

## Infection Control



### Why do I need to concern myself with Infection Control?

Q) Isn't there a department here that handles that?

A) Yes, there is a department whose responsibility is to oversee Infection Control for the health system, but it is impossible for the handful of people in the department to control infections.

We need you!



### How can I help?


Q) How can I help?

A) The number one way to help protect our patients, yourself and your loved ones is to wash your hands often.



### But I don't work in Patient Care...

Q) I don't work in a patient care area. What does this have to do with me?

A) You work in an environment that has the potential to spread germs. Think of the public bathroom and varying personal habits... 

Germs survive on dry surfaces. Germs in the healthcare setting have been around the block a few times and have gotten street smart so that powerful antibiotics won't kill them.



### What can I do?

Get vaccinated against:

- Hepatitis B (for healthcare workers with potential for blood or body substances exposure as a part of their job duties)
- Influenza
- Mumps, Rubella, Measles
- Tetanus and Pertussis (whooping cough)



### What can I do?

■ Use the Respiratory Risk Assessment to screen patients for potential TB, Avian Flu, Pandemic Flu, etc. and follow the steps on the assessment to protect everyone

■ Health care workers can:

- ◆ Encourage removal of invasive devices as soon as patient condition permits (central lines, ventilator)
- ◆ Vaccinate your patients with flu and pneumonia vaccines as appropriate
- ◆ Give prophylactic antibiotics as ordered within an hour of surgical incision time
- ◆ If surgical hair removal is ordered - clip don't shave



### What can I do?

Don't forget to use personal protective equipment (PPE) to protect yourself from exposure to blood, body substances or other infectious substances.

Examples:

- ◆ Gloves for touching moist, wet body substances
- ◆ Face shield covering your eyes, nose and mouth to protect from splashes of body substances
- ◆ Gown covering your body and arms to protect from splashes of body substances
- ◆ Follow isolation precautions



### What can I do?

Make sure you use safe practices when handling contaminated sharps.

- ◆ Don't recap or manipulate the needle by hand. If you have to remove the needle use mechanical means to do so.
- ◆ Dispose of sharps in a sharps container as soon as use is completed and patient safety permits.
- ◆ Don't hide reusable sharps under towels when returning to CSS.



### Put things in their proper place

■ Regulated medical waste such as container holding 20 ml or more of body fluid (chest drainage system) that can not be safely poured into the sewage system is placed in the bio-hazardous box for incineration by contracted company

■ Place patient care waste such as bandage with dried caked on blood, gloves, IV bags, and empty urinary drainage bags into clear plastic bag at the point of waste generation (patient's room).



### Clean patient care instruments or equipment properly

If item touches non-intact skin or mucous membranes:

- ◆ it must be sterilized if it enters a sterile body site
- ◆ or if it enters the GI, GU, or respiratory tract at a minimum it must receive high level disinfection by trained and competent staff

If the item touches intact skin, then it is cleaned with disinfectant such as Caviwipes.

- ◆ if visible contamination is present use a detergent to remove the contamination prior to using the disinfectant.



### What can I do?

You can also use engineering controls to protect yourself from exposure to infections.

For example:

- ◆ Use the splash shield attached to the work area in Lab
- ◆ Use the sharps containers for disposal of sharps
- ◆ Use the safety devices on needles, syringes, scalpels, etc.
- ◆ Use negative pressure rooms for airborne disease



### What can I do?

Lastly, wear your N95 respirator when entering airborne isolation rooms (AFB Precautions, Airborne Precautions, Special Airborne Precautions)

- ◆ Remember you must be fit tested to check for leaks prior to ever using a respirator. You should know if you've been fit tested because you look like a Martian wearing a space hood. If this doesn't sound familiar check with your supervisor.



### **What if I get stuck with a contaminated needle?**

If you get stuck with a contaminated needle:

- ◆ First wash the exposed area with soap and water. If you got a splash in your eyes, rinse with water.
- ◆ Then report to your supervisor and complete on-line lab requests for the source of the exposure to be tested for HIV, Hepatitis B & C.
- ◆ Call Employee Health. If the office is closed call Care Link at 5465.



### **What if I get stuck with a contaminated needle?**

Time is of the essence. Anti-HIV drugs can decrease risk of acquiring HIV if taken within the first 24 hours of exposure. For optimal benefit these should be taken within the first 2 hours of exposure.



### **What Can Everyone Do?**

Get your flu shot if you meet the qualifications for being at risk. These change from time to time depending on supply and demand.

Use Respiratory Etiquette which means cover your mouth and nose when you cough or sneeze and wash your hands.



### **What Can Everyone Do?**

If you develop symptoms of a contagious disease report to Employee Health prior to returning to work.

You will need to be cleared by Employee Health so that you do not become a “Typhoid Mary”. See the list on the next page.



### **Signs that you may be a “Typhoid Mary”**

You have:

- ◆ Diarrhea
- ◆ Open or draining wounds
- ◆ Rash, particularly with fever
- ◆ Fever > 101° F and have traveled outside the country in the last 10 days or had exposure to live poultry
- ◆ Productive cough > 3 weeks or coughing up blood
- ◆ Conjunctivitis (red, irritated eyes with discharge)
- ◆ Head lice, scabies
- ◆ Strep sore throat



### **Why is hand washing so important?**

Hand washing is the single most important method to prevent the spread of infection.

Our hands have the most contact with our patients and ourselves giving ample opportunity to pass and share germs.

**Why is hand washing so important?**

If hand washing is so important, why do we always see such low compliance?

- ◆ Various reasons have been given for this, but if germs were fluorescent, it might help!

**Why do we have so much MRSA and VRE?**

MRSA (Methicillin Resistant *Staph Aureus*) and VRE (Vancomycin Resistant *Enterococcus*) are two very familiar resistant bugs that we have seen increase over the past several years.

- ◆ There are several reasons why this has happened. We have patients with weakened immune systems that have invasive devices and procedures receiving strong antibiotics. These bugs have gotten street smart and learned how to outsmart the antibiotics. So the more powerful antibiotics we use, the more resistance the bugs develop. **And we fail to wash our hands 50% of the time.** It's a vicious cycle.

**MRSA/VRE & The Iceberg Effect**

Q) What is the iceberg effect?

A) It is when you only see the danger that is above water, but the real danger is below the water where you can't see it.

**MRSA/VRE & The Iceberg Effect**

Q) What does the iceberg effect have to do with MRSA & VRE?

A) There are lots of people who are colonized (carriers) and can pass the resistant bug on to another person.

**The Iceberg Effect**

**Infected**  
The germs are causing damage to cells as evidence by fever, redness, puss, swelling, etc.

**Colonized**  
Germs are happily residing in the host without causing any harm, but can be passed on to other hosts.

**Fluorescent bugs anyone?**

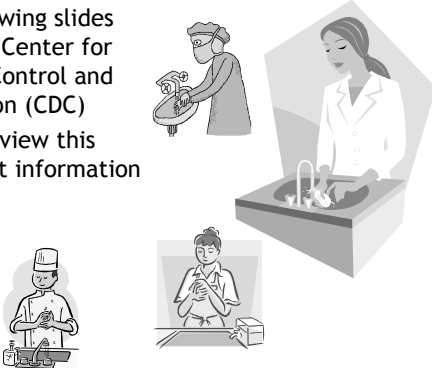
**The Inanimate Environment Can Facilitate Transmission**

X represents VRE culture positive sites

~ Contaminated surfaces increase cross-transmission ~  
Abstract: The Risk of Hand and Glove Contamination after Contact with a VRE (+) Patient Environment. Hayden M, ICAAC, 2001, Chicago, IL.

## Some details on hand hygiene

The following slides are from Center for Disease Control and Prevention (CDC)  
Please review this important information

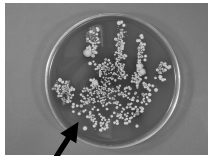


## Many personnel don't realize when they have germs on their hands

Nurses, doctors and other healthcare workers can get 100s or 1000s of bacteria on their hands by doing simple tasks, like:

- pulling patients up in bed
- taking a blood pressure or pulse
- touching a patient's hand
- rolling patients over in bed
- touching the patient's gown or bed sheets
- touching equipment like bedside rails, over-bed tables, IV pumps

How can this happen?

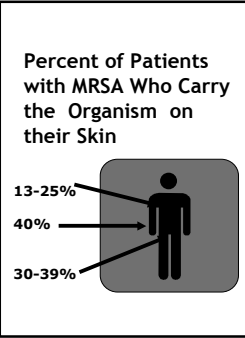


Culture plate showing growth of bacteria 24 hours after a nurse placed her hand on the plate

## Patients often carry resistant bacteria on their skin

Patients with resistant bacteria like methicillin-resistant *S. aureus* (MRSA) or vancomycin-resistant enterococci (VRE) often carry the organism on many areas of their skin, even when they don't have any wounds or broken skin.

The Figure shows the percent of patients with methicillin-resistant *S. aureus* (MRSA) who carry the organism on the skin under their arms, on their hands or wrists, or in the groin area.



Percent of Patients with MRSA Who Carry the Organism on their Skin

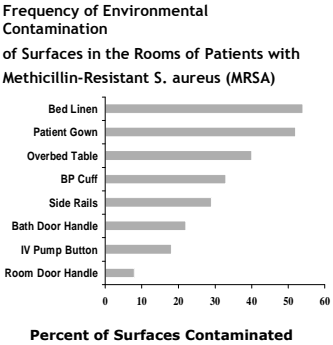
- 13-25%
- 40%
- 30-39%

## Here's another way healthcare workers contaminate their hands

Resistant bacteria on the skin or in the gastrointestinal tract of patients can often be found on common items.

(see chart) →

Healthcare workers can contaminate their hands by touching environmental surfaces near affected patients.



Frequency of Environmental Contamination of Surfaces in the Rooms of Patients with Methicillin-Resistant *S. aureus* (MRSA)

Surface	Percent of Surfaces Contaminated
Bed Linen	50
Patient Gown	45
Overbed Table	40
BP Cuff	35
Side Rails	30
Bath Door Handle	25
IV Pump Button	20
Room Door Handle	15

Percent of Surfaces Contaminated

## How can we overcome problems associated with handwashing?

Since washing hands frequently with soap and water is:

- inconvenient
- time-consuming
- often causes skin irritation and dryness

Experts have suggested that hospitals, extended care facilities, and home health agencies develop new strategies for improving hand hygiene among healthcare workers.

We need to make it easier for you to clean your hands quickly, with a minimum of effort and skin irritation.

One way to accomplish these goals is to clean your hands with an alcohol-based handrub (a gel, rinse or foam).

## Using an alcohol-based handrub takes less time than handwashing

One study found it took ICU nurses an average of 62 seconds to go to a sink, wash and dry their hands, and return to patient care activities.

However, in the same hospital, it was estimated that if an alcohol-based handrub was available at each patient's bedside, it would take nurses about 15 seconds to clean their hands.

So, one of the advantages of using alcohol hand rubs is that they require much less time to use.

### **Are alcohol-based handrubs really effective?**



More than 20 published studies have shown that alcohol-based handrubs are more effective than either plain soap or antibacterial soaps in reducing the number of live bacteria on the hands.

### **Won't frequent use of alcohol dry out my skin?**

No!

In fact, studies have proven that nurses who routinely cleaned their hands between patients by using a modern alcohol-based handrub had **less skin irritation** and dryness than nurses who washed their hands with soap and water.

Modern alcohol-based handrubs contain skin conditioners (emollients) that help prevent the drying effects of alcohol.

### **When should you wash your hands with soap and water?**

Wash your hands with plain soap and water, or with antimicrobial soap and water if:

- your hands are visibly soiled (dirty)
- your hands are visibly contaminated with blood or body fluids
- before eating
- after using the restroom
- the patient has or is suspected of having *Clostridium difficile*

### **Here are some tips on how to wash your hands effectively**

When washing hands with plain or antimicrobial soap:



- wet hands first with water (avoid HOT water)
- apply 3 to 5 ml of soap to hands
- rub hands together for at least 15 seconds
- cover **all surfaces** of the hands and fingers
- rinse hands with water and dry thoroughly
- use paper towel to turn off water faucet

### **When should you use an alcohol-based handrub?**

If hands are *not* visibly soiled or contaminated with blood or body fluids, use an alcohol-based handrub for routinely cleaning your hands:

- before having direct contact with patients
- after having direct contact with a patient's skin
- after having contact with body fluids, wounds or broken skin
- after touching equipment or furniture near the patient
- after removing gloves

### **Here are some tips on how to use an alcohol handrub**

If you are using an alcohol hand rub:

- Apply 1.5 to 3 ml of an alcohol foam, gel or rinse to the palm of one hand, and rub hands together
  - Foam should be the size of a golf ball
- Cover all surfaces of your hands and fingers
- Include areas around/under fingernails
- Continue rubbing hands together until alcohol dries

If you have applied a sufficient amount of alcohol hand rub, it should take **at least 10 -15 seconds** of rubbing before your hands feel dry.



### **Here are some more tips on how to use an alcohol-based handrub**

If after cleaning your hands 5 to 10 times with an alcohol-based handrub, you feel a “build-up” of emollients on your hands, wash your hands with soap and water.

If you clean your hands with an alcohol-based handrub before putting on gloves, make sure the alcohol has dried completely before putting on gloves.



### **Surgical Hand Hygiene/Antisepsis**

Use either an antimicrobial soap or alcohol-based hand rub.

Antimicrobial soap: scrub hands and forearms for length of time recommended by manufacturer.

Alcohol-based handrub: follow manufacturer’s recommendations. Before applying, pre-wash hands and forearms with non-antimicrobial soap.

Guideline for Hand Hygiene in Health-care Settings. *MMWR* 2002; vol. 51, no. RR-16.



### **Fingernails and Artificial Nails**

Here are some things to keep in mind:

- Natural nail tips should be kept to ¼ inch in length
- Artificial nails should not be worn when having skin-to-skin contact with patients or items that touch patients.

Guideline for Hand Hygiene in Health-care Settings. *MMWR* 2002; vol. 51, no. RR-16.

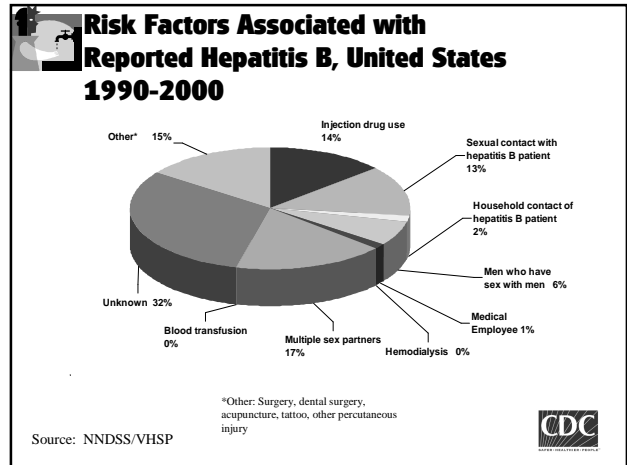
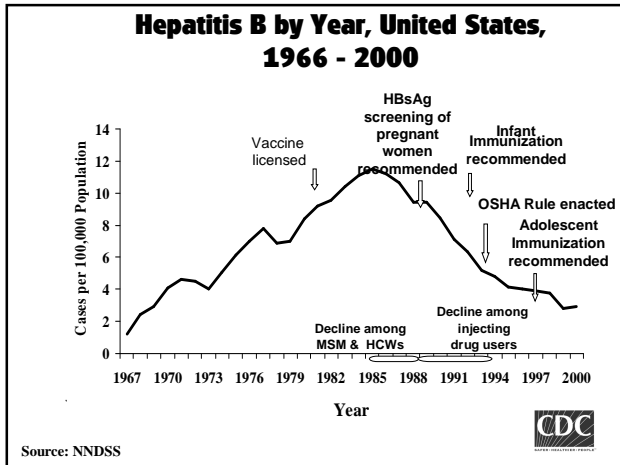


### **Statistics Time! Don’t worry it’s not on the test!**

OSHA requires that you are updated on the epidemiology of certain diseases. The following slides are for your scanning enjoyment. If you have any questions, please call Infection Control at 6818 or after hours CareLink at 5465.

Thank you!



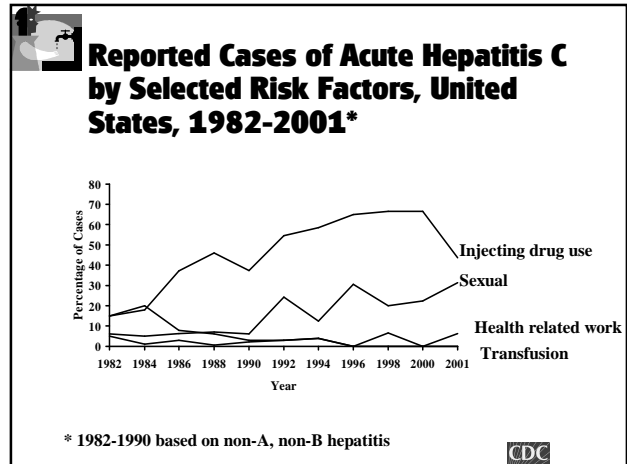


### Exposures Known to Be Associated With HCV Infection in the United States

Some Exposures known to be associated with HCV infections in the US:

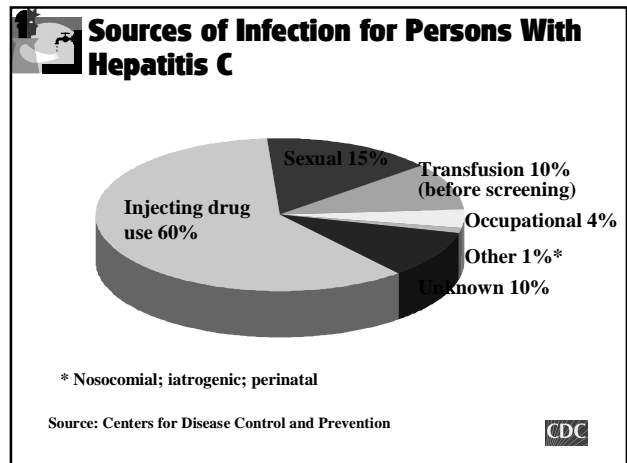
- Injecting drug use
- Transfusion, transplant from infected donor
- Occupational exposure to blood
  - ◆ Mostly needle sticks
- Iatrogenic (unsafe injections)
- Birth to HCV-infected mother
- Sex with infected partner
  - ◆ Multiple sex partners

CDC



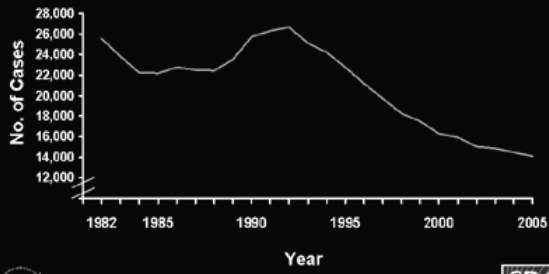
### Occupational Transmission of HCV

- Inefficient by occupational exposures
- Average incidence 1.8% following needle stick from HCV-positive source
  - ◆ Associated with hollow-bore needles
- Case reports of transmission from blood splash to eye; one from exposure to non-intact skin
- Prevalence 1-2% among health care workers
  - ◆ Lower than adults in the general population
  - ◆ 10 times lower than for HBV infection





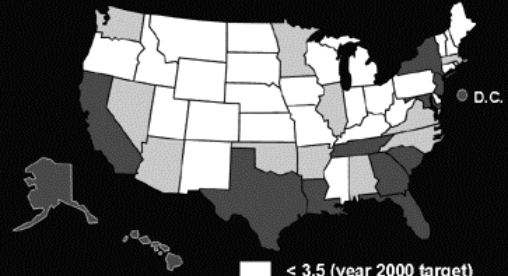
## Reported TB Cases\* United States, 1982–2005



\*Updated as of March 29, 2006



## TB Case Rates,\* United States, 2005



- ≤ 3.5 (year 2000 target)
- 3.6–4.8
- > 4.8 (national average)



\*Cases per 100,000.



You are now ready to take the test.