A faded background image of a Grady Memorial Hospital ambulance. The ambulance is white with 'Grady Memorial Hospital' written on the side. A person in a dark uniform and cap is standing next to the ambulance, and another person in a white protective suit is visible near the open back door. The scene is outdoors.

Infection Control and Prevention: Protecting Yourself, Protecting Your Patients

Grady Health System



Protecting Yourself

- Preventing exposure to bloodborne pathogens
- What to do if exposure occurs
- Preventing exposure to TB (for yourself, other HCWs, and patients)

Number of Persons in US Infected with Bloodborne Viruses

- HIV 650,000-800,000
- Hepatitis B 1 – 1.25 million
- Hepatitis C 3-4 million

OSHA Bloodborne Pathogens Standard: Hospital/Employer Requirements

- Identify tasks that carry risks of exposure to employees
- Develop a written exposure control plan including
 - Universal precautions
 - Work practices controls
 - Sharps safety
 - Medical waste trash and linen management
- Define and monitor compliance
- Provide Hepatitis B vaccine at no cost
- Use safety engineered sharps devices & needleless systems
- Provide annual education, at no cost

Requirements
that should have
a direct impact on
your experience
as a HCW.



What is Meant by “Blood or Body Fluid Exposure”?

- **Sharp object injury (aka NEEDLESTICK)**
 - Percutaneous injury with a used sharps device (needle, scalpel, lancet, etc.) or patient fingernails or teeth
 - Needlesticks, cuts, scratches, bites

OR

- **Other exposures (aka splashes and spills)**
 - Patient blood, tissue or potentially infectious* body fluids make contact (splash, spill, etc) with a healthcare worker's:
 - mucous membranes
 - or
 - non-intact skin

What Body Fluids are “Potentially Infectious”?

- Blood and blood products
- Any visibly bloody body fluid
- Semen and vaginal secretions
- Cerebrospinal fluid
- Synovial fluid
- Pleural fluid
- Peritoneal fluid
- Pericardial fluid
- Amniotic fluid
- Breast milk

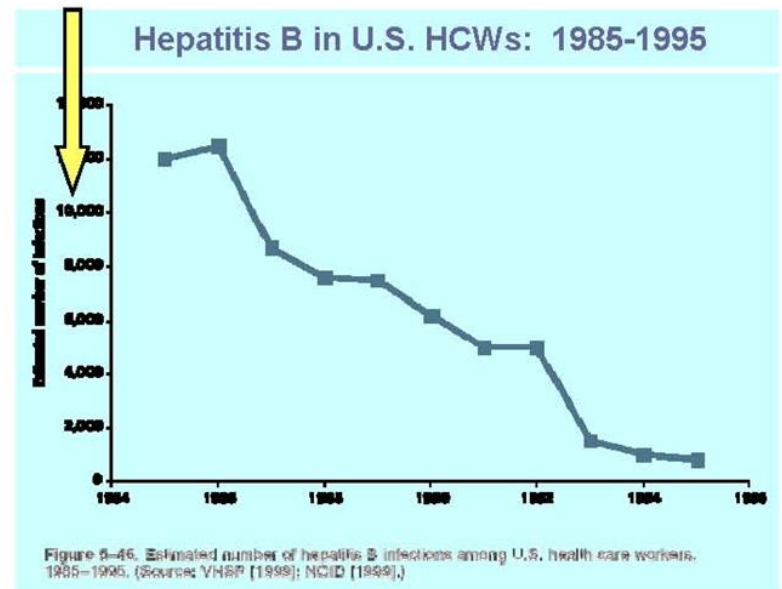
Bloodborne Pathogens: Risks and Prevention Measures

Virus	Risk of transmission from needlestick	Pre -exposure prevention measures
Hepatitis B	5 – 45%	Vaccine Safer work practices
Hepatitis C	1 – 3%	Safer work practices
HIV	0.3%	Safer work Practices

Hepatitis B Vaccine

1982: Vaccine introduced

- Hepatitis B vaccine is available in Occupational Health Services and Student Health Services
 - 3 doses of vaccine are required (month 0, month 1, month 5)
- The vaccine is 92% effective in healthy adults.
- If you have not been vaccinated against Hepatitis B, it is highly recommended that you get vaccinated.



Prior to the introduction of the Hepatitis B vaccine, acute Hepatitis B was a common occupational illness among HCWs.

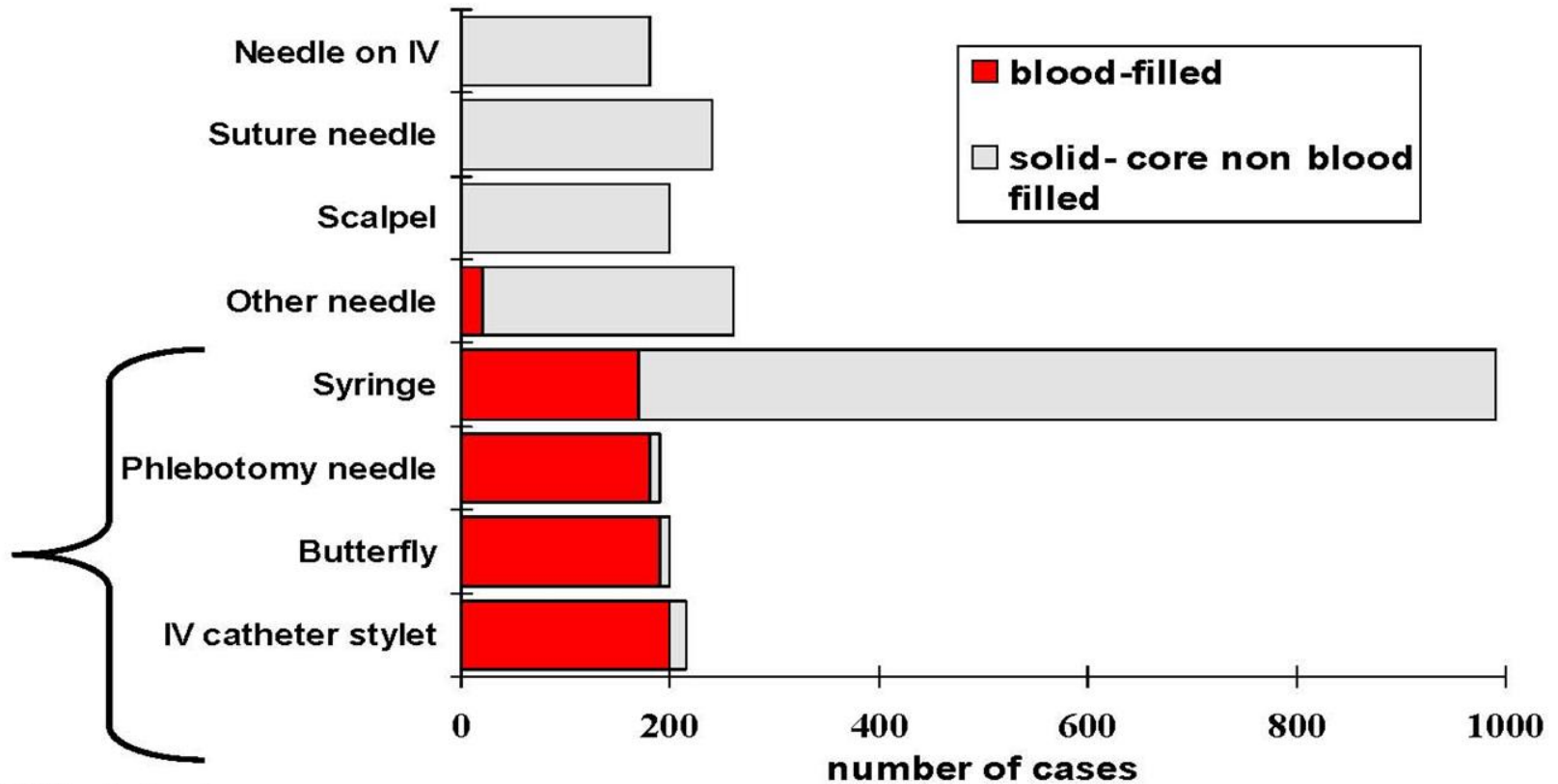
Risk of HIV Infection to HCW by Exposure Route

- Percutaneous 0.3%
- Mucous Membrane $\leq 0.1\%$
(eyes, mouth, nose)
- Non Intact Skin $< 0.1\%$

What Types of Exposures are Considered Highest Risk?

- Injury with hollow-bore needles used in patient's vein or artery
- Exposures to blood with a high viral titer
- Deep injury
- Exposure to large quantity of blood

Devices Causing Sharps Injuries



Blood-filled device injuries are highest risk

US EPINet Data *55 hospitals 3,067 cases



Preventing Exposure to Bloodborne Pathogens:

- **Universal precautions**
- Work practices controls
- Sharps safety

Standard (Universal) Precautions

- Consider all blood and body fluids as potentially infectious
- Use appropriate **barrier precautions*** to avoid direct contact with all blood or body fluids from any patient
- For all patients wear **gloves*** when:
 - touching blood, body fluids, mucous membranes, or non- intact skin
 - drawing blood, starting IV catheters, etc.
- Use gloves once, dispose of, wash hands
- **Gown, mask, eye protection*** where appropriate

* PPE – see next slide

PPE: Personal Protective Equipment

- “Specialized clothing or equipment worn by an employee for protection against infectious materials” (OSHA)
- PPE can be considered a first line of defense against blood and body fluid exposures
- **Gloves** – bare hands should never touch body fluids, mucous membranes or open skin lesions
- **Mask and goggles or a face shield** – prevent splash exposures to mucous membranes (eyes, nose, mouth)
- **Gowns** – when there is a possibility of exposure to a large volume of patient body fluid (i.e. trauma bay, OR), gowns impervious to liquid may be worn

Rules To Follow with PPE:

- Always wear PPE when there is a possibility of being exposed to infectious materials
- Remove & replace PPE that is torn or punctured
- Remove PPE before leaving the work area

Sharps Injuries Occur Due To:

- Improper activation of safety mechanisms
- Passing or transferring equipment
- Recapping needles
- Accessing full sharps containers
- Collisions with co-workers
- Sharps left behind: in/on laundry, mattresses, tables, trays or other surfaces

Be Prepared: Before beginning a procedure...

- 1. Organize equipment at the point of use.**
- 2. Have adequate lighting and work space.**
- 3. Keep sharps pointed away from the user.**
- 4. Locate the sharps disposal container ...or have nearby.**
- 5. Assess patient's cooperativeness and get help if necessary.**

Be Aware: During a Procedure...

1. “Keep your eye on the ball” – know where the sharp point is at all times
2. Keep sharps pointed away from the user and others
3. Never pass sharps hand to hand: use predetermined neutral zone
4. Alert others when sharps are in motion
5. Activate the safety feature of engineered sharps injury prevention devices
 - as soon as the procedure is completed
 - observe audio or visual cues that the feature is locked in place

Preventing Injuries in the Procedure Room

- Double gloving
- Neutral zone

Double Gloving is Recommended

- Two pairs of gloves offer a high degree of protection because
 - corresponding punctures of both gloves is rare
 - reduces risk of exposure by as much as 87%
 - volume of blood on suture needle is reduced by as much as 95%
 - prevents prolonged occult hand contact with patient blood

A tip from Dr. Barbara Pettit (Professor of Surgery): For greatest freedom of movement wearing 2 pair of gloves, use a slightly larger pair of gloves as the inside layer.

Neutral Zone

- A location on the field where sharps are placed from which HCWs can retrieve them
 - Need for hand to hand passing is limited
 - Use when:
 - Sharp device will be used more than once
 - Sharp device does not have a safety mechanism to cover the sharp point

Sharps Containers



Clean Up and Dispose With Care: During Clean-Up...

- Be accountable for the sharps you use.
 - Check procedure trays, waste materials, and bedding for exposed sharps before handling
 - Look for sharps/equipment that may have been left behind inadvertently
 - Dispose of sharps in SHARPS CONTAINERS

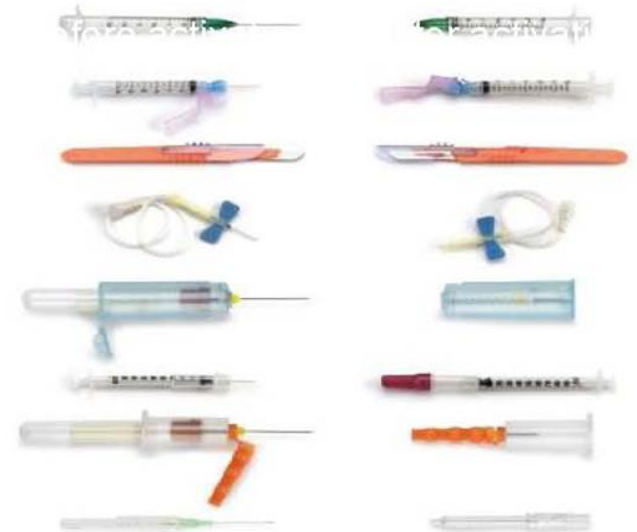
Clean Up and Dispose With Care: While Disposing of a Sharp...

1. Inspect container
2. **Keep hands behind the sharp tip**
3. Never put hands or fingers into the sharps container.
4. If you are disposing of a sharp with attached tubing:
 - Be aware that tubing attached to a sharp can recoil and lead to injury.
 - Maintain control of both tubing and the device during disposal.

Safety Devices: Things You Need to Know

- Most safety features are not passive...
 - the user must activate the safety mechanism
- It is not always obvious how some safety features work....
 - training is necessary
- Safe work practices are important...
 - safety devices do not prevent all injuries
- Safety devices are not available for all tasks

Devices with Engineered Sharps Injury Prevention Features



Safer Sharps Device Engineering

- Safer sharps devices are designed to cover/isolate/eliminate the sharp part directly after use
- Most common strategies:
 - Something slides or swings to cover the sharp part
 - The sharp is retracted into the device
- How the mechanism is activated:
 - Sliding part
 - Swinging part
 - Push button

You are Part of the Prevention Process When You:

- Report an injury
- Properly use sharps safety features
- Participate in education and training efforts
- Participate in surveys and device evaluations
- Assist and support colleagues in safer practices
- Report sharps injury hazards and near misses

Sharp Object Injury & Blood/ Body Fluid Exposure by HCW Occupation: Grady

Occupation	Grady 2009 (n=277)
House Staff	77 (28%)
RN/LPN	88 (32%)
Attending MD	15 (5%)
Medical Student	17 (6%)
Paramedic/EMT	27 (10%)
Surgery Tech	8 (3%)
CNA	1 (0%)
Mid-Level Provider	6 (2%)
Phlebotomist	7 (3%)
Housekeeper	4 (1%)
Respiratory Therapist	0 (0%)
Other	27 (10%)

Where Do Sharps Injuries Occur?

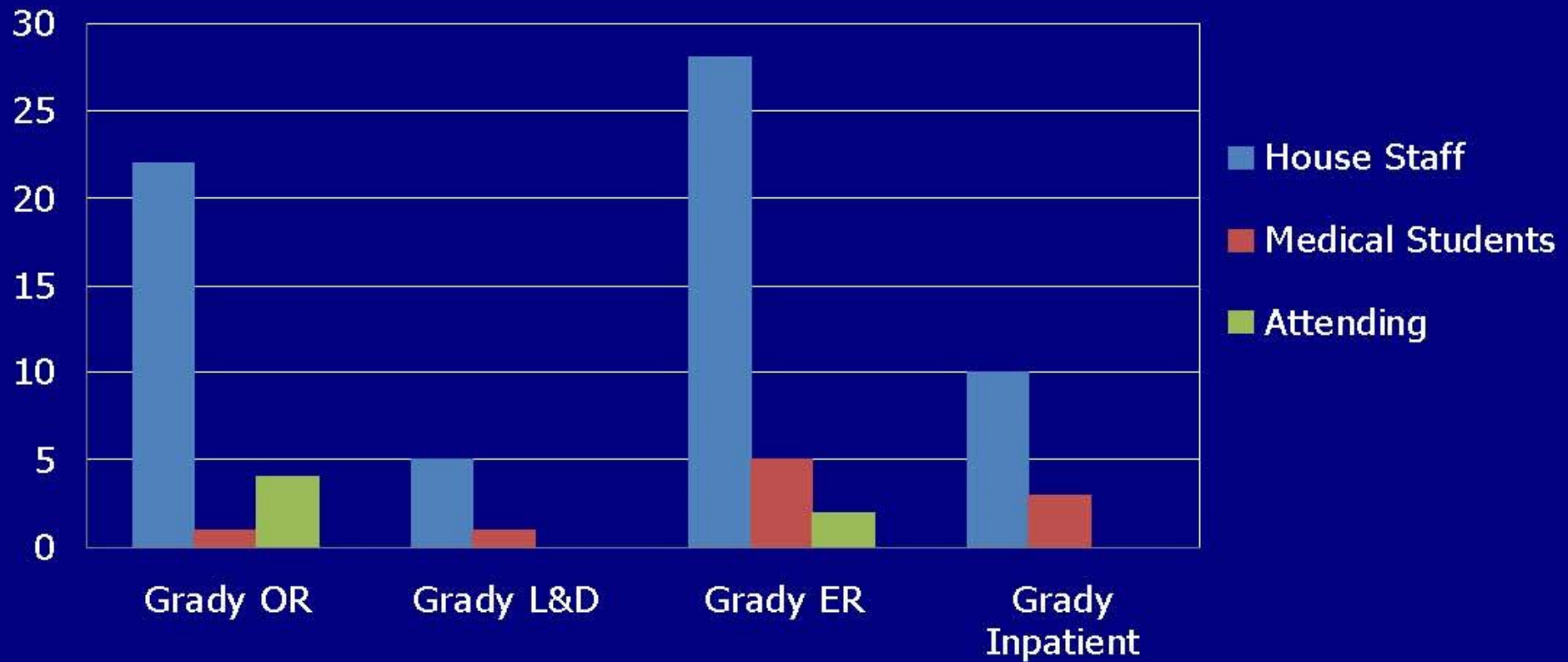
	National Data*	Grady 2009
Patient room (inpatient)	39%	41%
Operating room	27%	18%
Outpatient	8%	9%
ER	8%	17%
Laboratory/ Pathology	5%	5%

HIV, Hepatitis C (HCV), and Hepatitis B (HBsAg) Status of Identified Source Patients, 2008

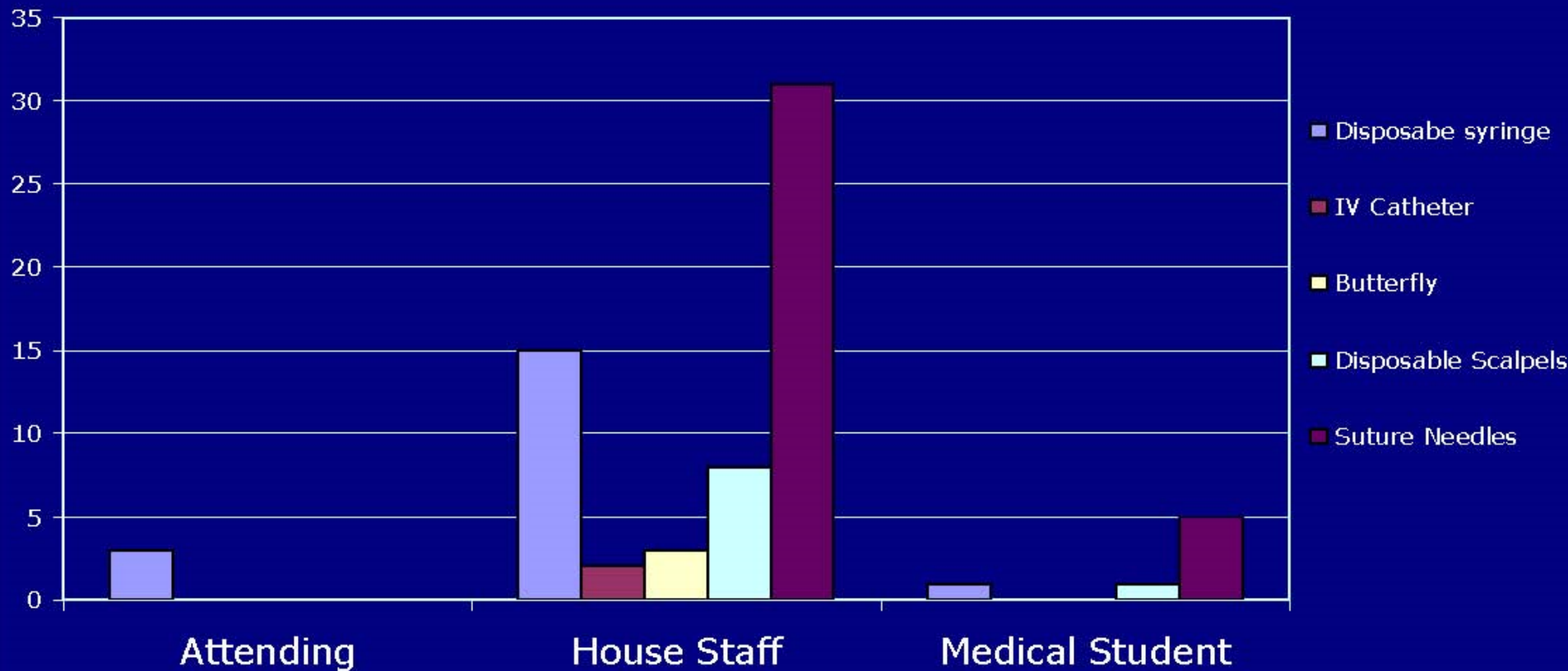
	HIV + n (%)	HCV+ n (%)	HBsAg+ n (%)	Any +* n (%)
Grady (n=244)	40 (17)	26 (11)	5 (2)	64 (26)

*** Any seropositivity**

Where the Exposure Occurred by Job



Needle or Surgical Device by Occupation



Bloodborne Pathogen Exposure - What to do If you have an exposure or think you might have had an exposure:

- Report it
- Report it even if you're not sure it's really an exposure
– it's not your job to make this judgement
- Report it right away –
 - time is of the essence in managing exposures to HIV
 - if medications are indicated they should be started within four hours of an exposure
- Report it!

HCW Blood/Body Fluid Exposures

What to Do:

Step 1: Local Care

- Wash puncture wounds and cuts with soap and water
 - If visible defect, wound should be irrigated with sterile saline
- Exposed oral and nasal mucosa should be decontaminated by vigorous flushing with water
- Eyes should be irrigated with clean water, saline or sterile irrigants

HCW Blood/Body Fluid Exposures

What to Do:

Step 2: Immediately Report the Exposure

- During week-day hours:
 - **Employee/Occupational Health Services** at the hospital where exposure occurred
- During nights/weekends/holidays:
 - **Call 404-616-STIX and then report to PACE zone in emergency room**

What Will Happen After You Report?

- Information will be obtained from you
 - Description of the exposure
 - Confirm the event could confer risk of blood borne pathogen exposure
 - Provide valuable information about how exposure events occur
 - Baseline laboratory tests
- Source patient testing
 - Serology tests for the source patient will be obtained including a rapid HIV test
 - It is not your job to arrange source patient testing – this will be done for you by the exposure management team at the hospital
 - These tests will determine whether or not you could have been exposed to HIV, Hep C or Hep B

What Lab Tests Are Run For The Exposed Healthcare Worker?

- Serology to detect antibody for
 - HIV, HBV & HCV
- Pregnancy test (for females)

All lab results and exposure information is kept confidential by Employee/Occupational Health Services.

Bloodborne Pathogens: Post-exposure interventions

Virus	Immune Globulin?	Medications?
Hepatitis B	Yes	No – not necessary
Hepatitis C	No	Yes – if acute infection is detected
HIV	No	Yes

Post-Exposure Management: Hepatitis B

- Hepatitis B Immune Globulin (HBIG)
 - administered following an exposure if the HCW has not completed vaccination for HBV
 - HBIG is 85-90% effective; should be given within 96 hours of exposure
- For HCWs that have not completed vaccination, Hepatitis B vaccine series will be continued or initiated following an exposure – to ensure protection from future exposures.
- Anti-viral medications are not used in the management of Hepatitis B exposures
- The availability of pre-exposure vaccination and post-exposure HBIG have virtually eliminated occupational Hepatitis B transmission.

Post-Exposure Management: Hepatitis C

- Follow closely to detect new infection
 - Periodic tests for viral RNA, antibody and liver enzymes
- Treat with anti-viral regimen (interferon-based) if infection is detected
- Treatment of acute hepatitis C is much more successful than treatment of chronic hepatitis C

Post-Exposure Management: HIV

- “Prophylactic” treatment with anti-HIV medicines is recommended following exposure to HIV-infected blood or body fluids
- In a large case-control study post-exposure prophylaxis was associated with an 80% decreased risk of HIV transmission.
- It is important to begin prophylactic treatment as soon as possible after the exposure (within 4 hours if possible)
- Details about the treatment:
 - 2 or 3 drug regimen based on risk of injury
 - Regimen may be adjusted based on source patient virus and treatment history
 - 4 week course of therapy

For more information: <http://www.cdc.gov/mmwrR/preview/mmwrhtml/rr5409a1.htm>



Post-Exposure Management: Laboratory Follow-up of Exposed HCWs

- Indicated for exposures to HIV and/or Hepatitis C
- For HIV: antibody tests at 6 wks, 3 mo, 6 mo after exposure
- For Hep C: viral RNA, antibody, and liver enzymes at 6 wks, 3 mo, and 6 mo after exposure

Why Report?

- Because you will worry if you don't
 - If you do report, but you'll have some support while you feel anxious
 - Our psychologist contacts every person who reports an exposure to check on their emotional well-being
- For your physical safety and health
 - Specific interventions may be indicated that can decrease the risk of the exposure
- For your financial / legal protection
 - Very unlikely that virus transmission would occur, but the impact of such a transmission event would be even worse without documentation to prove occupational acquisition
- To provide information that can be used in developing new prevention messages

Protecting Your Patients

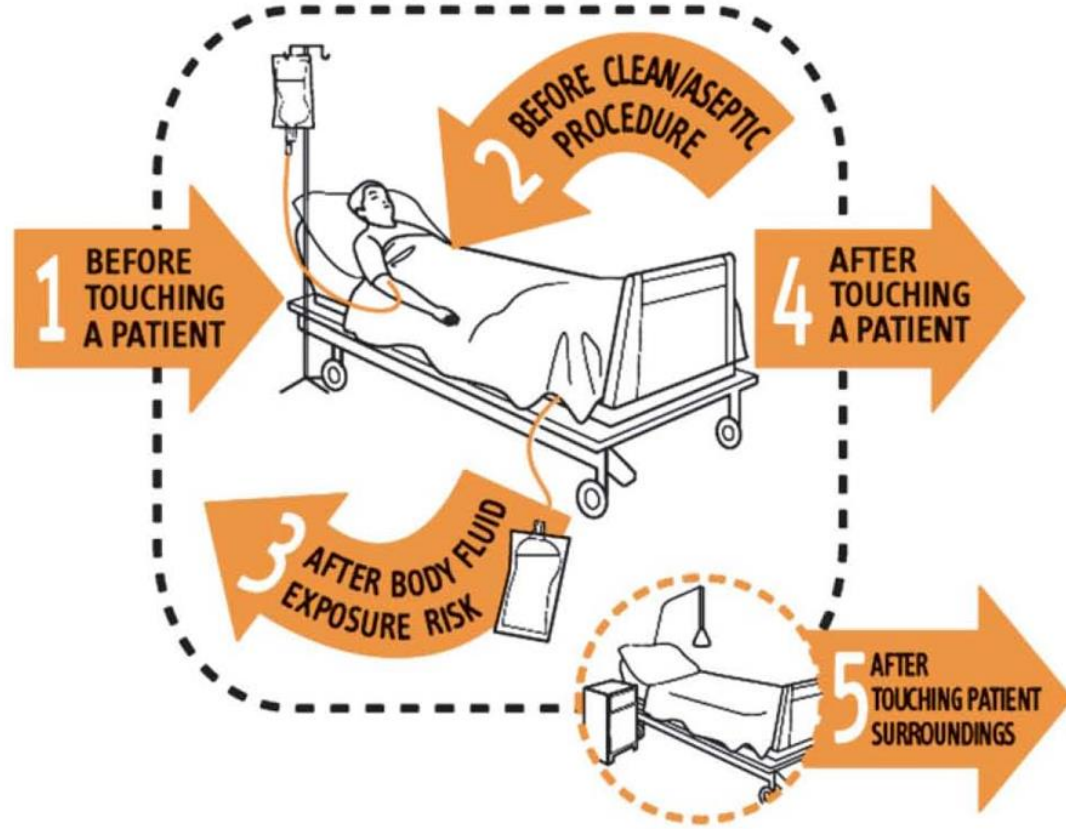


When Should Hands be Cleaned?

- Before and after every patient contact
- After taking off gloves

Hand disinfection is the single most important intervention for the prevention of nosocomial infections in hospitalized patients.

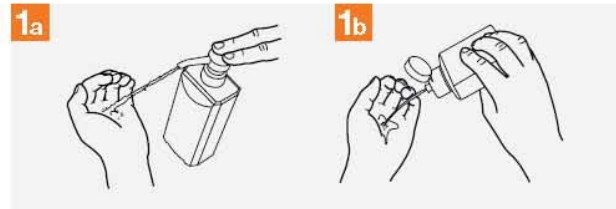
My 5 moments for HAND HYGIENE



HOW TO HANDRUB?

RUB HANDS FOR HAND HYGIENE! WASH HANDS WHEN VISIBLY SOILED

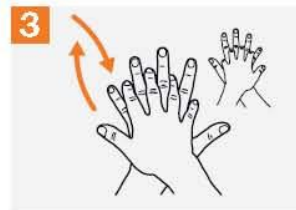
🕒 Duration of the entire procedure: 20-30 seconds



1a Apply a palmful of the product in a cupped hand, covering all surfaces;



2 Rub hands palm to palm;



3 Right palm over left dorsum with interlaced fingers and vice versa;



4 Palm to palm with fingers interlaced;



5 Backs of fingers to opposing palms with fingers interlocked;



6 Rotational rubbing of left thumb clasped in right palm and vice versa;




7 Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;

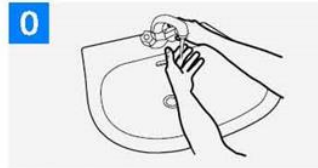


8 Once dry, your hands are safe.

How to Handwash?

WASH HANDS WHEN VISIBLY SOILED! OTHERWISE, USE HANDRUB

 Duration of the entire procedure: 40-60 seconds



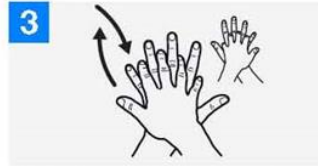
Wet hands with water;



Apply enough soap to cover all hand surfaces;



Rub hands palm to palm;



Right palm over left dorsum with interlaced fingers and vice versa;



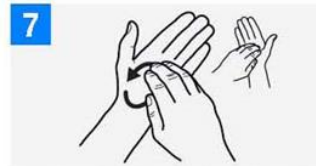
Palm to palm with fingers interlaced;



Backs of fingers to opposing palms with fingers interlocked;



Rotational rubbing of left thumb clasped in right palm and vice versa;



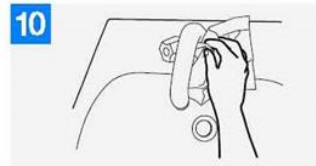
Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;



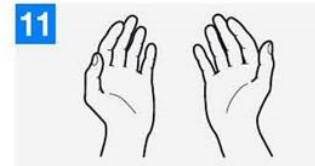
Rinse hands with water;



Dry hands thoroughly with a single use towel;



Use towel to turn off faucet;



Your hands are now safe.

GHS Fingernail Policy

- No artificial nails for direct patient care givers (gel, tips, acrylic, etc).
- Natural nails should not exceed 1/4 inch in length.



Standard Precautions – Updated by CDC in 2007

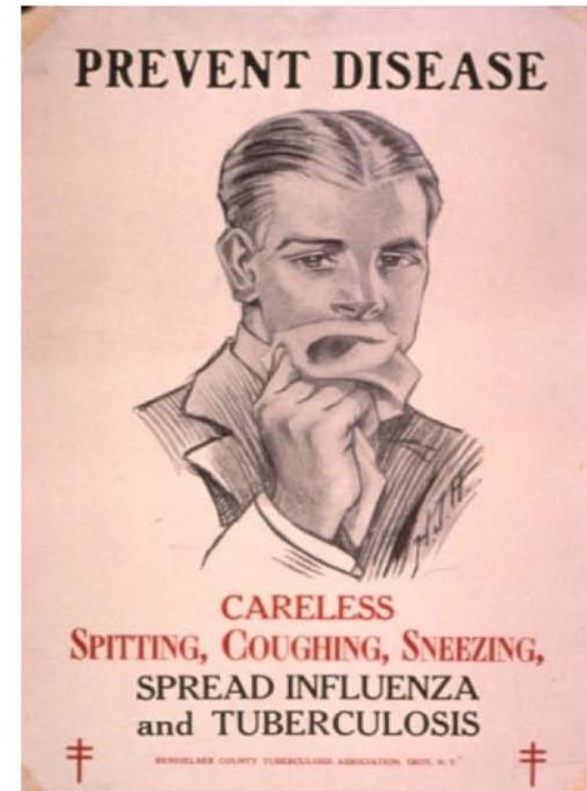
- Consider all blood and body fluids as potentially infectious
- Use appropriate barrier precautions to avoid direct contact with all blood or body fluids from any patient
- Respiratory Hygiene/Cough Etiquette
- Safe injection practices
- Use of masks for insertion of catheters or injection of material into spinal or epidural spaces via lumbar puncture procedures (e.g., myelogram, spinal or epidural anesthesia)
- Airborne, Droplet, Contact Precautions should be used when appropriate

Respiratory Hygiene/Cough Etiquette

Covering sneezes and coughs and placing masks on coughing patients prevent infected persons from dispersing respiratory secretions into the air.

Elements of the respiratory hygiene/cough etiquette guidelines:

1. Education of healthcare facility staff, patients, and visitors – applies to all
2. Posted signs (e.g., “Cover Your Cough”) with instructions to patients and accompanying family members or friends
3. Source control measures (e.g., covering the mouth/nose on the coughing person with a tissue or surgical mask)
4. Hand hygiene after contact with respiratory secretions
5. Spacial separation, ideally >3 feet, of persons with respiratory infections in common waiting areas when possible



Isolation Precautions

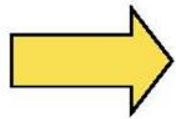
Standard (Universal) Precautions

Airborne Precautions TB Chickenpox Measles	Droplet Precautions Meningitis Parvovirus Influenza	Contact Precautions VRE MRSA
--	---	---

- As discussed in the modules on bloodborne pathogens, Standard Precautions were initially developed as measures to protect healthcare workers from inadvertent exposure to bloodborne pathogens
- There are special categories of precautions (transmission-based) which may be implemented to prevent the transmission of other infectious agents in the healthcare setting:
 - Airborne precautions
 - Droplet precautions
 - Contact precautions

These transmission-based precautions are important in preventing transmission from patients to healthcare workers AND (very importantly) from patient to patient.

Isolation Precautions



Standard (Universal) Precautions

Airborne Precautions

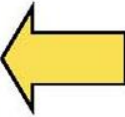
TB
Chickenpox
Measles

Droplet Precautions

Meningitis
Parvovirus
Influenza

Contact Precautions

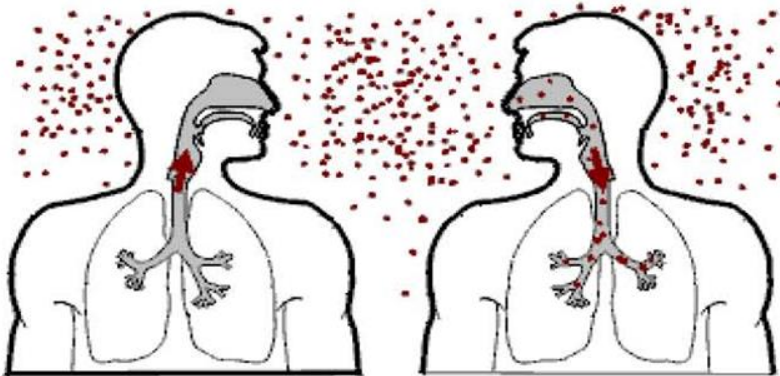
VRE
MRSA



Airborne Infection Isolation

TB: how to find it and prevent transmission in the hospital

TB Transmission



- TB is spread through the air from one person to another via droplet nuclei
- Droplet nuclei are expelled when a person with infectious TB coughs, sneezes, speaks, or sings
- People nearby are at highest risk of becoming infected
- Transmission occurs from a person with infectious TB disease (not latent TB infection)

What factors determine if TB will be transmitted?

- Infectiousness of person with TB
 - How many organisms in sputum
 - Cough behavior
- Environment in which exposure occurred
 - Size of air space (phone booth vs. gymnasium)
 - Air circulation
- Duration of exposure

Hierarchy of TB Infection Control

1. Administrative controls

- Early identification, isolation, diagnosis and treatment of TB patients
- Regular PPD testing of HCWs to identify any serious lapses in measures above
- MOST important
 - Have been demonstrated to prevent TB transmission even without other measures
 - Other measures can have no impact if administrative controls are not in place

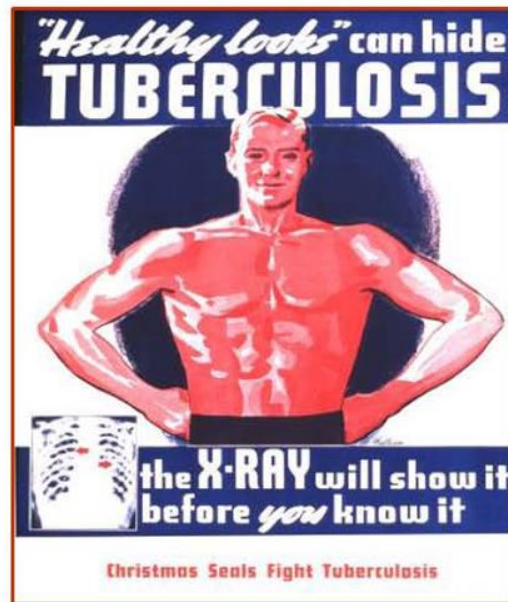
2. Engineering controls: eg., negative pressure rooms

3. Respiratory Protection: eg., N-95 respirators for HCWs

Pulmonary Tuberculosis: Clinical Presentation

Symptoms

- Fever, Chills
- Night sweats
- Weight loss
- **Productive cough**
 - Duration > 3 wks



Signs

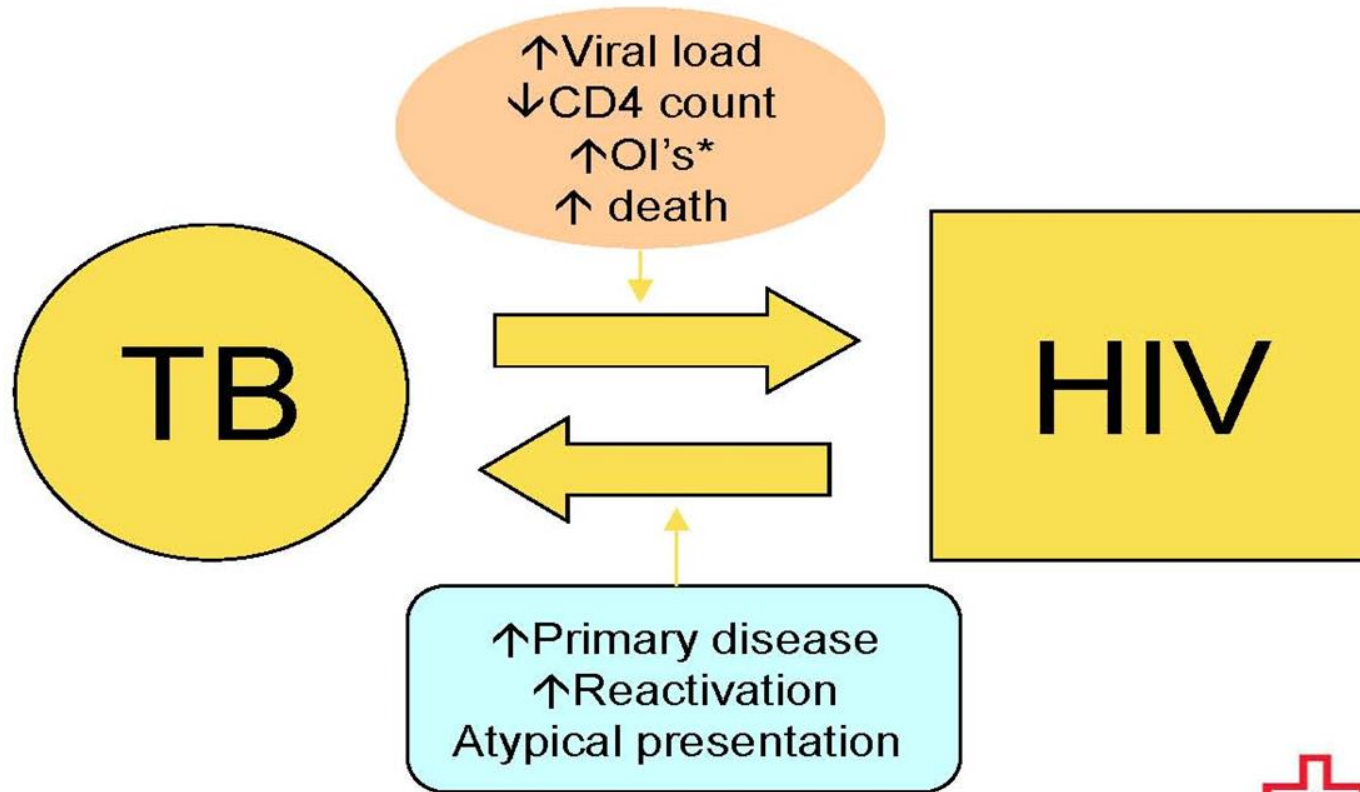
- Physical exam is often normal in a patient with pulmonary TB
- Patients with the symptoms at left must be evaluated further with a **CXR**

So, all patients with a prolonged cough should get a chest x-ray (no matter why they came to the hospital) to look for pulmonary TB.

And as long as the chest x-ray doesn't look suspicious for TB, we don't need to worry. Right?

Well, that's a problem. We learned (the hard way) that immunocompromised patients who have pulmonary TB can have chest x-ray findings of all varieties – including changes that are NOT typical for TB.

TB and HIV: Powerful (and Unfortunate) Synergy



Clinical Features of TB in HIV-Infected Patients

- Atypical manifestations → delays in diagnosis
- Chest x-ray findings may suggest non-TB diagnoses
 - Lobar infiltrate: bacterial pneumonia suspected
 - Interstitial infiltrates: PCP or pulmonary edema suspected
 - Adenopathy: sarcoid suspected
- Disseminated/extrapulmonary disease common; often accompanied by pulmonary disease
- PPD negative (anergy) a common finding

CXR Findings in HIV+ Patients with Pulmonary TB

	HIV/AIDS N=17 No. (%)	CONTROLS (%) N=30 No. (%)	P value
Lymphadenopathy	10 (59)	1 (3)	<0.001
Middle/lower lobe	5 (29)	1 (3)	<0.05
Upper lobe	3 (18)	29 (97)	<.001
Diffuse interstitial	3 (18)	0 (0)	<.0.05
Cavity	0 (0)	20 (67)	<0.001
Normal	2 (12)	0 (0)	0.13

Am Rev Respir Dis 1985; 131:393

In The Setting of HIV – Think TB!

- It is easy to “miss” active pulmonary TB in a patient with HIV – we should consider a TB diagnosis for just about any pulmonary presentation
- In any hospital, we should have a low threshold for TB evaluation in an HIV infected patient

Airborne Infection Isolation

- Negative pressure room
- Varicella, measles, **TB**, smallpox, SARS
- N-95 respirator **for healthcare workers**
- Surgical-type masks **for the patient**
 - Worn when outside of the negative pressure room
 - Keeps droplet nuclei from becoming airborne



N-95 mask used by Emory-affiliated hospitals

AIRBORNE PRECAUTIONS

VISITORS: Report to Nurse before entering & must wear surgical mask. Antes de entrar, vea al enfermero

RESPIRATOR
Use mascarilla
When Healthcare Worker Entering Room

PERFORM HAND HYGIENE
Lávase las manos

- Before patient contact
- After removing PPE
- Prior to leaving room

DOOR MUST BE KEPT CLOSED
La puerta debe permanecer cerrada
Patient transport - Patient wears surgical mask

All Grady HCWs Must Have An Annual Tuberculin Skin Test (PPD)

- **PPD testing is done by Occupational Health services (at any of the hospitals where you are assigned)**
- **Proof of PPD testing is required to maintain a valid hospital badge.**
- **Having a positive PPD is not the same as having active TB disease.**

For more information about TB skin testing for HCWs:

http://www.cdc.gov/TB/pubs/TBfacts_HealthWorkers/identification_ltbi.htm

Healthcare Workers: Your Role In Preventing TB Transmission

- Participate in TB Skin Testing Program.
- Employ airborne infection isolation for any patient with symptoms or signs that suggest TB until further evaluation can be done
- Wear an N-95 respirator mask when in contact with a patient in respiratory isolation

Respiratory Protection Training



- **How to maximize “best fit” of mask on your face**
 - “small” mask often needed
 - determined by shape of face/chin, not height and weight
 - Conform mask to make a tight seal on the face so that you create negative pressure inside the mask when you inhale
 - BOTH elastic straps should be worn for a proper fit

Hierarchy of TB Infection Control Measures

1. **Administrative Controls--most important**

- Careful screening of patients, isolation, early diagnosis and treatment
- Comprehensive Tuberculin Skin Testing Program

2. **Engineering Controls**

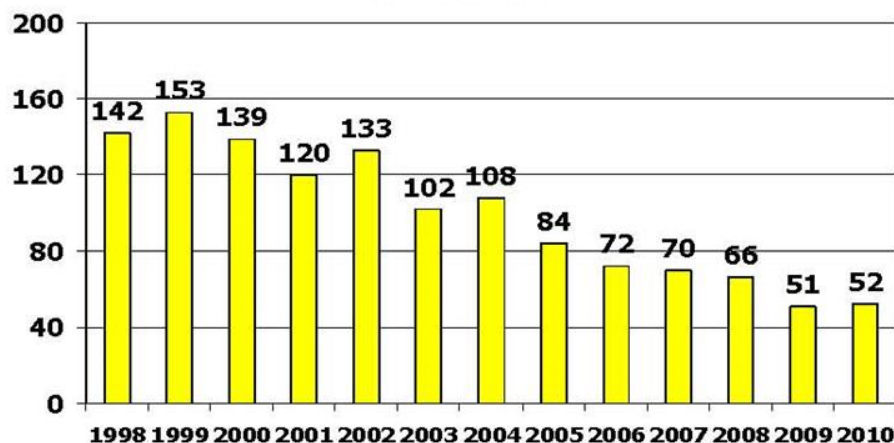
- Negative pressure isolation rooms

3. **Personal Respiratory Protection Equipment**

- Respirator masks

More TB cases are diagnosed at Grady than most hospitals in the country.
 Yet, HCWs who work there are very unlikely to develop new positive PPDs.

**Number of TB Patients
 Grady Health System
 1998-2010**



Year	Conversions/ 100-person years
2004	0.22%
2005	0.26%
2006	0.21%
2007	0.15%
2008	0.11%
2009	0.12%
2010	0.09%



The sole reason for this remarkable (and very good) disparity.....
an effective administrative control

Grady Expanded TB Isolation Policy

Duration of hospitalization
unless >4 weeks and then
must have 3 negative AFB
smears

(expanded surveillance)

**3. HIV+ patient admitted
with abnormal CXR**

Until 3 sputum AFB smears
are negative

Hierarchy of TB infection control

The undiagnosed TB case is the one most likely to transmit disease.

Help us make sure we don't miss a single case!

Isolation Precautions



Standard (Universal) Precautions

Airborne Precautions

TB
Chickenpox
Measles

Droplet Precautions

Meningitis
Parvovirus
Influenza

Contact Precautions

VRE
MRSA



Droplet Precautions

DROPLET PRECAUTIONS

VISITORS: Report to Nurse before entering
Antes de entrar, vea al enfermero



PERFORM HAND HYGIENE

Lávase las manos

- Before patient contact
- After removing PPE
- Prior to leaving room



MASK

Mascarilla

Upon entry to room or
within 6 feet of patient
when outside room.

To prevent transmission of pathogens spread through close respiratory or mucous membrane contact with respiratory secretions

- Different from airborne isolation
 - Because these pathogens do not remain infectious over long distances, special air handling and ventilation are not required to prevent droplet transmission
- For:
 - Bacterial meningitis (1st 24 hours)
 - Influenza
 - Respiratory Syncytial Virus (plus contact precautions)

Contact Precautions

CONTACT PRECAUTIONS

VISITORS: Report to Nurse before entering
Visitantes: Antes de entrar, vea al enfermero



**PERFORM HAND
HYGIENE**

- Lávese las manos**
- Before patient contact
 - After removing PPE
 - Prior to leaving room



**GLOVES
GUANTES**

Upon room entry



**GOWN
BATA**

Upon room entry



EQUIPMENT

Dedicate
equipment to room
where possible

To prevent transmission of infectious agents, including drug-resistant microorganisms, which are spread by direct or indirect contact with the patient or the patient's environment

Resistant microorganisms – MRSA, VRE and selected gram negative bacilli

C. difficile

CONTACT PRECAUTIONS HAND WASHING REQUIRED

VISITORS: Report to Nurse before entering
Visitantes: Antes de entrar, vea al enfermero



PERFORM HAND HYGIENE

Lávese las manos

- Before patient contact
- After removing PPE
- Prior to leaving room
- No alcohol hand disinfectants



GLOVES GUANTES

Upon room entry



GOWN BATA

Upon room entry



EQUIPMENT

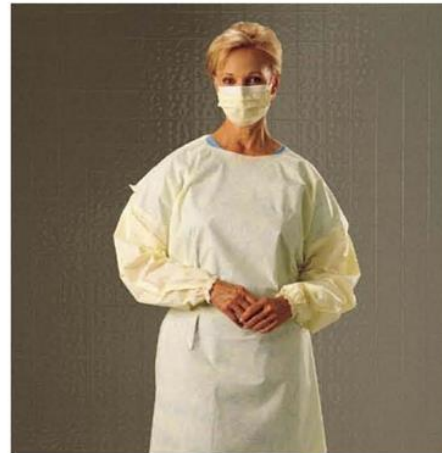
Dedicate
equipment to room
where possible

- Hand hygiene BEFORE and AFTER patient care
- Gown and gloves before room entry
- Soap and water for hand hygiene – alcohol rub is NOT effective

Choose the Right Gown For the Right Time



Contact precautions
and NO potential
exposure to blood and
body fluids exist



Potential exposure to
blood and body fluids
exists

NO Potential Exposure to Blood and Body Fluids

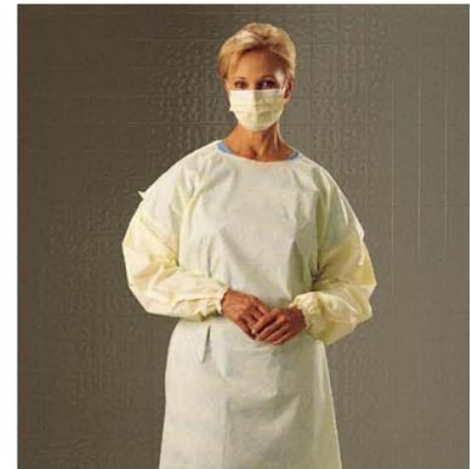
- Gown does NOT provide a moisture barrier
- Gown does NOT provide protection against blood or body fluids
- Uses:
 - Transporting patients
 - Visitors
 - Delivering food trays
 - Clinicians taking vital signs
 - Assessing a patient
 - Changing unsoiled bed linens



Potential Exposure to Blood and Body Fluids

Potential exposure to blood and body fluids exists

- **Uses:**
 - Dressing changes
 - Tube or line insertions
 - Discontinuing lines/tubes
 - Emptying a container of any body fluid
 - Emptying trash
 - Patient care that involves cleaning blood or body fluids
 - Linen changes that may be soiled with blood or body fluids



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.

MDRO POLICY

(MULTI-DRUG RESISTANT ORGANISMS)

Purpose: to decrease the potential for transmission of MDRO from patients who are infected or colonized, to other patients Please adhere to the following measures:

- Contact isolation precautions must be ordered for patients with a positive clinical culture or a history of cultures positive for MDRO.
- **EPIC** must be flagged with **“Contact”** and the **name of the organism**.
- On admission Patient Access Services are responsible for placing an orange armband on patients at registration when the identifier in EPIC indicates a Multi-Drug Resistant Organism.
- The Nursing staff are responsible for placing the orange armband on the patient whose cultures are positive for a MDRO during admission.
- Please refer to Grady Health System, Infection Control Policy #62 on the GradyNet.

Immunizations for HCWs

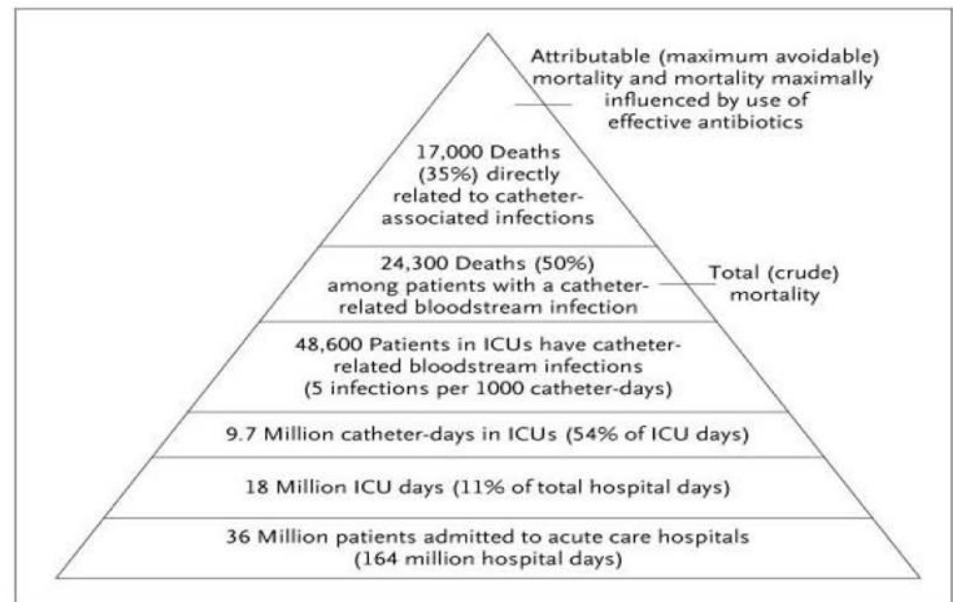
Required:

- MMR (mumps, measles, rubella)
- Chickenpox (if not immune)
- Influenza (annual) for all without medical contraindication
- **Pertussis (TDaP – Tetanus Diptheria acellular Pertussis)**

Strongly Recommended:

- Hepatitis B Virus vaccine
- Tetanus (Td)--every 10 years

Prevention of Central Line Associated Bloodstream Infections: Do your part



Wenzel 2006; NEJM



Five Measures To Decrease Risk of Infection From Central Venous Access “Central Line Bundle”

1. Hand hygiene prior to procedure
2. Full-barrier precautions during insertion
3. Skin preparation with chlorhexidine
4. Optimal site selection:
 - Avoid the femoral site
 - **Subclavian preferred** – get the technical training you need
5. Removing unnecessary catheters.

Provonost 2006, NEJM

Central Venous Catheters (CVCs): Maximum Sterile Barriers for Insertion

- Maximum Sterile Barriers
 - Sterile gown
 - Sterile gloves
 - Mask
 - Cap
 - Large drape
- Required regardless of the setting where insertion takes place (ICU room, ward room, procedure room, OR, ER, etc)
- All persons assisting with the insertion should wear full sterile garb (gown, gloves, mask)

Surgical Site Infection (SSI)

Surgical site infection = development of infection at the surgical site.



SSI Prevention

Pre Op Orders for CABG often require:

- CHG shower or bath the night before and morning of surgery
- Bactroban/Mupirocin to nares twice daily
- Pre op Hgb A1C for diabetics
- Prophylactic antibiotic sent to OR with the patient

Surgical Care Improvement Project Measures

Infection Prevention

- **Prophylactic antibiotic** given within 1 hr prior to surgery
- **Recommended antibiotic** given based on procedure
- Antibiotic dc'd within 24 hrs after surgery end time (48 hrs for cardiac patients)
- Appropriate hair removal with **clippers** only (no razors)
- **Normothermia** (96.8) immediately post op (colorectal pts)
- **Serum glucose** post op controlled at 6am on post op day 1 and day 2 (cardiac pts)

Evidence for SCIP Core Measures

- **Antibiotics** are most effective when given within one hour of initial incision
- Short duration abx are as effective in preventing infection as long duration abx
- Long duration abx are more likely to cause development of drug resistant bacteria (MDRO)

Evidence for SCIP Core Measures

- Shaving with a razor creates small nicks at the surgical site that can become infected.
- Hair removal with **clippers** or depilatories results in significantly lower infection rates
- **Hypothermia** causes vasoconstriction, reducing delivery of IV medications
- Hypothermia suppresses the immune system

Evidence for SCIP Core Measures

- CABG patients with uncontrolled **serum glucose** have significantly higher infection rates
- Deep wound infections in diabetic cardiac surgery patients are reduced by controlling mean blood glucose levels below 200mg/dL

SSI Prevention

- **Hand hygiene**
- **Dressing changes**
 - **Sterile gloves**
 - **Contaminated material containment**
- **Wound inspection**
 - **Note- erythema, swelling, drainage, warmth, odor, induration = SSI**





Take Home Points



1. Hand hygiene before and after every patient contact
2. Follow standard precautions
3. Don't recap needles/ use safety devices
4. Report blood and body fluid exposures
5. Follow posted isolation signs
6. Follow TB infection control policies—THINK TB
7. Be up to date on immunizations
8. Maximum sterile barriers for central line insertion
9. Follow SCIP Core Measures to prevent SSI

