).

## Case 2:

### Meningococcal Meningitis:

Paramedic unit receives a call for a 35-year-old male with difficulty breathing and severe coughing. On the scene he is warm to touch, face is flushed, respirations are 24/minute, appears emaciated, and has frequent deep coughing productive of whitish sputum.

The Emergency Room physician informs the Paramedic Captain a day after admission that meningococcal meningitis is suspected. What next?



Information: Mode of transition by direct contact, including:

Respiratory droplets from nose and throat of infected people.

Infection usually causes only subclinical mucosal infection.

Invasion sufficient to cause systemic disease is comparatively rare.

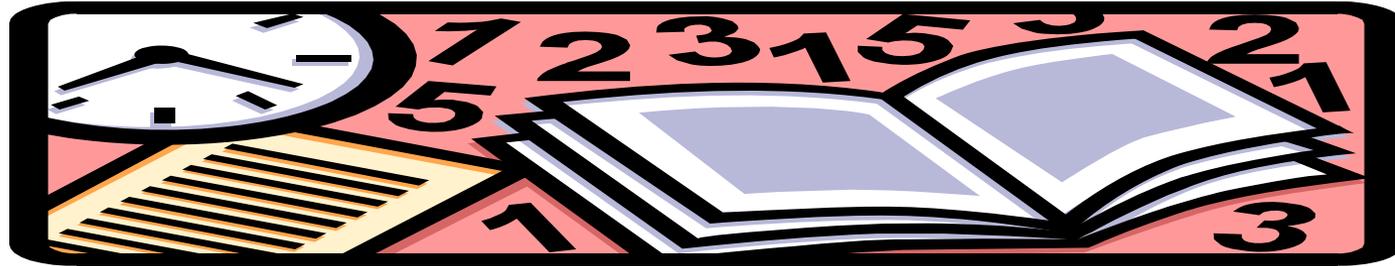
During epidemics, over half of men in a military unit have been found to be healthy carriers of pathogenic meningococci.

Incubation: Varies from two to ten days, commonly three to four days.

Period of Communicability: Until meningococci are no longer present and discharged from nose and mouth.

Meningococci usually disappear from the nasopharynx within 24 hours after institution of treatment with antibiotics.

Special Notes: Those without a spleen are more susceptible.



**Exposed Individuals: Initiate prevention.**

**Cipro 500 mg po. OR**

**Rifampin 600 mg, twice a day for two days.**

**Routine immunization of children over 11 years is advised.**

**Preventive measures: Respiratory protection**

# Case 3:

## Vancomycin-Resistant Enterococcus:

Automatic sprinkler head pops off in a nursing home patient room. Fire Department is called. Meanwhile the patient is removed from the room and changed into dry clothing.

While fire fighters are in the room attempting to turn off the sprinkler, a nurse informs them that the patient has vancomycin-resistant enterococcus in her stool only. There are no open lesions on the skin, etc.

What should you do?



# Case 4:

## Methicillin-resistant Staph Aureus:

Automatic sprinkler head pops off in a nursing home patient room. Fire Department is called. Meanwhile the patient is removed from the room and changed into dry clothing.

While fire fighters are in the room attempting to turn off the sprinkler, a nurse informs them that the patient has methicillin-resistant staph aureus in her stool only. There are no open lesions on the skin, etc.

What should you do?

# SOP: MRSA

- **Report possible skin infections early.** If a red spot or bump on the skin is larger than a dime see a health care professional. Any red streaks require immediate evaluation.
- **Clean surfaces regularly:** Establish a regular cleaning schedule for work surfaces including medic trucks, stethoscopes, blood pressure cuffs.
- **Replace MRSA hot spots:** Fabric couches should be disinfected and covered with vinyl or replaced with vinyl or leather. In either case add couches to the regular cleaning schedule
- **Ban turnouts and work boots from living quarters.** All the cleaning won't help if living area is re-infected. Place a large sign in the apparatus bays as a reminder.

# SOP: MRSA

- **Wash your hands.** Use soap and water or an alcohol-base hand sanitizer. Also, wash thoroughly. Experts suggest that you wash your hands for as long as it takes you to recite the alphabet
- **Cover cuts and scrapes with a clean bandage.** This will help prevent you from spreading bacteria to other people
- **Do not touch other people's wounds or bandages unless you are wearing gloves**
- **Do not share personal items like towels or razors.** If you use any shared equipment, wipe it down before and after you use it. Drying clothes, sheets, and towels in a dryer -- rather than letting them air dry -- also helps kill bacteria

# Case 5: Hepatitis B, C



Paramedics are called to the home of a teenager who attempted to commit suicide by slashing her wrists. She resists treatment and splashes paramedics with blood. One paramedic says his eyes/conjunctiva were saturated by blood.

Another paramedic's gloves were torn by the patient thrashing and he sustained a deep scratch. Paramedics ask parents if she is on any medication and they say, "she has used a lot of street drugs". What should you do?

# Case 6

- A envelope with a whitish powder is found by a local elementary school teacher. The contents have spilled onto the surface of the playground.
- What should you do?



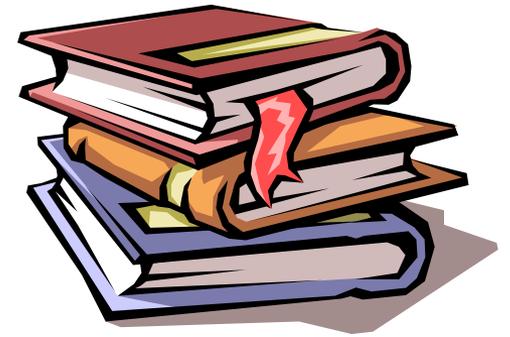
- Cover the spill with anything
- Section off area
- Wash hands to prevent spread to face
- Remove contaminated clothing ASAP and place in plastic bag
- Shower with soap and water
- List all people in area for follow-up.

- What if some was sucked into local air handler?
  - Turn off fans and ventilation
  - Leave area immediately
  - Close doors and section off area
  - Shut down air handler
- List people in area for follow-up

# Clean room:

- How best prevent MRSA and other microbes from entering living area in station?
- Ultraviolet on apparatus
- Air scrubbers (don't have an effect on surfaces)
- Clean room technology

# References:



- CDC.gov for:
  - recommendations for postexposure prophylaxis of HIV exposure in the work place.
  - The ABC's of Hepatitis
  - CDC Health advisory Anthrax
  - Vancomycin-Resistant enterococcus:
  - Tuberculosis, meningococcal meningitis etc.
- Control of Communicable Diseases Manual  
A. Benenson, an official report of the  
American Public Health Association



# MASTER MEMO

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**DATE:** May 25, 2007

**TO:** All Fire Personnel

**FROM:** Ed Nied

**SUBJECT:** New Exposure Protocol

## **Background**

Any member who has had the misfortune to experience an infectious disease exposure knows that it is not a pleasant experience. Aside from the obvious anxiety resulting from the health concerns, working through the paperwork and follow-up process can be just as frustrating. One of the chief sources of that frustration is that there is very little continuity from hospital to hospital when it comes to source patient testing and baseline testing for our personnel after hours and on weekends. In an attempt to ensure proper and appropriate follow-up to an exposure incident, the following revisions to the Exposure Protocol are being implemented.

## **Program**

First, there is NO replacement for prevention. All appropriate PPE for the given/or potential situation should be enforced by Company Officers.

There are basically three different situations crews can encounter in the field with regard to blood/OPIM exposure:

1. Exposure on ALS call.
  - a. The Paramedic will draw blood at time of IV start and place into tubes contained in J2 box.
  - b. Do all you can to obtain consent for HIV testing. For a list of surrogate signers on the consent form, see the Exposure Packet. If assistance is needed call your respective EC Captain.
  - c. Call J2 and have them pick up the box at the station.
2. Exposure on BLS call.
  - a. If a Paramedic is on scene, obtain consent to draw and test blood. Then follow steps under #1 above.
  - b. If Paramedic not on scene, follow steps under #3 below.
  - c. If patient is already loaded in BLS unit, ride in and follow above procedures.
3. Exposure on non-transport call.
  - a. If Paramedic is on scene, follow same steps above
  - b. If Paramedic is not on scene, at first knowledge of exposure, ask Fire Alarm to send the closest PAU/PM/EC (ALS) to draw the blood. Patient transport should not unnecessarily be delayed, so early dispatch of ALS personnel should be a top priority.

If after hours or on weekends, crews can use a second J2 kit to draw "baseline" blood work from members.

If TPD personnel are exposed the same procedures should be followed regardless if TFD personnel have experienced an exposure.

District Management teams have been given 2 replacements of *Exposure Packets* containing all of the paperwork required for an occupational exposure to an infectious disease. These packets must be placed on each front-line Engine, Ladder, Ladder Tender, Paramedic, Alpha, BC and EC units, as well as all reserve units.

Included in each packet are:

- 4 Communicable Disease Exposure Forms (CDER)
- Infectious Disease Notification Form (IDN)
- Exposure Flow Sheet
- Exposure Forms Checklist
- Lab Slip
- Prescription for Post Exposure Prophylactic (PEP) medications
- Declination Form
- Consent for HIV Testing Form
- Information Sheet on PEP medications
- Walgreen locations

### **Procedure**

If you suffer an exposure, there are really only four things you have to remember:

1. Call the TFD Physician, Dr. Wayne Peate, or his designate, of WellAmerica at 795-1098 or pager 930-3028 after hours and weekends.
2. Call your supervisor.
3. Refer to the appropriate flow sheet for completing the paperwork.
4. Leave a message on BN12 phone: 791-5211 ext 1212 or page me at 218-8010 if you have further questions.

Based on your description of the incident, Dr. Peate, or the on-call physician, will determine the level of exposure. He then will speak to the appropriate hospital representative to determine the appropriate course of action. If Dr. Peate determines that you need Post Exposure Prophylactic (PEP) medications, he will call the prescription into the Walgreen pharmacy that you and he agree on. If for whatever reason, that doesn't occur, the prescription form instructs the Walgreen pharmacist to call Dr. Peate for verification. If you require lab work, Dr. Peate will instruct you as to how to go about getting it completed, but usually this will be drawn by a Paramedic and sent through the J2 labs if on the weekend. If this is during the week, Dr. Peate will most likely have you come in the next morning to his office for "baseline" blood draws.

At no time should you be paying for medications or tests out of your own pocket. These forms clearly indicate whom the companies providing these services should bill.

When you have completed the appropriate paperwork (essentially the Communicable Disease Exposure Report, Infectious Disease Notification form and any associated memos), place it back in the packet and turn the whole thing into your Battalion Chief. Your Battalion Chief will then hand you a fresh packet. The Battalion Chief will then forward it to the Infection Control Officer BN12 or EC26. Once the packet is received from the Battalion Chief, BN12/EC26 will trade it for a fresh one that s/he will file away for future use.

## Respiratory Exposures

For respiratory-based exposures, the hospital system, IDNs, etc., must be used. The IDN is the only legal form we can use to assure follow-up testing will be done on the source patient.

The white copy of the IDN *must* go to the Hospital Infection Control Officer (Practitioner). If s/he is not available, please give the white copy of the IDN to the PM Coordinator or ED Charge Nurse. Your EC Captain has a list of hospital ICOs along with their fax numbers. It is prudent to also fax a copy of the IDN to their office to assure the form gets to them.

## **Summary**

The key thing to remember in the event of an exposure is to notify Dr. Peate, or his designate, before you get caught up in the hospital's system. It is TFD policy to utilize the J2 lab process for any blood/OPIM exposure wherever possible. This includes ALS, BLS, non-transport or TPD exposures.

The only time TFD personnel should be using the hospital-based system is when there is a respiratory-based exposure, crews are unable to draw the blood, or the blood/OPIM exposure occurs in the parking lot of the hospital and the blood draw by TFD personnel would extend definitive care arrival time.

Having the department physician be the primary point of contact will provide some level of standardization of treatment for our folks and get you the care that you need in a timelier manner.

There is no way to come up with one system that will encompass any/all situations you may encounter, therefore use your resources if you are not sure:

1. District Management Team
2. Battalion 12 at 791-5211 ext. 1212; pgr. 235-2242
3. EC26 at 791-5874; pgr. 410-1304
4. WellAmerica at 795-1098; pgr. 930-3028

**MM#**    **037**  
**DATE:**   **05/25/07**



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- California Tech Bulletin 117 section E
- IMO A.652(16) 8.2 & 8.3
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- BIFMA – class A
- NFPA 260 – class I
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- superior abrasion resistance (100,000 double rubs – Wyzenbeek/CFFA-I, Federal Standard 191A – Method 5304, wire screen)
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**SUITABLE APPLICATIONS**

- contract interiors
- office
- restaurant
- hotel/motel/casino
- healthcare/assisted living
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- residential

**SPECIFICS**

- width 54 in. (137.16 cm)
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ADVANCED VINYL PROTECTION

**CARE AND CLEANING GUIDE**

Get rid of stains with one of the following steps:

<b>step 1</b>	eye shadow, mascara, grease, crayon, black felt tip pen, chocolate and suntan lotion
<b>step 2</b>	red lipstick, blood, urine and feces
<b>step 3</b>	oil base paint, tar and asphalt
<b>steps 4 &amp; 5</b>	all other tough stains

**step 1:** Remove excess spill with a damp cloth. Clean with 1:1 mix of Ivory® liquid and water. Next, rinse with clean water and dry.

**step 2:** Use straight application of concentrated cleaners such as Formula 409® or Fantastik® spray cleaner. Wipe with a clean cloth.

**step 3:** Use a 1:1 mix of ammonia and water or a 1:4 mix of bleach and water. Rinse with clean water and dry.

**step 4:** Use straight application of naphtha (lighter fluid). Rinse thoroughly with clean water and pat surface dry.

**step 5:** Use 1:1 mix of isopropyl alcohol and water. If stain persists, use straight alcohol. Rinse thoroughly with clean water and pat surface dry.

**note:** For cleaning that requires steps 4 or 5 – use a soft cotton cloth saturated with the cleaning material, rub the stain in circles 10 times. Pat dry with another soft cotton cloth and check the results.

The information published in this care guide refers to the performance of Permablok<sup>3</sup>® products in specific tests conducted under laboratory conditions. Results may vary under actual conditions.

This information is not a guarantee and does not relieve the user from the responsibility of the proper and safe use of the product and all cleaning agents. The use of certain agents can be harmful to the surface appearance and lifespan of vinyl. Spradling, its agents and assigns assume no responsibility resulting from the use of such cleaning agents to the vinyl.

Formula 409® is a registered trademark of the Clorox Company®. Fantastik™ is a trademark of Dow Brands, Inc.® Trademark of the Dow Chemical Co.® Ivory® is a trademark of Procter and Gamble®. Permablok<sup>3</sup>® is a trademark of Spradling International, Inc.® ©1997 Spradling International, Inc.®

Please check compatibility when using this product in combination with painted or varnished surfaces.

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	<b>MRSA Infection Control Guidance</b>	Effective Date: December 1, 2007
		Reviewed/ Revised:

## **SAFETY DIRECTIVE**

### **1.0 SCOPE**

To assist Departments in combating bacteria that may be commonly found in the workplace. Bacteria are present on every surface and are carried on and in the body of healthy individuals. Staphylococcus aureus (Staph) is one of the more common bacteria encountered. When staph bacteria are clinically tested and found to be resistant to a penicillin derived antibiotic it is classified as "MRSA".

Infectious bacteria (agents) types addressed in this directive include Methicillin-resistant Staphylococcus aureus (MRSA) and Vancomycin-resistant Enterococcus faecalis (VRE).

### **2.0 PURPOSE OF SAFETY DIRECTIVE**

- A. To provide Departments with a basic checklist of surfaces or areas within the workplace where bacteria is commonly found, thereby creating a need for daily or frequent disinfection of those surfaces.
- B. To confirm with Departments the difference between cleaning (apply/remove) and disinfection (apply/contact time/remove)
- C. To provide Departments with a reference list of cleaning products and/or compounds registered with the Environmental Protection Agency (EPA) as being effective against Methicillin-resistant Staphylococcus aureus (MRSA) and Vancomycin-resistant Enterococcus faecalis (VRE) bacteria.
- D. To provide Departments with a list of cleaning products stocked in Procurement (City Stores) inventory which may have a manufacturer's claim or a formulary compound registered with the EPA tested to be effective against MRSA and VRE.
- E. To provide Departments with a list of cleaning products or compounds registered with the EPA, to be effective against MRSA and VRE, so that Departments can reference and/or compare the registered disinfectants or disinfecting compounds with cleaning products currently in use by custodial contractors under service contracts with the City of Tucson.
- F. To encourage Departments to review current cleaning products in Department inventory to ensure those disinfection agents are effective against MRSA and VRE.

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### 3.0 DEFINITION

**Cleaning:** Is the use of water, chemical, towel or friction to wipe surfaces giving them a clean appearance.

**Concentration:** means the amount of concentrated bulk cleaning agent that will be diluted with water to create a cleaning solution. Cleaning solutions that exceed recommend concentrations may be harmful to the user, the surface to be cleaned, or the environment. Concentrations that do not meet the minimum solution recommended by the manufacturer may not be effective against the intended agent.

**Contact Time:** means the amount of time recommended or specified by the manufacturer that the cleaning product must remain on the surface being disinfected before the bacteria is effectively eliminated (killed).

**Disinfection:** The application of a cleaning or disinfection product according to the manufacturer's specifications that will include a "contact kill time" before removal of the chemical, where required. The contact kill time will be different for specific bacteria.

**Hand Sanitizer:** means a liquid product with an alcohol content of 60% or greater for the control of MRSA or VRE.

**Methicillin-resistant Staphylococcus aureus (MRSA):** is a type of "Staph" bacteria that is resistant to penicillin as well as some other common antibiotics. Most commonly manifests as a skin infection.

**Vancomycin-resistant Enterococcus faecalis (VRE):** is a type of common bacteria that is resistant to the antibiotic vancomycin, and is clinically similar to MRSA.

### 4.0 General Guidance

**Cleaning** is the application of a chemical to a surface, followed by the immediate wiping or removal of the chemical.

**Disinfection of a surface is usually achieved when the chemical is applied according to the manufacturer's instruction listed on the product label, and the chemical is left on the surface long enough to kill the agent before the excess chemical is removed or wiped away. This is called the "Contact Time" or "Contact Kill Time".**

**It is only when the disinfecting product is mixed into it's proper solution (if required), applied according to manufacturer's instruction, and left on the surface for the required amount of contact time, that the user can be reasonably assured the disinfection process is complete. It is preferred**

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**that most cleaning agents are allowed to evaporate or dry on the surface without removal to complete disinfection.**

**Disinfection products are available through City Stores or are purchased from vendors under contract with the City or Department, or petty cash. It is important that all disinfection products in the workplace are surveyed to verify a manufacturer's claim that the product is effective against the *Staphylococcus aureus* bacteria.**

A product with a manufacturer's claim that it is tested against specific bacteria and is found to kill the specific bacteria when applied to the manufacturer's recommendations, MRSA or VRE would be an effective product. In cases where a commercial disinfection product may not available, practical or cost effective, a bleach solution (1:100 – 1 part bleach to 100 parts water) can be used effectively if left on a nonporous surface for a minimum of ten (10) minutes.

In many cases, a disinfection product will also be effective against other *infectious agents* such as viruses like Hepatitis B, HIV-1, Norovirus (stomach virus), rotavirus (cold virus) and others. Disinfections products may also be effective against bacteria such as *Mycobacterium tuberculosis* (TB) and *Escherichia coli* (E-coli) and others. A disinfection product may also be effective against certain fungal spores, commonly called mold.

A disinfection product that is effective against the greatest spectrum of bacteria, viruses and fungi, when applied and utilized according to manufacturer's recommendation, may be the best product for use within a Department. It should be noted that in many cases, contact times may differ between bacteria versus a virus or other infectious agent. When utilizing the product to kill the full spectrum of bacteria, virus or fungus listed by the manufacturer, the cleaning agent must be left on for the longest duration recommended by the manufacturer.

Unused solutions of disinfectant can be poured down the sanitary sewer (drain), other than toilet facilities. Disposable wipes can be discarded in the normal waste stream (trash).

It is mandatory that whenever any cleaning product is added to a department's chemical inventory, even for products under trail use, that the Material Data Safety Sheet (MSDS) is added to the Department's electronic MSDS inventory and printed for inclusion in the paper MSDS inventory. All secondary containers (spray/squirt bottles) for the dispensing of disinfection solutions shall be labeled with the appropriate contents.

Departments shall understand that where the custodial service is provided by General Services Department - Facilities Management or contract vendor, cleaning and disinfection is generally limited to common areas; floors, entry glass, drinking fountains, handrails and assembly spaces such as Conference Rooms. Restrooms; fixtures, glass and floors are cleaned and disinfected once a day.

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### **A. Work Areas**

Employees can disinfect their personal work spaces by ensuring that all hard (nonporous) surfaces in the working environment that may come into contact with bodily fluids are disinfected daily or regularly with an EPA registered or effective cleaning product, including but not limited to; desks, tables, doorknobs (push bars), computer desks, and countertops.

Disposable bacterial wipes are the preferred method for disinfecting electronic appliances, keyboards, mouse, light switches and other electronic control buttons.

Employees who share the operation of motor vehicle equipment can disinfect the steering wheel, armrest(s), control knobs and buttons with a disposable bacterial wipe between each use of the vehicle. Care should be taken when utilizing an alcohol based wipe on vehicles that have been parked in direct sunlight.

### **B. Exercise Areas**

In areas where exercise or weight rooms are present, equipment where bodily fluids may be present should be disinfected between each use. Specific areas to be disinfected would include; bench, seat, grips, bars and handles.

Wall dispensers or “pump type” hand sanitizers (≥60% Alcohol) should be present for occupant use.

### **C. Restrooms**

Hand towels should be restricted to disposable paper and the use of communal bar soap should be eliminated and replaced with liquid soap dispensers and/or hand sanitizers (≥60% Alcohol).

### **D. Shower Areas**

In areas where showers and locker rooms are present floors walls and fixtures should be disinfected daily. Wall dispensers should be available for liquid soap. Use of communal bar soap shall not be allowed. Employees should not handle other person’s personal items, such as a towel, without the use of gloves.

Showers, lockers, exercise rooms, and restrooms should have cleaning equipment (mops and buckets) independent from other common areas and mop heads should be changed or disinfected weekly, at a minimum.

### **E. Program Areas/High Use Areas**

In areas where “Sports Equipment” is utilized, the equipment should be disinfected after each use. This includes specialty equipment, footballs, basketballs, kick balls, soccer balls, softballs, volley balls, etc.

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In areas where sports or play activities are conducted, employees are required and participants should be encouraged, to bandage or securely cover every skin abrasion, cut or laceration before participating in an activity. Participants observed with active bleeding should be removed from participation. Participants with active skin infections (wound drainage) should be referred to a physician for evaluation.

In public program areas, or high use employee use areas, hand sanitizer should be readily available in portable containers or mounted in a fixed location near the entry/exit doors. Hand sanitizer should also be located adjacent to every first aid kit. Disposable latex (or similar) gloves should be included or located adjacent to every first aid kit.

## Appendix 1



<b>Infection Control Policy and Checklist</b>		
<i>Review the recommendations for disinfection procedures below. Utilize this checklist to ensure daily and periodic cleaning and disinfection control is practiced in your facility.</i>		
<b>General</b>	<b>Yes</b>	<b>No</b>
All hard environmental surfaces that may come in contact with body fluids are cleaned and disinfected daily with an EPA registered product		
Light switches, door knobs, door push bars, elevator controls, handrails and community phones are disinfected daily with an EPA registered product		
All hard flooring is cleaned and disinfected daily with an EPA registered product		
Mops heads and buckets utilized for restrooms, locker rooms and showers should be independent from program areas and office space. Mop heads are cleaned and disinfected weekly		
Restrooms - Wall dispensers are utilized for liquid soap (no bar soap)		
<b>Exercise/Weight Rooms</b>		
Grip areas on weights bars, dumbbells and machines are wiped down at the beginning of day (shift), Between each use, end of day (shift) with an EPA registered product or 1:100 bleach solution		
Grip areas on weights bars, dumbbells, and machines should not be taped		
Wall padding, lifting benches, stationary bike seats and/or floor mats are cleaned daily with an approved product or 1:100 bleach solution		
Wall dispensers for hand cleaner (≥60% alcohol) are placed at each entry/exit door. Signage to indicate minimum use: Entering/leaving facility		
<b>Shower Rooms/Locker Rooms</b>		
Showers and Locker Rooms (shower area, locker room floors and benches) are cleaned and disinfected daily with an EPA registered product and wall dispensers are utilized for liquid soap are placed within or directly adjacent to showers (no bar soap)		
Used towels or linens utilized are only handled by employees with latex (or similar) gloves.		
Towels or linens laundered in COT facilities are washed at 160°F and dried in a clothes dryer		
<b>Sports Equipment</b>		
All sports equipment used during the day is cleaned and disinfected daily with an EPA registered product		
<b>Vehicles</b>		
Steering wheels, armrest(s), control knobs and buttons should be wiped daily with an EPA registered product		
<b>First Aid/Bodily Fluids</b>		
Hand Sanitizer (≥60 Alcohol) is utilized before and after practicing first aid		
When caring for an injury or cleaning bodily fluids, disposable gloves and eye protection shall be utilized		

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## Appendix 2



**List H. EPA's Registered Products  
Effective Against Methicillin  
Resistant  
*Staphylococcus aureus* (MRSA) and  
Vancomycin Resistant *Enterococcus  
faecalis* or *faecium* (VRE)**

January 16, 2007

**Click on this  
link to see the  
EPA  
Registered List**

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### Appendix 3

**List of Cleaning and/or Disinfection Products carried by City Stores. These products may be effective against MRSA and VRE dependent upon label claim when utilized in proper concentration, applied according to manufacturer's recommendation:**

Waxie Pine Cleaner, Gallon (000072234)  
Misty Disinfectant foam cleaner, spray (000072211)  
Waxie bleach, gallon (000072213)  
Purell hand sanitizer, 4 fl. Oz. (000010950)  
Corium hand sanitizer, 8 fl. Oz. (000072457)  
Joy dishwashing detergent (000072264)  
Ivory bar soap (000072263)  
Lava bar soap (000072262)  
Gojo hand cream cleaner (000072218)  
Wypall waterless handwipes (000071655)  
Hillyard Top Clean #144 all purpose floor cleaner, 5 gallon (000072210)  
Hillyard Select Green degreaser, gallon (000072207)  
Waxie Sparkle window cleaner, gallon (000072223)  
Flo-Kem alkaline concrete cleaner, 5 gallon (000072229)  
Kimberly-Clark Triangle hand soap (000072266)  
Boraxo Pink Luron powder hand soap, 5 lb (000072267)  
Tide powder detergent (000072268)  
Ajax bleach cleanser, 21 oz. can (000072212)  
Waxie Kleen-brite, tile cleaner, qt. (000072206)  
Johnson wax Crew toilet bowl cleaner, qt. (000072214)  
Betco stainless steel crème cleaner, qt. (000072209)  
Procter & Gamble, Spic-N-Span all purpose cleanser, 1.68 lb. (000072215)

## MRSA in the Fire Service Key Points

Contact Info:  
Deputy Chief Ed Nied  
Tucson Fire Department  
10001 S. Wilmot Rd. Tucson, AZ 85713  
520-791-4701-office  
520-904-5358-cell  
520-791-5535-fax  
Ed Nied@tucsonaz.gov

- MRSA is Methicillin-Resistant Staphylococcus Aureus
  - Normally found in 30% population-usually in nose
  - Was predominately found in hospital environment- HA-MRSA
  - Now found in community like schools, homes, public places-CA-MRSA
  - Easily controlled by basic prevention such as washing hands, proper care of equipment, apparatus, PPE.
  - Can cause systemic infection, multiple organ failure and death (1 known FF)
  - Very difficult to get rid of
  - U of A and Tucson Fire Department study on MRSA in FF environment.
    - Some results
      - It is definitely in all aspects of the FF environment. PPE, apparatus, living areas, workout areas
      - Proper cleaning/disinfecting are needed
      - Need to use EPA certified products, not just EPA approved
        - There currently are NO EPA certified products for soft surfaces
        - Bleach based, many others available for hard surfaces
    - Some helpful prevention
- 1. Don't bring MRSA from calls into your living area at work or at home.**
- Disinfecting won't help if your living area is re-infected. Keep "dirty" items such as turnouts and work boots in the apparatus bay-AT ALL TIMES.
  - Place a large sign as a reminder.
- 2. Take personal responsibility.**
- Report possible skin infections early. If a red spot or bump on the skin is larger than a dime see a health care professional. Any red streaks require immediate evaluation.
  - Wash your hands. Use soap and water or an alcohol-base hand sanitizer. Also, wash thoroughly. Experts suggest that you wash your hands for as long as it takes you to recite the alphabet.
  - Cover cuts and scrapes with a clean bandage. This will help prevent you from spreading bacteria to other people.
  - Do not touch other people's wounds or bandages unless you are wearing gloves.
  - Do not share personal items like towels or razors.
  - Drying clothes, sheets, and towels in a dryer -- rather than letting them air dry -- also helps kill bacteria.
- 3. Clean surfaces regularly:**
- Stethoscopes and other equipment are often contaminated with dangerous bacteria. Wipe down the diaphragm (the flat area) with alcohol.
  - Establish a regular cleaning/disinfecting schedule for work surfaces including medic trucks, stethoscopes, blood pressure cuffs.
- 4. Replace MRSA hot spots:**
- Fabric couches should be regularly disinfected and covered with vinyl or replaced with vinyl or leather. Vinyl is preferable.



Mel and Enid Zuckerman  
College of Public Health

Division of Community,  
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## **Survey of MRSA Bacteria in the Fire Station Environment**

### **Final Executive Summary**

**Jonathan Sexton, M.S. Candidate, Kelly A. Reynolds<sup>1</sup>, Ph.D., Wayne Peate, M.D.**  
**Zuckerman College of Public Health, The University of Arizona, Tucson, AZ 85721**

**April 9, 2008**

*The following is an executive summary of a research project conducted by investigators at the University of Arizona's College of Public Health in cooperation with the Tucson Fire Department. Publication of the full study is pending and will be available upon request.*

#### **Acknowledgement:**

Special thanks to Ed Nied, Deputy Chief, Tucson Fire Department

#### **Introduction:**

*Staphylococcus aureus* is found on the epidermis and in the nose of about a third of healthy individuals. *S. aureus* may cause infections with symptoms ranging from pimples, boils and other skin conditions to life-threatening pneumonias and septicemia. Some strains are more difficult to treat due to resistance to many commonly administered antibiotics. These strains are known as methicillin resistant *Staphylococcus aureus* (MRSA). MRSA is one of the leading causes of infections in patients in hospitals and long-term care facilities. According to the U.S. Centers for Disease Control (CDC), there were an estimated 94,360 cases of MRSA in 2005 in the U.S. Since the early 1990's reports of MRSA infections have steadily increased in the community with no association to hospitals and long-term care facilities. No longer confined to hospitals, MRSA infections occur in certain populations at an increased rate, in particular groups with close contacts (i.e., prison inmates, sports teams, child care attendees).

Infections of aggressive MRSA are also documented more frequently among fire and emergency service workers. Such workers represent a unique crossover population; in that they are exposed to hospital acquired (HA)- and community acquire (CA)- MRSA contacts and are thought to be at a higher risk of exposure due to the communal lifestyles of fire stations and frequent contact with high risk populations. From 2003 to 2006, The city of Los Angeles Fire Department reported 136 medical claims of suspected MRSA, with 5 requiring hospitalization for aggressive antibiotic treatment. Individuals were identified as part of the cluster of those infected who had no contact with patients, suggesting a common transmission route in the fire station between



employees. Further investigation found that the MRSA was community acquired and thought to be spread by surface contact in shared kitchen, bathroom and workout room spaces at the fire stations.

This study was undertaken to determine the frequency of MRSA contamination in fire stations in the Tucson area. Data on environmental MRSA contamination will aid the evaluation of possible transmission routes of the bacteria and potential risk of exposure among fire personnel.

**Methods:**

Approximately 500 samples from 9 fire stations or administrative/training facilities were collected using laboratory swabs and sponges. Biochemical tests were used to identify *S. aureus* isolates. MRSA isolates were then identified by growth on media containing methicillin-derived antibiotics. Samples were tested for heterotrophic plate count (HPC) bacteria and total coliforme, general hygiene indicators, and *E. coli*, a fecal indicator bacteria.

**Results and Discussion:**

The overall results for this study are presented in Figure 1. HPC counts greater than 1,000 colony forming units (cfu) are considered to be of poor hygiene. Average HPC counts on all sites resulted in failing of the hygiene test, suggesting that common surfaces need to be cleaned and disinfected more frequently.

The site that contained the highest HPC was the locker room, with 53,400 cfu/site, while the lowest was the transit bags containing 3,040 cfu/site, and MRSA was not isolated from either of these sites. The locker room contained the highest percentage of total and fecal coliforms, 100% and 20%, respectively and general office surfaces as well as kitchen surfaces also tested positive for the fecal indicator bacteria.

The highest percentage of *S. aureus* (20%) was found on the couch and the desks with the couch also containing the highest percentage of MRSA (20%). There was no *S. aureus* or MRSA found on the transit bags. A high percentage (65%) *S. aureus* isolates were confirmed to be MRSA. Overall, MRSA was detected to be present on 7% of all surfaces tested in the fire station environment.

**Figure 1: Results**

Sample Site	HPC (cfu/site)	Total Coliform (%)	Fecal Coliform (%)	<i>S. aureus</i> (%)	MRSA (%)	<i>S. aureus</i> that was MRSA (%)
office	6,960	60	3	13	6	50
couch	25,600	90	5	20	20	100
remotes	4,360	40	0	10	5	50
table	5,630	30	0	5	5	100
kitchen	13,700	50	3	10	3	33
desks	20,900	70	0	20	10	50
classroom equip.	4,970	30	0	10	10	100
Transit Bags	3,040	20	0	0	0	0
Locker Room	53,400	100	20	0	0	0
<b>Total Sites</b>		<b>54</b>	<b>3</b>	<b>10</b>	<b>7</b>	<b>65</b>



**Recommendations:**

Recommendations consist of a set of focused interventions. The first intervention is increased education in infection control. This may be implemented in a variety of ways such as posters and signs throughout the firehouse, a teacher instructed class or an Internet based self-pace lesson.

MRSA is known to survive for days to weeks, and even months on inanimate objects, increasing the chance for exposure if the cycle of contamination is not broken. The need for frequent application of certified germ-killing products is expected to reduce the risk of MRSA exposure from contaminated surfaces. The EPA maintains a growing list of certified MRSA abatement products and further states that disinfectants, when used properly, can be expected to reduce bacteria, including MRSA, by 99.9%. In a field trial it was shown that a disinfectant was able to reduce bacteria by 90-99%.

A third intervention is increased hand washing. Washing hands for 30-60 seconds has been shown to reduce bacteria and viruses on hands by 99-99.9%. Frequent handwashing should be encouraged throughout the work shift.

A combination of interventions aimed is likely the most effective approach. Based on our data, soft covers on fire station couches should be replaced with vinyl. Policies and incentives should be put into place focused on improving the hygiene of the station. Procedures should be implemented aimed at designating “clean” and “dirty” areas of the firehouse and increasing personal protection precautions when on higher risk calls. Interventions including the issue of guidelines for station cleaning procedures, handwashing and decontamination following patient contacts, and the use of personal protective equipment (i.e., gloves) have been reported to result in a dramatic reduction of MRSA related infections in the workplace.

**Conclusions:**

Fire station personnel represent a unique population in that they are exposed to both HA- and CA-MRSA. MRSA contamination of surfaces at the station has been documented, where 7% of all targeted sites tested positive. The documented occupational exposures, including high-risk-patient contacts and a communal lifestyle, pose an increased risk of exposure for all personnel. Focused interventions, including increased education in infection control, proper and frequent use of disinfectants, increased hand washing, and targeted policies can help to reduce the risk of exposure. Preventing the likelihood of cross contamination of the living quarters in the station with contaminated field equipment are recommended to reduce the risk of MRSA exposure in the fire station environment.

Respectfully submitted by:



Kelly A. Reynolds, MSPH, PhD

Associate Professor

Phone: 520-626-8230; Email: [reynolds@u.arizona.edu](mailto:reynolds@u.arizona.edu)





# MASTER MEMO

---

**DATE:** July 6, 2006

**TO:** All Fire Personnel

**FROM:** Ed Nied  
Deputy Chief  
Safety & Wellness

**SUBJECT:** Station Housekeeping

As many of you are aware, we have had issues at one of the stations concerning MRSA. Specifically, one person working at that station contracted wound MRSA from what appeared to be an insect bite and it is assumed it happened on duty. Shortly thereafter, another individual had a similar episode, but MRSA could not be determined as the causative factor. These two individuals not only worked in the same station, but also shared the same bunkroom. After investigation and follow up, it was determined a standard for general station housekeeping was in order to assist with the prevention of like occurrences in the future. The following suggestions come from COT Risk Management, the CDC and City Physician.

## General Information and Personal Hygiene Issues

- Upwards of 30% of the population is colonized with MRSA. This figure is higher for emergency services personnel due to the repeated encounters with the bug. The CDC reports that 69% of MRSA infections are caused by environmental contamination.
- Any staph infection that is resistant to penicillin type antibiotics is categorized as MRSA.
- We have historically recognized nursing homes and extended care facilities as likely sources for contracting the disease. In these areas, be sure to use universal precautions, including gloves, mask, and glasses. However, there are other areas that are potential source vectors besides nursing homes, including locker rooms, showers and general living quarters.
- It usually takes skin to skin contact to acquire MRSA; however, handling infected pieces of equipment, etc. can easily spread the bug.
- Typically, MRSA manifests itself as a purulent boil-like skin protrusion which can be very painful. Left untreated, this can lead to systemic blood-borne infection.
- Washing your hands is the #1 way to prevent transmission, cleaning surfaces that are potential vectors with a 10% bleach solution or other antibacterial solution is recommended.
- Cover your own wounds to prevent possible exposure.
- Do not walk around in bare feet and wear flip/flops on way to shower.
- Clean boots occasionally. This can be done by wiping the boot, including the bottom, with a 10% bleach-soaked towel.
- Don't wear bunker gear into the stations. This is poor hygiene and can be a definite source vector.

### Station Housekeeping

- Each day, multiple use areas in station should be cleaned with 10% bleach or bactericide. These items include but are not limited to: shower floors, basins, faucet handles, door handles, countertops, and tables.
- During Saturday inspections, room mattresses should be aired out for a minimum of one hour. Bedding covers washed, floors vacuumed/mopped and room generally aired out.
- Equipment used daily including the apparatus should be disinfected after calls where bodily fluids are evident. Regular disinfection of multiple-use pieces of equipment that are handled daily, such as monitors should also be disinfected.
- Continually clean kitchen and living quarter areas before and after cooking.

### Final Comments

If you feel at anytime you have been exposed, have a wound that will not heal, or are otherwise concerned about station/equipment cleanliness, please report it to your supervisor.

**MM# 031**

**DATE: 07/06/06**



# MASTER MEMO

---

**DATE:** December 29, 2006

**TO:** All Fire Personnel

**FROM:**

**SUBJECT:** New Infection Control Code

In November, the Fire Chief, members of Senior Staff, Risk Management, and Union officials met and discussed the issues surrounding MRSA, general infection control, and medical coverage issues.

One of the issues identified was the inability to accurately track potential exposures—especially where members are not actually exposed by blood, OPIM, or droplet. Realizing our members come into contact with these types organisms regularly and in certain occupancy/patient types, a new way to assist this process will be the code of “90” placed into the first care report under the Vehicle Protection field. While not the ideal tool, this method was chosen because it is a field that can be immediately utilized, was a simple fix by communications, and can be queried for data easily.

A few points to remember:

1. Please remember that the true prevention is protection and there is **NO** replacement for properly worn PPE. Company supervisors are **directly responsible** to assure their crews are using the appropriate level of PPE for the given situation, and to also anticipate potential issues which may place their crews into harm’s way.
2. This code is not to be used on every call. The following are examples of types of calls or patient contacts as per Manual of Operations, section 425.B.2. and 425.H where the person writing the report should/may consider entering the code of 90.
  - A. High-risk occupancies such as nursing homes, adult care homes, long-term care facilities, prisons, and hospitals.
  - B. High-risk patient types such as IV drug users, patients just released from hospitals, open wound infections, long-term antibiotic therapy.

- C. If there is a positive answer to the three questions noted below that TFD dispatchers currently ask regarding infectious disease:
  1. Is the patient actively coughing or sneezing?
  2. Does the patient have a fever?
  3. Does the patient have a known communicable disease?
3. The entry of the 90 code does **NOT** mean a CDER is needed. It is for those scenes where there was a potential for MRSA, VRE, etc to be present, but no actual direct exposure occurred. If an actual exposure of blood or other OPIM occurs, please follow current guidelines found in Manual of Operations section 425 and in the “exposure packets” on apparatus.

How will this help?

This new code will help in a number of ways:

1. It will document for the members that there was suspicion regarding potential infectious disease on a particular call due to type of occupancy or patient.
2. It will allow the Infection Control Officer to go back and research calls where the individual who cannot place the fact that they have contracted a condition such as a MRSA infection to a specific call (a requirement of being covered by Workman’s Comp.)
3. It will allow better data collection for further study, which can lead to enhanced operational safety.

This is a quick fix and the issue will continue to be worked on. The TFD has an Infection Control Committee (ICC) that is comprised of management and labor (to include field and other section personnel) who are currently meeting to review procedures and improve the overall program. TFD members will also be receiving continuing education during first quarter CE 2007 regarding infectious disease and control.

**MM# 068**  
**DATE: 12/29/06**



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## **Survey of MRSA Bacteria in the Fire Station Environment**

### **Final Executive Summary**

**Jonathan Sexton, M.S. Candidate, Kelly A. Reynolds<sup>1</sup>, Ph.D., Wayne Peate, M.D.**  
**Zuckerman College of Public Health, The University of Arizona, Tucson, AZ 85721**

**April 9, 2008**

*The following is an executive summary of a research project conducted by investigators at the University of Arizona's College of Public Health in cooperation with the Tucson Fire Department. Publication of the full study is pending and will be available upon request.*

#### **Acknowledgement:**

Special thanks to Ed Nied, Deputy Chief, Tucson Fire Department

#### **Introduction:**

*Staphylococcus aureus* is found on the epidermis and in the nose of about a third of healthy individuals. *S. aureus* may cause infections with symptoms ranging from pimples, boils and other skin conditions to life-threatening pneumonias and septicemia. Some strains are more difficult to treat due to resistance to many commonly administered antibiotics. These strains are known as methicillin resistant *Staphylococcus aureus* (MRSA). MRSA is one of the leading causes of infections in patients in hospitals and long-term care facilities. According to the U.S. Centers for Disease Control (CDC), there were an estimated 94,360 cases of MRSA in 2005 in the U.S. Since the early 1990's reports of MRSA infections have steadily increased in the community with no association to hospitals and long-term care facilities. No longer confined to hospitals, MRSA infections occur in certain populations at an increased rate, in particular groups with close contacts (i.e., prison inmates, sports teams, child care attendees).

Infections of aggressive MRSA are also documented more frequently among fire and emergency service workers. Such workers represent a unique crossover population; in that they are exposed to hospital acquired (HA)- and community acquire (CA)- MRSA contacts and are thought to be at a higher risk of exposure due to the communal lifestyles of fire stations and frequent contact with high risk populations. From 2003 to 2006, The city of Los Angeles Fire Department reported 136 medical claims of suspected MRSA, with 5 requiring hospitalization for aggressive antibiotic treatment. Individuals were identified as part of the cluster of those infected who had no contact with patients, suggesting a common transmission route in the fire station between



employees. Further investigation found that the MRSA was community acquired and thought to be spread by surface contact in shared kitchen, bathroom and workout room spaces at the fire stations.

This study was undertaken to determine the frequency of MRSA contamination in fire stations in the Tucson area. Data on environmental MRSA contamination will aid the evaluation of possible transmission routes of the bacteria and potential risk of exposure among fire personnel.

**Methods:**

Approximately 500 samples from 9 fire stations or administrative/training facilities were collected using laboratory swabs and sponges. Biochemical tests were used to identify *S. aureus* isolates. MRSA isolates were then identified by growth on media containing methicillin-derived antibiotics. Samples were tested for heterotrophic plate count (HPC) bacteria and total coliforme, general hygiene indicators, and *E. coli*, a fecal indicator bacteria.

**Results and Discussion:**

The overall results for this study are presented in Figure 1. HPC counts greater than 1,000 colony forming units (cfu) are considered to be of poor hygiene. Average HPC counts on all sites resulted in failing of the hygiene test, suggesting that common surfaces need to be cleaned and disinfected more frequently.

The site that contained the highest HPC was the locker room, with 53,400 cfu/site, while the lowest was the transit bags containing 3,040 cfu/site, and MRSA was not isolated from either of these sites. The locker room contained the highest percentage of total and fecal coliforms, 100% and 20%, respectively and general office surfaces as well as kitchen surfaces also tested positive for the fecal indicator bacteria.

The highest percentage of *S. aureus* (20%) was found on the couch and the desks with the couch also containing the highest percentage of MRSA (20%). There was no *S. aureus* or MRSA found on the transit bags. A high percentage (65%) *S. aureus* isolates were confirmed to be MRSA. Overall, MRSA was detected to be present on 7% of all surfaces tested in the fire station environment.

**Figure 1: Results**

Sample Site	HPC (cfu/site)	Total Coliform (%)	Fecal Coliform (%)	<i>S. aureus</i> (%)	MRSA (%)	<i>S. aureus</i> that was MRSA (%)
office	6,960	60	3	13	6	50
couch	25,600	90	5	20	20	100
remotes	4,360	40	0	10	5	50
table	5,630	30	0	5	5	100
kitchen	13,700	50	3	10	3	33
desks	20,900	70	0	20	10	50
classroom equip.	4,970	30	0	10	10	100
Transit Bags	3,040	20	0	0	0	0
Locker Room	53,400	100	20	0	0	0
<b>Total Sites</b>		<b>54</b>	<b>3</b>	<b>10</b>	<b>7</b>	<b>65</b>



**Recommendations:**

Recommendations consist of a set of focused interventions. The first intervention is increased education in infection control. This may be implemented in a variety of ways such as posters and signs throughout the firehouse, a teacher instructed class or an Internet based self-paced lesson.

MRSA is known to survive for days to weeks, and even months on inanimate objects, increasing the chance for exposure if the cycle of contamination is not broken. The need for frequent application of certified germ-killing products is expected to reduce the risk of MRSA exposure from contaminated surfaces. The EPA maintains a growing list of certified MRSA abatement products and further states that disinfectants, when used properly, can be expected to reduce bacteria, including MRSA, by 99.9%. In a field trial it was shown that a disinfectant was able to reduce bacteria by 90-99%.

A third intervention is increased hand washing. Washing hands for 30-60 seconds has been shown to reduce bacteria and viruses on hands by 99-99.9%. Frequent handwashing should be encouraged throughout the work shift.

A combination of interventions aimed is likely the most effective approach. Based on our data, soft covers on fire station couches should be replaced with vinyl. Policies and incentives should be put into place focused on improving the hygiene of the station. Procedures should be implemented aimed at designating “clean” and “dirty” areas of the firehouse and increasing personal protection precautions when on higher risk calls. Interventions including the issue of guidelines for station cleaning procedures, handwashing and decontamination following patient contacts, and the use of personal protective equipment (i.e., gloves) have been reported to result in a dramatic reduction of MRSA related infections in the workplace.

**Conclusions:**

Fire station personnel represent a unique population in that they are exposed to both HA- and CA-MRSA. MRSA contamination of surfaces at the station has been documented, where 7% of all targeted sites tested positive. The documented occupational exposures, including high-risk-patient contacts and a communal lifestyle, pose an increased risk of exposure for all personnel. Focused interventions, including increased education in infection control, proper and frequent use of disinfectants, increased hand washing, and targeted policies can help to reduce the risk of exposure. Preventing the likelihood of cross contamination of the living quarters in the station with contaminated field equipment are recommended to reduce the risk of MRSA exposure in the fire station environment.

Respectfully submitted by:



Kelly A. Reynolds, MSPH, PhD

Associate Professor

Phone: 520-626-8230; Email: [reynolds@u.arizona.edu](mailto:reynolds@u.arizona.edu)





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Associate Professor

Phone: 520-626-8230; Email: [reynolds@u.arizona.edu](mailto:reynolds@u.arizona.edu)





# MASTER MEMO

---

**DATE:** July 6, 2006

**TO:** All Fire Personnel

**FROM:** Ed Nied  
Deputy Chief  
Safety & Wellness

**SUBJECT:** Station Housekeeping

As many of you are aware, we have had issues at one of the stations concerning MRSA. Specifically, one person working at that station contracted wound MRSA from what appeared to be an insect bite and it is assumed it happened on duty. Shortly thereafter, another individual had a similar episode, but MRSA could not be determined as the causative factor. These two individuals not only worked in the same station, but also shared the same bunkroom. After investigation and follow up, it was determined a standard for general station housekeeping was in order to assist with the prevention of like occurrences in the future. The following suggestions come from COT Risk Management, the CDC and City Physician.

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- We have historically recognized nursing homes and extended care facilities as likely sources for contracting the disease. In these areas, be sure to use universal precautions, including gloves, mask, and glasses. However, there are other areas that are potential source vectors besides nursing homes, including locker rooms, showers and general living quarters.
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Station Housekeeping

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Final Comments

If you feel at anytime you have been exposed, have a wound that will not heal, or are otherwise concerned about station/equipment cleanliness, please report it to your supervisor.

MM# 031

DATE: 07/06/06



# MASTER MEMO

---

**DATE:** December 29, 2006

**TO:** All Fire Personnel

**FROM:**

**SUBJECT:** New Infection Control Code

In November, the Fire Chief, members of Senior Staff, Risk Management, and Union officials met and discussed the issues surrounding MRSA, general infection control, and medical coverage issues.

One of the issues identified was the inability to accurately track potential exposures—especially where members are not actually exposed by blood, OPIM, or droplet. Realizing our members come into contact with these types organisms regularly and in certain occupancy/patient types, a new way to assist this process will be the code of “90” placed into the first care report under the Vehicle Protection field. While not the ideal tool, this method was chosen because it is a field that can be immediately utilized, was a simple fix by communications, and can be queried for data easily.

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**MM# 068**  
**DATE: 12/29/06**



# MEMORANDUM

---

**DATE:** May 20, 2008

**TO:** All Personnel

**FROM:** Ed Nied  
Deputy Chief  
Safety and Wellness

**SUBJECT:** Environmental Study Final Results

**Background:**

In February of 2007, Tucson Fire Department together with the University Of Arizona College Of Public Health entered into an environmental study of our working environment. This study, while testing for numerous bacteria and other contaminants, has focused on MRSA. The study has been completed and the final results document from Dr. Kelly Reynolds, PhD, MSPH and her team are linked below.

**Conclusion:**

“Fire station personnel represent a unique population in that they are exposed to both Hospital Acquired (HA) and Community Acquired (CA)-MRSA. MRSA contamination of surfaces at the station has been documented, where 7% of all targeted sites tested positive. The documented occupational exposures, including high risk patient contacts and a communal lifestyle, pose an increased risk of exposure for all personnel. Focused interventions, including increased education in infection control, proper and frequent use of disinfectants, increased hand washing, and targeted policies can help to reduce the risk of exposure. Preventing the likelihood of cross contamination of the living quarters in the station with contaminated field equipment are recommended to reduce the risk of MRSA exposure in the fire station environment.”

**Recommendations:**

Within the document are several recommendations. Below is an explanation of what Tucson Fire has done so far regarding these.

**Recommendation one:** Posters, signs as reminders. These are currently being developed. They will include such items as “Now Entering Clean Area, No Contaminants Beyond This Point” and reminders to wash hands, etc. These have been shown to assist personnel with remembering these important items as you are so busy in the field, sometimes it’s easy to forget.

**Recommendation two:** Products for cleaning. This is also in process. We are working on appropriate wipes, cleaners and disinfectants. We want this to be a “one product fits all” so field personnel do not have to remember where and when to use *this* product versus *that* one. This is not an easy item in that there are constantly new products being developed, but some do not do what we need them to. An example of this is the kill time, which in some products is as long as

## **Environmental Study Final Results**

**MM#037**

**Page 2 of 2**

20 minutes. It is clearly understood that field personnel do not have 20 minutes to stand there and keep the surface wet to assure kill time. The extra work we are putting into this now will save the field personnel additional headaches and work in the longer run.

Recommendation three: Increased hand washing. This one is up to you, but we will be assisting with the gentle reminder signage within and around the station. Please see MM#084 of 10/22/2007 for guidance in this and other areas pertaining to station/personal cleanliness issues. We are also determining which product we will use as a hand sanitizer. We are working with other city departments to maximize our buying power through City Stores.

Recommendation four: Soft coverings on furniture. Chief Gulotta has been working hard in this area to replace furniture coverings with a new “pleather” type material which contains a natural anti-bacterial layer called “Permablok™. This material will allow us to use whichever product we end up employing to clean and yet maintain a comfortable material for your use. Dr. Kelly Reynolds’ staff has done repeat swabbing of this furniture and NO evidence of MRSA has been found, indicating our number one potential source has been mitigated.

Recommendation five: Clean and dirty areas. From this point in time forward, the clean area will be the station and the dirty area will be considered the bay area. This means a true line has been drawn within the stations to assure personnel understand where this begins and ends. Included in this is a policy that now states “NO turnouts in the station for ANY reason”. We are strongly recommending that turnouts be laundered regularly to remove fire debris and soot. Company officers should be checking for turnout cleanliness on the regularly scheduled monthly PPE inspection.

### **Training for MRSA**

As part of our annual OSHA training, we are asked to complete the 10- min MRSA educational tool on COTEU. To get to this:

1. Please log into [www.coteu.org/fire](http://www.coteu.org/fire) and enter your username and password.
2. Click on “learning center”.
3. Enter “MRSA” into keyword area.
4. On bottom of page, click on “MRSA online”.
5. Assure there is a checkmark in the “take course for credit” box.
6. Click on take course.

Company officers are encouraged to review the results of this important study and monitor the station and emergency environment to reduce their personnel’s risk. Below is the link to Dr. Reynold’s memo.

Thank you for your commitment to safety.

**MM#:        037**  
**DATE:      05/20/08**

\*Survey Results on following pages.

# Survey of MRSA Bacteria in the Fire Station Environment

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Special thanks to Ed Nied, Deputy Chief, Tucson Fire Department

### **Introduction:**

*Staphylococcus aureus* is found on the epidermis and in the nose of about a third of healthy individuals. *S. aureus* may cause infections with symptoms ranging from pimples, boils and other skin conditions to life-threatening pneumonias and septicemia. Some strains are more difficult to treat due to resistance to many commonly administered antibiotics. These strains are known as methicillin resistant *Staphylococcus aureus* (MRSA). MRSA is one of the leading causes of infections in patients in hospitals and long-term care facilities. According to the U.S. Centers for Disease Control (CDC), there were an estimated 94,360 cases of MRSA in 2005 in the U.S. Since the early 1990's reports of MRSA infections have steadily increased in the community with no association to hospitals and long-term care facilities. No longer confined to hospitals, MRSA infections occur in certain populations at an increased rate, in particular groups with close contacts (i.e., prison inmates, sports teams, child care attendees).

Infections of aggressive MRSA are also documented more frequently among fire and emergency service workers. Such workers represent a unique crossover population; in that they are exposed to hospital acquired (HA)- and community acquire (CA)- MRSA contacts and are thought to be at a higher risk of exposure due to the communal lifestyles of fire stations and frequent contact with high risk populations. From 2003 to 2006, The city of Los Angeles Fire Department reported 136 medical claims of suspected MRSA, with 5 requiring hospitalization for aggressive antibiotic treatment. Individuals were identified as part of the cluster of those infected who had no contact with patients, suggesting a common transmission route in the fire station between employees. Further investigation found that the MRSA was community acquired and thought to be spread by surface contact in shared kitchen, bathroom and workout room spaces at the fire stations.

This study was undertaken to determine the frequency of MRSA contamination in fire stations in the Tucson area. Data on environmental MRSA contamination will aid the evaluation of possible transmission routes of the bacteria and potential risk of exposure among fire personnel.

### **Methods:**

Approximately 500 samples from 9 fire stations or administrative/training facilities were collected using laboratory swabs and sponges. Biochemical tests were used to identify *S. aureus*

isolates. MRSA isolates were then identified by growth on media containing methicillin-derived antibiotics. Samples were tested for heterotrophic plate count (HPC) bacteria and total coliforme, general hygiene indicators, and *E. coli*, a fecal indicator bacteria.

**Results and Discussion:**

The overall results for this study are presented in Figure 1. HPC counts greater than 1,000 colony forming units (cfu) are considered to be of poor hygiene. Average HPC counts on all sites resulted in failing of the hygiene test, suggesting that common surfaces need to be cleaned and disinfected more frequently.

The site that contained the highest HPC was the locker room, with 53,400 cfu/site, while the lowest was the transit bags containing 3,040 cfu/site, and MRSA was not isolated from either of these sites. The locker room contained the highest percentage of total and fecal coliforms, 100% and 20%, respectively and general office surfaces as well as kitchen surfaces also tested positive for the fecal indicator bacteria.

The highest percentage of *S. aureus* (20%) was found on the couch and the desks with the couch also containing the highest percentage of MRSA (20%). There was no *S. aureus* or MRSA found on the transit bags. A high percentage (65%) *S. aureus* isolates were confirmed to be MRSA. Overall, MRSA was detected to be present on 7% of all surfaces tested in the fire station environment.

**Figure 1: Results**

Sample Site	HPC (cfu/site)	Total Coliform (%)	Fecal Coliform (%)	<i>S. aureus</i> (%)	MRSA (%)	<i>S. aureus</i> that was MRSA (%)
Office	6,960	60	3	13	6	50
Couch	25,600	90	5	20	20	100
Remotes	4,360	40	0	10	5	50
Table	5,630	30	0	5	5	100
Kitchen	13,700	50	3	10	3	33
Desks	20,900	70	0	20	10	50
Classroom Equipment	4,970	30	0	10	10	100
Transit Bags	3,040	20	0	0	0	0
Locker Room	53,400	100	20	0	0	0
<b>Total Sites</b>		<b>54</b>	<b>3</b>	<b>10</b>	<b>7</b>	<b>65</b>

**Recommendations:**

Recommendations consist of a set of focused interventions. The first intervention is increased education in infection control. This may be implemented in a variety of ways such as posters and signs throughout the firehouse, a teacher instructed class or an Internet based self-pace lesson. MRSA is known to survive for days to weeks, and even months on inanimate objects, increasing the chance for exposure if the cycle of contamination is not broken. The need for frequent application of certified germ-killing products is expected to reduce the risk of MRSA exposure from contaminated surfaces. The EPA maintains a growing list of certified MRSA abatement products and further states that disinfectants, when used properly, can be expected to reduce

bacteria, including MRSA, by 99.9%. In a field trial it was shown that a disinfectant was able to reduce bacteria by 90-99%.

A third intervention is increased hand washing. Washing hands for 30-60 seconds has been shown to reduce bacteria and viruses on hands by 99-99.9%. Frequent handwashing should be encouraged throughout the work shift.

A combination of interventions aimed is likely the most effective approach. Based on our data, soft covers on fire station couches should be replaced with vinyl. Policies and incentives should be put into place focused on improving the hygiene of the station. Procedures should be implemented aimed at designating “clean” and “dirty” areas of the firehouse and increasing personal protection precautions when on higher risk calls. Interventions including the issue of guidelines for station cleaning procedures, handwashing and decontamination following patient contacts, and the use of personal protective equipment (i.e., gloves) have been reported to result in a dramatic reduction of MRSA related infections in the workplace.

### **Conclusions:**

Fire station personnel represent a unique population in that they are exposed to both HA- and CA-MRSA. MRSA contamination of surfaces at the station has been documented, where 7% of all targeted sites tested positive. The documented occupational exposures, including high- risk patient contacts and a communal lifestyle, pose an increased risk of exposure for all personnel. Focused interventions, including increased education in infection control, proper and frequent use of disinfectants, increased hand washing, and targeted policies can help to reduce the risk of exposure. Preventing the likelihood of cross contamination of the living quarters in the station with contaminated field equipment are recommended to reduce the risk of MRSA exposure in the fire station environment.

Respectfully submitted by:

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# MASTER MEMO

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**DATE:** October 25, 2006

**TO:** All Fire Personnel

**FROM:** Ed Nied  
Deputy Chief  
Health and Safety

**SUBJECT:** MRSA

As many of you are aware, MRSA is becoming increasingly prevalent throughout society. There is no way to completely protect you from the bugs responsible for this condition, however, complete, consistent PPE use as well as decontamination of equipment are two very good ways to drastically minimize your risk. The document below is created by Dr. Peate with input from the CDC, OSHA to hopefully answer some basic questions regarding MRSA.

## **Skin infection and MRSA Information for Public Safety Personnel**

### **MRSA. What is it?**

Staph is a type of bacteria. It may cause skin infections that look like pimples or boils. Skin infections caused by Staph may be red, swollen, painful, or have pus or other drainage. Some Staph (known as Methicillin-Resistant *Staphylococcus aureus* or MRSA) are resistant to certain antibiotics, making it harder to treat.

The information on this page applies to both Staph and MRSA

Anyone can get a Staph infection. People are more likely to get a Staph infection if they have:

- Skin-to-skin contact with someone who has a Staph infection.
- Contact with items and surfaces that have Staph on them
- Openings in their skin such as cuts or scrapes
- Crowded living conditions
- Poor hygiene

Methicillin-resistant *Staphylococcus aureus* (MRSA) has become a prevalent pathogen in the United States. Most Staph skin infections are minor and may be easily treated. Staph also may cause more serious infections, such as infections of the bloodstream, surgical sites, or pneumonia. Sometimes, a Staph infection that starts as a skin infection may worsen. It is important to contact your doctor if your infection does not get better.

This past year in Phoenix, ten firefighters required medical treatment for MRSA skin infections. Two were so severe they need surgical debridement; one required a skin graft. In the Tucson area there have been seven MRSA cases in firefighters.

## **How do you get MRSA?**

The main mode of transmission of MRSA is via hands which may become contaminated by contact with a) colonized or infected patients, b) colonized or infected body sites of the personnel themselves, or c) devices, items, or environmental surfaces contaminated with body fluids containing MRSA. Standard Precautions, as described in the "Guideline for Isolation Precautions in Hospitals" (Infect Control Hosp Epidemiol 1996;17:53-80), should control the spread of MRSA in most instances

## **Who has MRSA?**

Up to a third of firefighters and health care workers are colonized by MRSA. Why don't they get sick? The answer is their immune system works to protect them. Sometimes a break in the skin can cause MRSA to ambush you --- cause an infection even in a healthy individual.

## **If someone has MRSA why are they allowed to be at work? Aren't they sick?**

First, they are not contagious under most circumstances (open wound would be one exception). Second, if every firefighter with MRSA on their skin were off work, one third of our work force would be at home unnecessarily.

**Isn't it true that the "flu" is more dangerous than MRSA? If so why do my co-workers come to work when they are coughing? I'm more worried about catching something from them than a co-worker with MRSA who has no symptoms.**

Flu kills 25,000 to 35,000 every year in the US. Its chief symptoms are cough, fever, chills and body aches. Do not come to work if you have those symptoms, and consider getting a flu immunization by the last week in October every year.

## **Why do people with MRSA sometimes get it again, or have to be treated with more than one antibiotic?**

Same reason people get a cold more than once, or contract the flu every year. The environment is filled with microbes looking for a home.

## **What are standard MRSA precautions:**

### **1) Treat skin wounds and infections aggressively.**

Remember the solution to pollution is dilution. Wash any wound with large amount of water for at least 30 seconds. Use antibiotic ointments and bandages. **If any redness, pus, swelling, red streaks, fever or chills noted seek medical attention immediately.**

- Keep your cuts and scrapes clean and cover them with bandages
- Do not touch other people's cuts or bandages
- Do not share personal items like towels or razors

### **2) Handwashing**

Wash your hands often or use an alcohol-based hand sanitizer. Be certain to wash hands after touching blood, body fluids, secretions, excretions, and contaminated items, whether or not gloves are worn. Wash hands immediately after gloves are removed, between patient contacts, and when otherwise indicated to avoid transfer of microorganisms to other patients or environments. It may be necessary to wash hands between tasks and procedures on the same patient to prevent cross-contamination of different body sites.

### **3) Gloving**

Wear gloves (clean nonsterile gloves are adequate) when touching blood, body fluids, secretions, excretions, and contaminated items; put on clean gloves just before touching mucous membranes and nonintact skin. Remove gloves promptly after use, before touching noncontaminated items and environmental surfaces, and before going to another patient, and wash hands immediately to avoid transfer of microorganisms to other patients or environments.

### **4) Masking**

Wear a mask and eye protection or a face shield to protect mucous membranes of the eyes, nose, and mouth during procedures and patient-care activities that are likely to generate splashes or sprays of blood, body fluids, secretions, and excretions.

### **5) Gowning**

Wear a gown (a clean nonsterile gown is adequate) to protect skin and prevent soiling of clothes during procedures and patient-care activities that are likely to generate splashes or sprays of blood, body fluids, secretions, and excretions or cause soiling of clothing.

### **6) Appropriate device handling**

Handle used patient-care equipment soiled with blood, body fluids, secretions, and excretions in a manner that prevents skin and mucous membrane exposures, contamination of clothing, and transfer of microorganisms to other patients and environments. Ensure that reusable equipment is not used for the care of another patient until it has been appropriately cleaned and reprocessed and that single-use items are properly discarded.

### **7) Appropriate handling of laundry**

Handle, transport, and process used linen soiled with blood, body fluids, secretions, and excretions in a manner that prevents skin and mucous membrane exposures, contamination of clothing, and transfer of microorganisms to other patients and environments.

**8) Keep tetanus booster up to date.** Tetanus isn't MRSA, but it kills a dozen previously immunized Americans each year. Routine booster is every ten years. For dirty, deep or contaminated wounds booster is every five years.

For further information contact:

[www. CDC.gov](http://www.CDC.gov)

**MM# 056**

**DATE: 10/25/06**