



# Preventing Employee Infections

Basics of Infection Prevention

2-Day Mini Course

April 2019





# OBJECTIVES

At the conclusion of this presentation, participants will be able to:

- Discuss vaccines offered to healthcare workers in long-term care
- Describe the relationship between Infection Prevention and Employee Health
- Understand the implications of drug diversion with regard to infection transmission and outbreaks
- Discuss two risks associated with unsafe injection practices
- List three safe injection practices
- List two bloodborne pathogens and two ways to protect healthcare workers
- Discuss two risk strategies to prevent the spread of aerosol transmissible diseases



# EMPLOYEE HEALTH





# HEALTHCARE WORKERS

Carrier of  
Infection to  
Residents

The diagram consists of two red arrows pointing in opposite directions, connected by a central horizontal bar. The left arrow points left and contains the text "Carrier of Infection to Residents". The right arrow points right and contains the text "Recipient of Infection from Residents".

Recipient of  
Infection from  
Residents



# INFECTION PREVENTION AND EMPLOYEE HEALTH

Goal



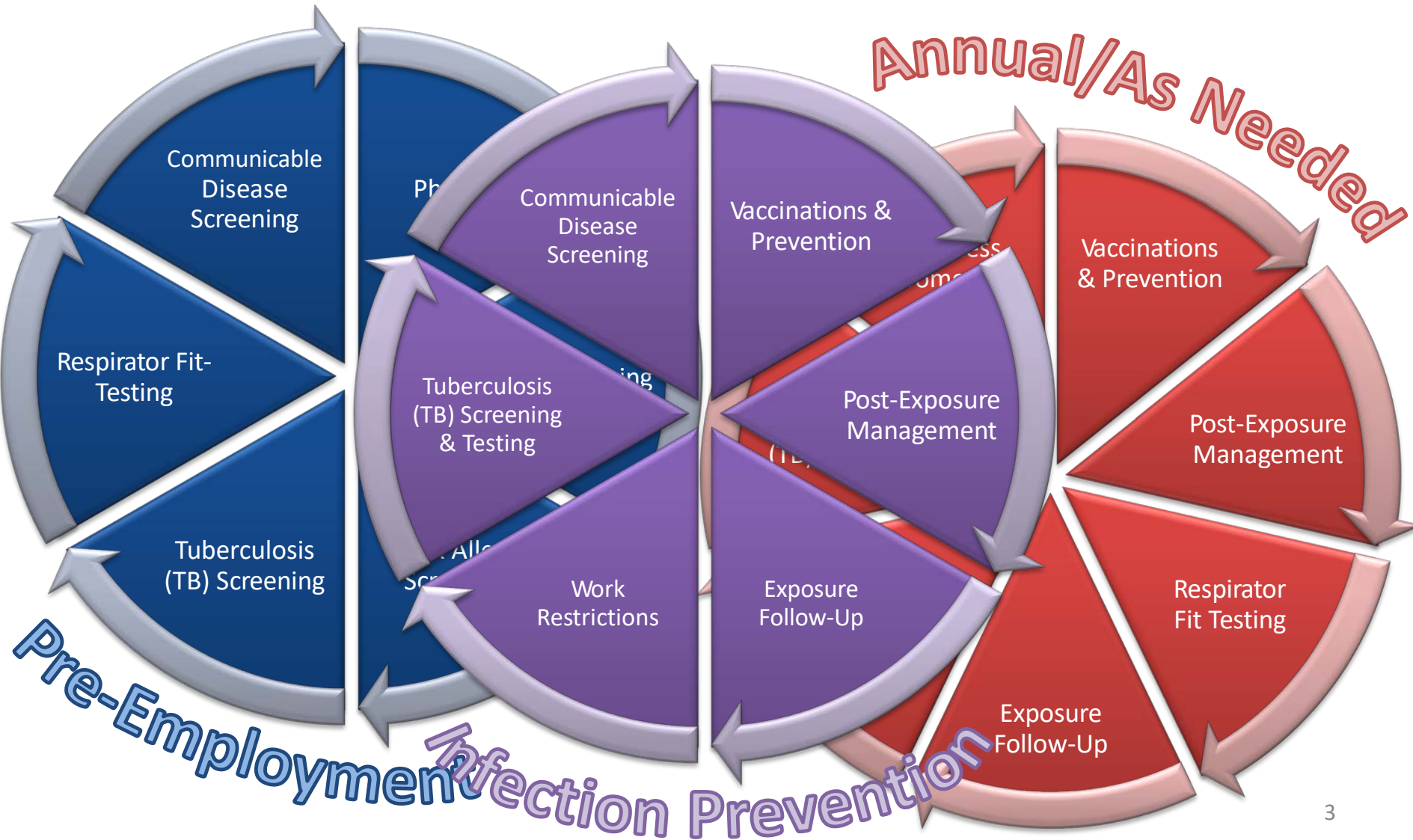
Safe



Free of  
Infection



# EMPLOYEE HEALTH RESPONSIBILITIES





# IMMUNIZATIONS



**KEEP  
CALM  
AND  
VACCINATE**



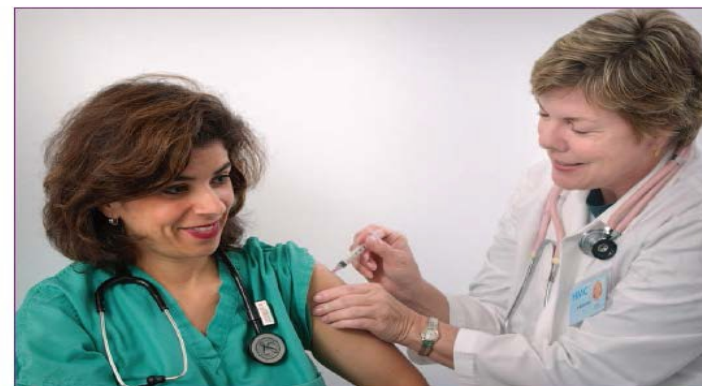
# PROTECTION PRINCIPLES OF PERSONNEL AND OTHER RESIDENTS FROM RESIDENTS WITH INFECTIONS

Centers for Disease Control and Prevention  
**MMWR**  
Recommendations and Reports / Vol. 60 / No. 7

Morbidity and Mortality Weekly Report  
November 25, 2011

## Immunization of Health-Care Personnel Recommendations of the Advisory Committee on Immunization Practices (ACIP)

## Healthcare Worker (HCW) Immunization



Continuing Education Examination available at <http://www.cdc.gov/mmwr/cme/conted.html>.







# HEALTHCARE WORKER (HCW) IMMUNIZATION

## Healthcare Personnel Vaccination Recommendations<sup>1</sup>

Vaccine	Recommendations in brief
<b>Hepatitis B</b>	Give 3-dose series (dose #1 now, #2 in 1 month, #3 approximately 5 months after #2). Give IM. Obtain anti-HBs serologic testing 1–2 months after dose #3.
<b>Influenza</b>	Give 1 dose of influenza vaccine annually. Give inactivated injectable vaccine intramuscularly or live attenuated influenza vaccine (LAIV) intranasally.
<b>MMR</b>	For healthcare personnel (HCP) born in 1957 or later without serologic evidence of immunity or prior vaccination, give 2 doses of MMR, 4 weeks apart. For HCP born prior to 1957, see below. Give SC.
<b>Varicella (chickenpox)</b>	For HCP who have no serologic proof of immunity, prior vaccination, or history of varicella disease, give 2 doses of varicella vaccine, 4 weeks apart. Give SC.
<b>Tetanus, diphtheria, pertussis</b>	Give a dose of Tdap as soon as feasible to all HCP who have not received Tdap previously and to pregnant HCP with each pregnancy (see below). Give Td boosters every 10 years thereafter. Give IM.
<b>Meningococcal</b>	Give 1 dose to microbiologists who are routinely exposed to isolates of <i>N. meningitidis</i> and boost every 5 years if risk continues. Give MCV4 IM; if necessary to use MPSV4, give SC.

*Hepatitis A, typhoid, and polio vaccines are not routinely recommended for HCP who may have on-the-job exposure to fecal material.*

**Immunization Action Coalition**  
 Technical content reviewed by CDC  
[www.immunize.org/catg.d/p2017.pdf](http://www.immunize.org/catg.d/p2017.pdf)



# EMPLOYEE EXPOSURE INVESTIGATIONS

Warranted when staff are exposed to infectious diseases

- Unprotected inadvertent exposure
- Evaluate type of exposure and risk of transmission
- Contact list of exposed staff
- Evaluate need for post-exposure management – dependent on infection or disease
  - Prophylaxis
  - Vaccination
  - TB skin testing
- Determine if local public health or state should be notified



# DIVER<sub>x</sub>SION





# WHAT IS DRUG DIVERSION?



DRUG DIVERSION

IN HOSPITALS BY

*Professionals*

*the illegal distribution or abuse of  
prescription drugs or their use  
for unintended purposes*



# Drug Diversion is a Multi-Victim Crime

## Employee Risks:

- Health - morbidity and death
- Progression to illicit substances
- Risky behaviors
- Incarceration
- Loss of employment
- Revocation of license



## Patient Risks:

- Lack of pain control
- Infection risk
- Care by an impaired employee

## Health System Risks:

- Patient harm -- *CDC estimates ~30,000 people exposed to Hep C in last decade by infected hospital workers using narcotics intended for patients.*
- Civil and regulatory liability
- Reputation and brand at risk

\*



# DRUG DIVERSION AND INFECTION

## DRUG DIVERSION\* SPREADS INFECTION FROM HEALTHCARE PROVIDERS TO PATIENTS



**HEALTHCARE PROVIDER**  
with Hepatitis C or other  
bloodborne infection  
tampers with injectable drug



**CONTAMINATED  
INJECTION EQUIPMENT  
AND SUPPLIES**  
present in the  
patient care environment



**EXPOSURE OF PATIENT**  
results from use of contaminated  
drug or equipment for patient  
injection or infusion

\*Drug diversion occurs when prescription medicines are obtained or used illegally by healthcare providers.

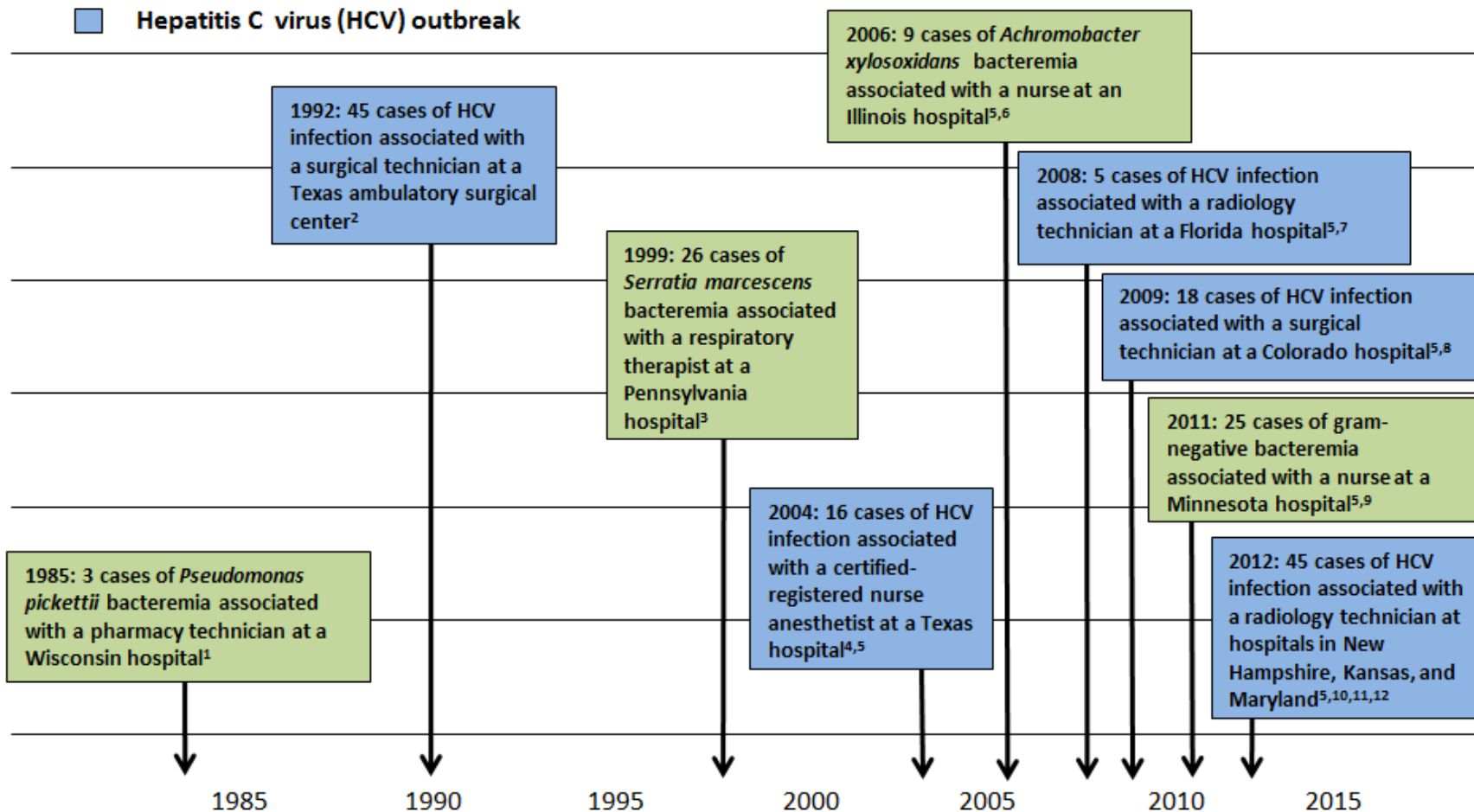
FOR MORE INFORMATION, VISIT [CDC.GOV/INJECTIONSAFETY/DRUGDIVERSION](https://www.cdc.gov/injectionsafety/drugdiversion)





# U.S. OUTBREAKS ASSOCIATED WITH DRUG DIVERSION BY HEALTHCARE PROVIDERS, 1983-2013

- Bacterial outbreak
- Hepatitis C virus (HCV) outbreak





## THREE STORIES

### **Nursing home worker accused of drug theft Suspect diverted painkilling medications from patients, Altoona police say**

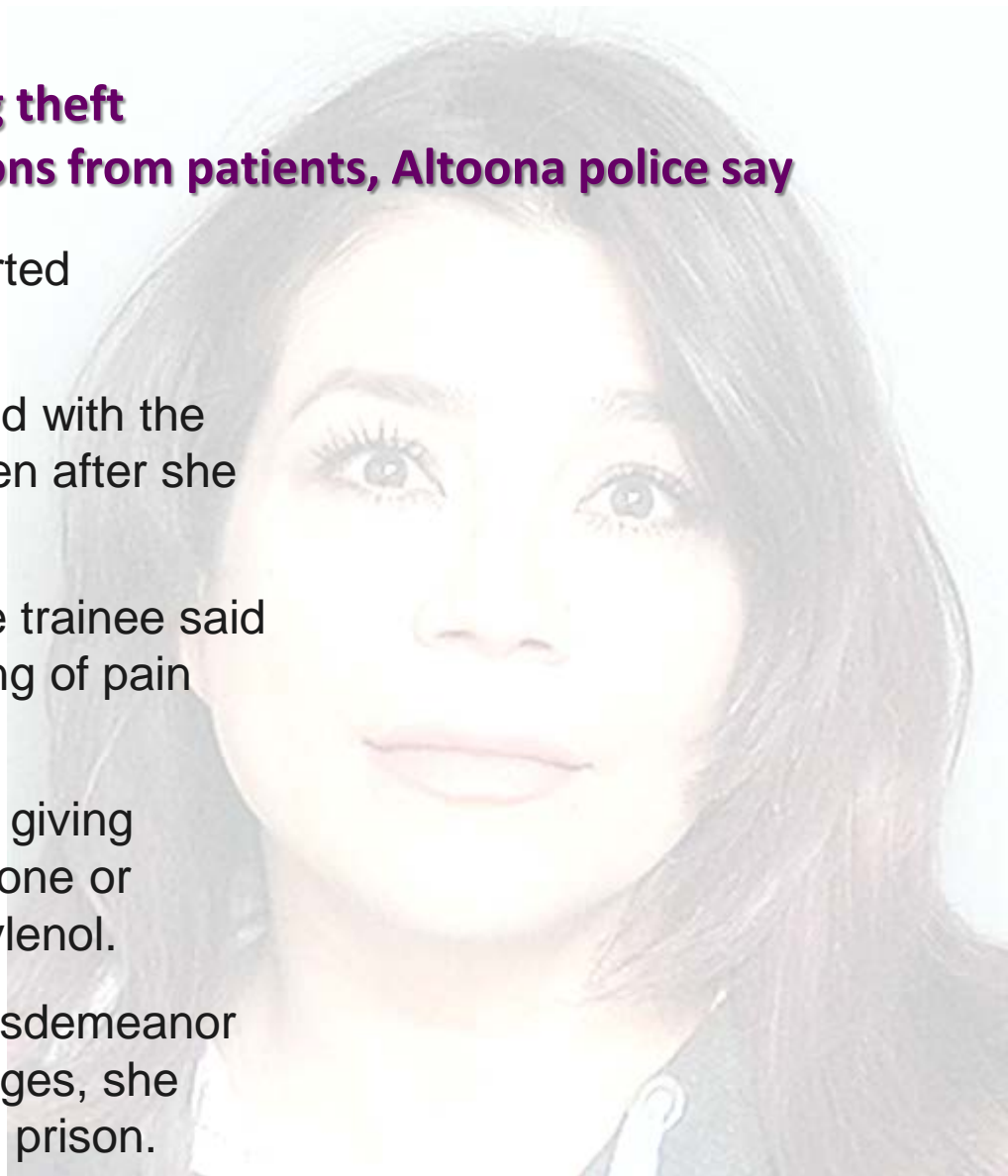
An astute nurse-trainee ultimately reported healthcare provider drug diversion.

The nurse trainee said when she worked with the nurse, residents complained of pain even after she gave them their medication.

But when training with other nurses, the trainee said the same residents were not complaining of pain after receiving pain medication.

An investigation showed that instead of giving residents scheduled doses of hydrocodone or Percocet, the nurse was giving them Tylenol.

She was charged with 11 felony and misdemeanor charges. If convicted of the felony charges, she could be sentenced to up to 16 years in prison.







# THREE STORIES

## ROAD TO RUIN: A NURSE'S STORY OF ADDICTION



“It just happened. But once it did, it was full-blown. There’s no other way to describe it,” he said of his addiction.”

To extract the drugs, he stole syringes from the hospital, and filled them from drug vials. To cover up his theft, he smeared Krazy Glue over the hole in the container’s packaging, according to court testimony. He said he didn’t get high at work — that came later, in private.

Court testimony revealed that he would use his personal password to gain access to the machine, take the drugs, and replace them with saline solution using a syringe.

Most of his friends didn’t know he’d become addicted, nor did his wife, even when he suffered withdrawals as he attempted to become sober shortly before he was found out.



# THREE STORIES

## MY STORY: HOW ONE PERCOCET PRESCRIPTION TRIGGERED MY ADDICTION

“It all started with a Percocet prescription 4 years ago” following a lumbar puncture.

He was an experienced nurse and was not questioned when asking another nurse to witness a narcotic waste in Pyxis – after which he pocketed the excess medication.

Eventually he moved to stronger oral opioids as the Percocet was not longer giving the same feeling, and when those no longer helped then eventually to injectable narcotics. He needed greater amounts and became reckless with his diverting. **“I became preoccupied with obtaining opioids, and patient care took a back burner.”**

He became even more reckless knowing he would soon be found out – and he was. He was called into his manager’s office; his lies and excuses were not believed and he was terminated and reported to the state board of nursing.

“It was at this point that the slippery slope became a lot steeper. I was crippled with fear of losing my nursing license, family, friends, and girlfriend.”

He got another job – before the board caught up with him – and began diverting opioids, moving from Morphine to Dilaudid in quantities he knew would be discovered but without caution, and he was caught.

The self-deception includes thinking his patients were not harmed, either by his impaired behavior at work, lack of receiving the pain medication they needed or contamination of the medication.



# STRATEGIES TO PREVENT DRUG DIVERSION

## Drug diversion monitoring program

- Include a narcotic log
- Monthly statistical comparison
- Anomalous number of one-time orders for a particular drug recorded by single user

## Train staff

- Requirements to report misconduct
- What constitutes “significant loss” of medication

## Establish environmental controls

- Medication storage
- Who has access
- How to handle unused medications

## Do not turn a blind-eye

- Staff don't want to get a colleague in trouble
- Remember the consequences: Inaction can lead to permanent harm or death



# STRATEGIES TO PREVENT DRUG DIVERSION – EARLY DETECTION

*Look for the red flags before the narcotics counts are “Off”*

- Train staff to know the signs and behaviors of impairment
  - Unusual behavior by colleagues
    - Forgetful, unpredictable behavior
    - Lack of concentration
    - Frequent illness or physical complaints
    - Elaborate excuses for things
    - Picking up extra on-call shifts
    - Labile mood with unexplained anger and overreaction to criticism
    - Increase in unexplained tardiness or absenteeism
  - Reports of items, e.g., sharps containers, being out of place
  - Large numbers of rejected verbal orders
  - Complaints of unrelieved pain by residents

***If you see something, say something!***

# Preventing Drug Diversion: Best Practices

## Staff Prevention Strategies:

- Only remove medications for your assigned patients
- Only remove current dose of medication for your patient
- Properly document medication administration and pain scores
- All wastes of medications must have a documented witness
- Don't be a "virtual witness" to medication wasting
- Don't loan your ID badge or pass-codes to anyone
- Return unused medications according to procedure
- Report medication discrepancies promptly to pharmacy (on-line reporting available)
- Report attempted inappropriate access to medications to pharmacy
- Report witnessed or suspected medication diversion to pharmacy





# RESPONSE TO DRUG DIVERSION EVENTS

## Assess harm to residents

- Consult with public health officials when tampering with injectable medication is suspected
- Promptly report event to law and other enforcement agencies (DEA, FDA)



# SAFE INJECTION PRACTICES



**ONE NEEDLE,  
ONE SYRINGE,  
ONLY ONE TIME.**



Safe Injection Practices Coalition

www.**ONEandONLY**campaign.org

## DISCUSSION QUESTIONS

- What do you think “safe injection practices” means?
- What would you describe as an unsafe injection practice?
- What do you think could be the result of unsafe injection practices?
- What unsafe practices have you seen in your workplace that could cause infection?
- What should you do if you observe an unsafe injection practice at work?





# HEPATITIS B AND C OUTBREAKS DUE TO UNSAFE INJECTION PRACTICES

- 44 hepatitis outbreaks reported to CDC
  - From 2008-2014
  - Non-hospital settings
- Six of the outbreaks were in California
  - Two skilled nursing facilities
  - Two assisted living facilities
  - Pain clinic
  - Dialysis clinic
  - 2678 people sent notices and tested
  - 27 new cases of hepatitis B or C

# CAUSE OF CALIFORNIA HEPATITIS OUTBREAKS

- CDC determined that the California outbreaks occurred because of injection safety breaches
  - Reuse of syringes on more than one patient
  - Contaminated medication vials used for more than one patient
  - Use of single-dose vials for more than one patient

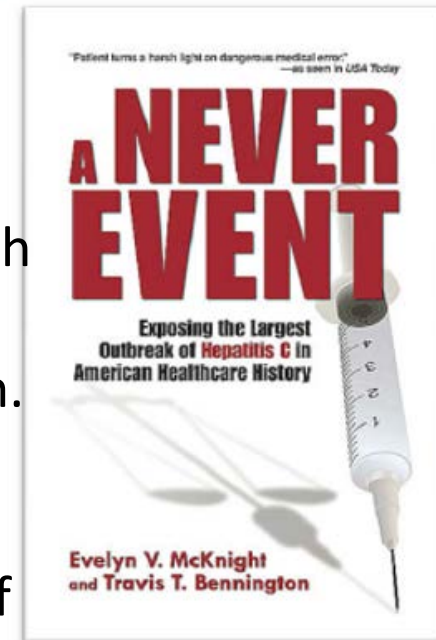
**1 ONE NEEDLE,  
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Safe Injection Practices Coalition  
[www.SIPCandOIG.com/join.org](http://www.SIPCandOIG.com/join.org)

## EVELYN MCKNIGHT'S STORY

Dr. Evelyn McKnight, mother of three, was battling breast cancer and was infected with Hepatitis C during treatment because of syringe reuse to access saline flush solution.

Along with Evelyn, a total of 99 cancer patients were infected in what was one of the largest outbreaks of Hepatitis C in American healthcare history.



Evelyn cofounded HONORreform, a foundation dedicated to improving America's injection safety practices, and was the catalyst of the formation of the Safe Injection Practices Coalition.



**1** ONE NEEDLE,  
ONE SYRINGE,  
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Safe Injection Practices Coalition  
www.OH1andOH2.com/pdq.org

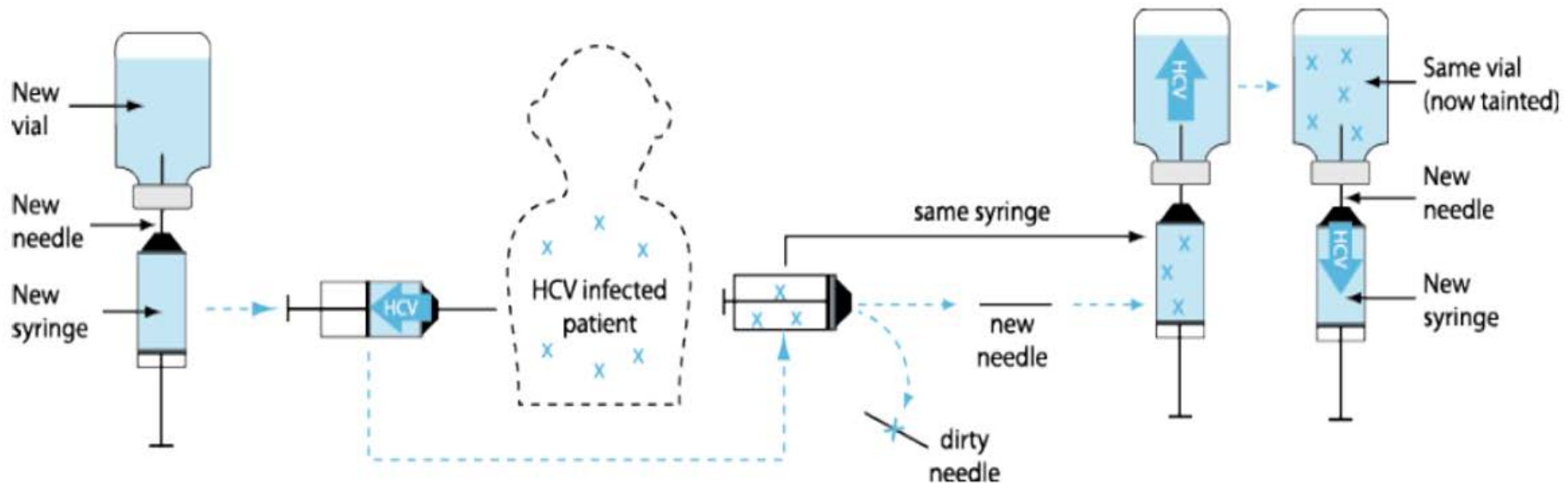
## LAS VEGAS, NEVADA OUTBREAK, 2008

- Cluster of three acute Hepatitis C Virus (HCV) infections identified in Las Vegas
- All three patients underwent procedures at the same endoscopy clinic during the incubation period
  - Two breaches contributed to transmission:
    - Re-entering vials with used syringes
    - Using contents from these single-dose vials on more than one patient

**1 ONE NEEDLE,  
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Safe Injection Practices Coalition  
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# LAS VEGAS, NEVADA OUTBREAK, 2008



# UNSAFE INJECTION PRACTICES IN THE U.S.

## Common causes of hepatitis outbreaks

- Not properly disinfecting equipment between patients
- Using the same finger stick device on more than one patient
- Reusing a syringe on more than one patient
- Using single-dose vials for more than one patient
- Using a single saline bag for more than one patient



# COMMON REASONS FOR UNSAFE INJECTION PRACTICES

- Lack of safe injection policies at healthcare facility
- Staff are poorly trained or unaware of safe injection practices
- Healthcare provider is rushed and takes a shortcut
- Healthcare provider learned safe injection practices at one time but has forgotten



# UNSAFE PRACTICES THAT LEAD TO INFECTION

- Using the same needle on multiple patients
- Switching the needle in between patients but using the same syringe
- Reusing cartridges or reusing insulin pens
- Attempting to disinfect a needle with alcohol in between patients



# WHAT ARE SAFE INJECTION PRACTICES?



Resident to  
Provider



Provider to  
Resident



Resident to  
Resident

A set of measures to perform injections in an optimally safe manner for residents, healthcare providers, and others

# SAFE INJECTION PRACTICES ARE PART OF STANDARD PRECAUTIONS

Hand hygiene



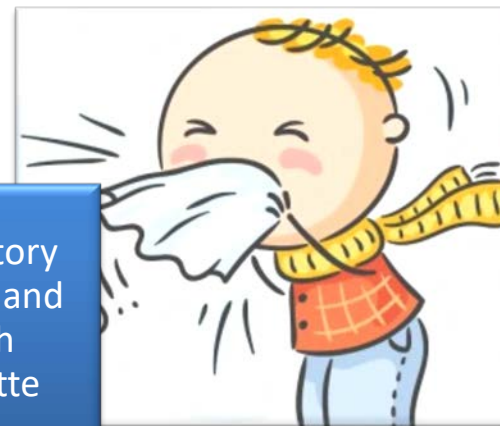
Personal protective equipment (gloves, gowns, masks)



Safe handling of soiled equipment or surfaces



Respiratory hygiene and cough etiquette





# ***“SAFE INJECTION = NO INFECTION”***

Injection safety includes

Safe production

Sterile medications from manufacturer

Safe preparation

Prepare in a clean area

Safe Administration

Follow standard precautions

Safe disposal

Minimize risks to the resident and healthcare provider



# ASEPTIC TECHNIQUE FOR PREPARING INJECTED MEDICATIONS

- Perform hand hygiene
- Draw up medications in a clean medication area
  - The designated medication area should **not** be near areas where contaminated items are placed

# NEEDLES AND SYRINGES: ONE TIME USE ONLY

- Use **needles** for only one resident/patient
- Use **syringes** only one time
  - Including manufactured prefilled syringes
- Use cartridge devices for only one resident/patient
- Use insulin pens for only one resident/patient



**Rx for Safe Injections  
in Healthcare**

**1 Needle  
1 Syringe  
+ 1 Time**

---

**0 Infections**

Safe injection practices prevent transmission of infectious diseases. Patients and healthcare providers must insist on nothing less than **One Needle, One Syringe, Only One Time** for each and every injection.

For more information, please visit:  
[OneandOnlyCampaign.org](http://OneandOnlyCampaign.org)

The *One & Only Campaign* is a public health effort to eliminate unsafe medical injections. To learn more about safe injection practices, please visit [OneandOnlyCampaign.org](http://OneandOnlyCampaign.org).

For the latest news and updates, follow us on Twitter @injectionsafety and Facebook/OneandOnlyCampaign.

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# SPECIAL CONSIDERATIONS FOR DIABETIC RESIDENTS

- Diabetic residents use needles frequently in the care and management of their disease
- Never allow reuse of insulin pens on more than one resident
  - It is not safe to change the needle on insulin pens for use on more than one resident
- Lancets used for blood glucose testing are designed for one resident only
  - Using lancets on multiple residents can lead to infections

# INJECTION SAFETY FOR DIABETIC RESIDENTS



Insulin pens that contain more than one dose of insulin are meant for only one person



For glucose testing, clean the glucometer after every use

# MEDICATION VIALS

- Always cleanse the diaphragm (tops) of medication vials using friction with 70% alcohol before entry
- Allow the alcohol to dry before inserting a needle or device into the vial

Note: Clean even if the vial comes with a hard lid or cap

- Manufacturers guarantee **medications and solutions** are sterile
- But they do not guarantee the **outside of the container** or **medication vial** is sterile



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# SINGLE-DOSE VIALS: ONE RESIDENT & ONLY ONCE

- Use single-dose medications for only one resident
- Read the label on medication vials carefully! Determine if single use
- Never enter a medication vial with a used syringe or needle
- If the vial says single-dose, throw it away after it has been accessed
- Do not store single use medications for future use
- Discard unused single-dose medications when expired



***When in doubt throw it out!***

# MULTI-DOSE (MULTIPLE-DOSE) VIALS

A multi-dose vial is recognized by its FDA-approved label





# MULTI-DOSE (MULTIPLE-DOSE) VIALS

Limit the use of multi-dose vials

- When possible, dedicate multi-dose vials to a single resident

For multi-dose vials used for more than one resident

- Keep in a medication area
- Never take into a resident treatment area, resident room or cubicle

Date the multi-dose vial when first opened

- Discard within 28 days
  - Unless the manufacturer recommends a shorter expiration period

Any time the sterility of the vial is in question, throw it out



# **BAGS OF INTRAVENOUS (IV) SOLUTIONS SHOULD BE USED FOR ONE RESIDENT ONLY**

Do not use bags of IV solution as a common source of supply for more than one resident

Everything from the medication bag to the resident's IV catheter is a single interconnected unit

# DANGEROUS MISPERCEPTIONS

Here are some examples of dangerous misperceptions about safe injection practices.



Myth	Truth
<p>Changing the needle makes a syringe safe for reuse.</p>	<p>Once they are used, both the needle and syringe are contaminated and must be discarded. A new sterile needle and a new sterile syringe should be used for each injection and each entry into a medication vial.</p>
<p>Syringes can be reused as long as an injection is administered through IV tubing.</p>	<p>Syringes and needles should never be reused. The IV tubing, syringe, and other components represent a single, interconnected unit. Distance from the patient, gravity, or infusion pressure do not ensure that small amounts of blood won't contaminate the syringe once it has been connected to the unit.</p>
<p>If you don't see blood in the IV tubing or syringe, it means that those supplies are safe for reuse.</p>	<p>Germs such as hepatitis C virus and staph or MRSA are invisible to the naked eye, but can easily infect patients even when present in microscopic quantities. Do not reuse syringes, needles, or IV tubing.</p>
<p>It's okay to use leftover medicine from use single-dose or single-use vials for more than one patient.</p>	<p>Single-dose or single-use vials should not be used for more than one patient regardless of how much medicine is remaining.</p>

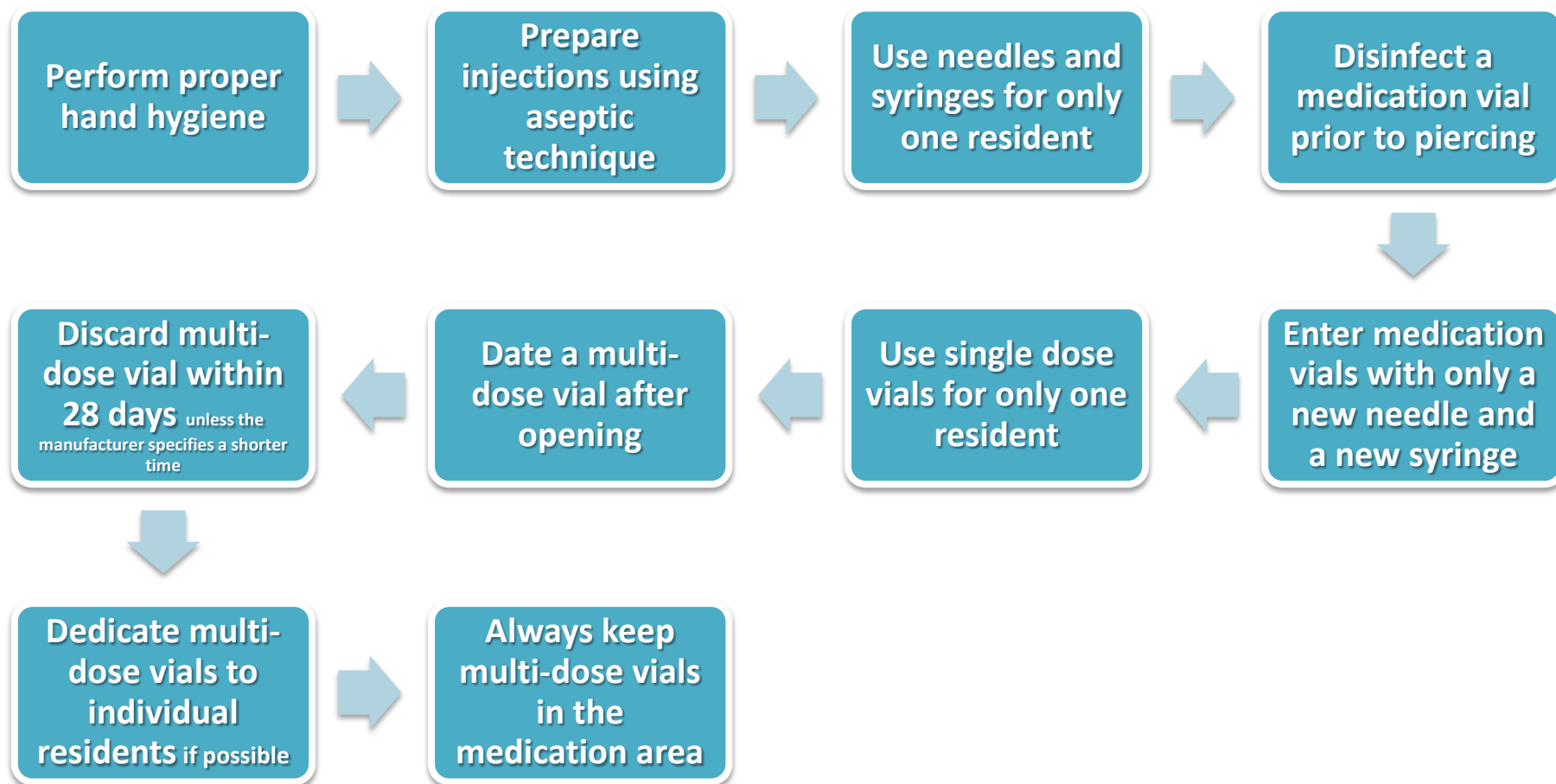
**Injection Safety is Every Provider's Responsibility!**

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# KEY COMPONENTS TO SAFE INJECTION PRACTICES



# SAFE INJECTION PRACTICES

## HOW TO DO IT RIGHT VIDEO



The video player shows an illustration of a doctor in a white lab coat and glasses, holding a yellow syringe, standing next to a patient sitting on a grey block. To the left is a yellow and orange pill bottle labeled 'SINGLE DOSE VIAL' with green pills floating around it. The video progress bar is at 1:28 / 4:25. The video title is 'Safe Injection Practices - How to Do It Right' by 'OneandOnlyCampaign' with 9 videos. It has 8,382 views, 20 likes, and 0 dislikes. A 'Subscribe' button shows 52 subscribers. A logo for '1 ONE NEEDLE ONE SYRINGE ONLY ONE TIME' is also visible.

1:28 / 4:25

Safe Injection Practices - How to Do It Right

OneandOnlyCampaign · 9 videos

8,382

Subscribe 52

20 0



# THE INJECTION SAFETY CHECKLIST

- Used to assess your facility's injection safety practices
- Download and share the Injection Safety Checklist

[www.cdc.gov/injectionsafety/PDF/SIPC\\_Checklist.pdf](http://www.cdc.gov/injectionsafety/PDF/SIPC_Checklist.pdf)

## INJECTION SAFETY CHECKLIST

The following Injection Safety checklist items are a subset of items that can be found in the *CDC Infection Prevention Checklist for Outpatient Settings: Minimum Expectations for Safe Care*.

The checklist, which is appropriate for both inpatient and outpatient settings, should be used to systematically assess adherence of healthcare personnel to safe injection practices. (Assessment of adherence should be conducted by direct observation of healthcare personnel during the performance of their duties.)

Injection Safety	Practice Performed?	If answer is No, document plan for remediation
Injections are prepared using aseptic technique in a clean area free from contamination or contact with blood, body fluids or contaminated equipment.	Yes No	
Needles and syringes are used for only one patient (this includes manufactured prefilled syringes and cartridge devices such as insulin pens).	Yes No	
The rubber septum on a medication vial is disinfected with alcohol prior to piercing	Yes No	
Medication vials are entered with a new needle and a new syringe, even when obtaining additional doses for the same patient.	Yes No	
Single dose (single-use) medication vials, ampules, and bags or bottles of intravenous solution are used for only one patient.	Yes No	
Medication administration tubing and connectors are used for only one patient.	Yes No	
Multi-dose vials are dated by HCP when they are first opened and discarded within 28 days unless the manufacturer specifies a different (shorter or longer) date for that opened vial. <small>Note: This is different from the expiration date printed on the vial.</small>	Yes No	
Multi-dose vials are dedicated to individual patients whenever possible.	Yes No	
Multi-dose vials to be used for more than one patient are kept in a centralized medication area and do not enter the immediate patient treatment area (e.g., operating room, patient room/cubicle). <small>Note: If multi-dose vials enter the immediate patient treatment area they should be dedicated for single-patient use and discarded immediately after use.</small>	Yes No	

**RESOURCES**  
 Checklist: <http://www.cdc.gov/HAI/pdfs/guidelines/ambulatory-care-checklist-07-2011.pdf>  
 Guide to Infection Prevention for Outpatient Settings: *Minimum Expectations for Safe Care*:  
<http://www.cdc.gov/HAI/pdfs/guidelines/standatds-of-ambulatory-care-7-2011.pdf>

[www.oneandonlycampaign.org](http://www.oneandonlycampaign.org)





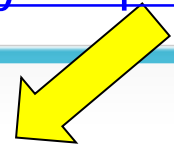
## SUMMARY

- Safe injection practices reduce the risk of infections
- They protect both residents and healthcare providers
- Evaluate your facility's injection safety practices
  - Use the injection safety checklist
- Always follow Standard Precautions
  - Every time
  - With every resident



- About the Campaign
- Safe Injection Practices
- Healthcare Provider Information
- Patient Information
- Campaign Resources
- News
- Contact Us

# California [www.oneandonlycampaign.org/partner/california](http://www.oneandonlycampaign.org/partner/california)



## News & Events

### » Injection Safety Newsletter



Check out the *California One and Only Campaign* newsletter by [clicking here](#).

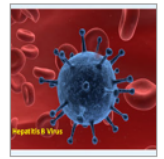
### » Injection Safety is Everyone's Responsibility



The Centers for Disease Control and Prevention (CDC) estimate that in recent years, unsafe injection practices have affected more than 150,000 patients in the United States, including 11,500 in California. CDC recommends that healthcare providers NEVER administer medications from the same syringe to more than one patient, even if the needle is changed. It is your right to know that your provider will use a new syringe and new needle every time.

The California One & Only Campaign encourages healthcare organizations and individuals to promote public awareness of safe injection practices. To become a member of the California One & Only Campaign, [click here](#)

### » Hepatitis B and C Outbreaks in California



CDC summarized 44 healthcare-associated outbreaks of hepatitis B and C in non-hospital settings from 2008-2014. Six of the outbreaks occurred in California; 2700 people were notified of possible exposure and 27 patients were found to be infected. The outbreaks occurred in two skilled nursing facilities, two assisted living facilities, a pain management clinic, and an outpatient dialysis clinic.

Unsafe injection practices that resulted in these infections included reusing

## USE AN INJECTION SAFETY CHECKLIST



It is every patient's right to receive a safe injection. Are healthcare workers always following safe

injection practices at YOUR facility? Safe injection practices are a set of measures that define how to give injections in a safe manner for patients and healthcare providers. The California One & Only Campaign encourages healthcare workers to review and use the Injection Safety Checklist to assess their practices. The checklist, developed by CDC and the Safe Injection Practices Coalition, includes nine observations to help healthcare workers ensure they are adhering to safe injection practices during the care of patients. To download and share the Injection Safety Checklist, [click here](#)

## WHEN IN DOUBT, THROW IT OUT!



Outbreaks of bloodborne infections have been associated with the reuse of single-dose vials or misuse of

multiple dose vials. As a team leader or a team member, it is important to make sure that every health worker uses single-dose vials only one time for one patient. If a healthcare



# BLOODBORNE PATHOGENS

## UNIVERSAL PRECAUTIONS FOR THOSE EXPOSED TO BLOOD OR OTHER POTENTIALLY INFECTIOUS MATERIALS IN THEIR OCCUPATION

### PROTECT YOURSELF

ALL BLOOD AND BODILY FLUID MUST BE TREATED AS IF THEY WERE INFECTED WITH:

- HUMAN IMMUNODEFICIENCY VIRUS (HIV) WHICH FREQUENTLY LEADS TO AIDS.
- HEPATITIS B VIRUS (HBV).
- OTHER BLOODBORNE PATHOGENS (MICROORGANISMS FOUND IN HUMAN BLOOD WHICH CAN CAUSE DISEASE).

### KNOW THE RULES

BE FAMILIAR WITH YOUR ORGANIZATION'S EXPOSURE CONTROL PLAN.



### MAKE SURE YOU KNOW:

- VACCINATION REQUIREMENTS
- PROCEDURES
- PRACTICES
- PROPER REPORTING REQUIREMENTS FOR INCIDENTS OF EXPOSURE.

### KNOW YOUR COLORS

- RED BAGS OR CONTAINERS DON'T NEED TO BE LABELED - THEIR COLOR INDICATES THEY MAY CONTAIN BIOHAZARDS.
- FLUORESCENT ORANGE-RED LABELS AND SIGNS WITH CONTRASTING LETTERING OR SYMBOLS ARE APPROPRIATE

### READ ALL LABELS AND SIGNS

### WEAR THE RIGHT EQUIPMENT



## PROPER PROCEDURE CAN REDUCE YOUR RISK OF INFECTION TO ZERO

### WASH HANDS



AND FOLLOW SAFE HYGIENE AND WORK PRACTICES.

### DISPOSE OF NEEDLES IN APPROPRIATE CONTAINERS.



### FOLLOW PROPER DISPOSAL PROCEDURES.

CONTAMINATED LAUNDRY AND PERSONAL PROTECTIVE EQUIPMENT SHOULD BE DISPOSED OF IN PROPERLY DESIGNATED AREAS.



### KEEP IT CLEAN

CLEAN WORKSITE AND DECONTAMINATE EQUIPMENT. FOLLOW ALL SAFE HANDLING PROCEDURES.

### DON'T FORGET

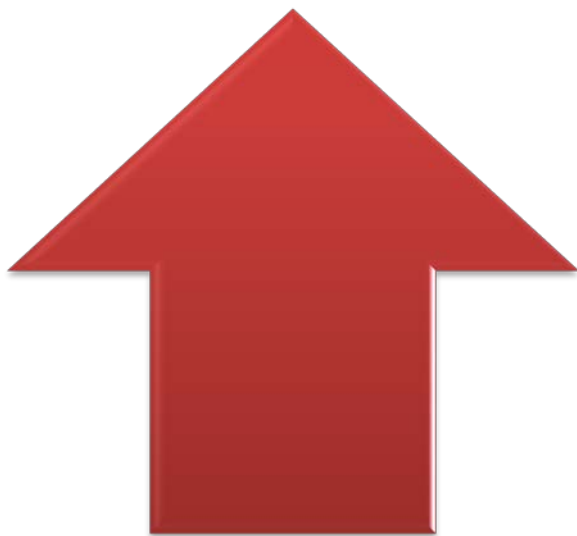
ALL BODY FLUIDS SHOULD BE HANDLED AS IF POTENTIALLY INFECTIOUS.



# BLOODBORNE PATHOGENS (BBP)

- Infectious microorganisms in human blood and other body fluids that can cause disease in humans
- These pathogens include, but are not limited to
  - **Hepatitis B Virus (HBV)**
    - Risk = 1-30%
  - **Hepatitis C Virus (HCV)**
    - Risk = 0-7%
  - **Human Immunodeficiency Virus (HIV)**
    - Risk = 0.2-0.5%

# BODY FLUID EXPOSURE RISK



## Higher risk body fluids

- Blood
- Amniotic fluid
- Peritoneal fluid
- Cerebrospinal fluid
- Pleural fluid
- Vaginal fluid/Semen
- Any body fluid with visible blood (saliva after dentist)



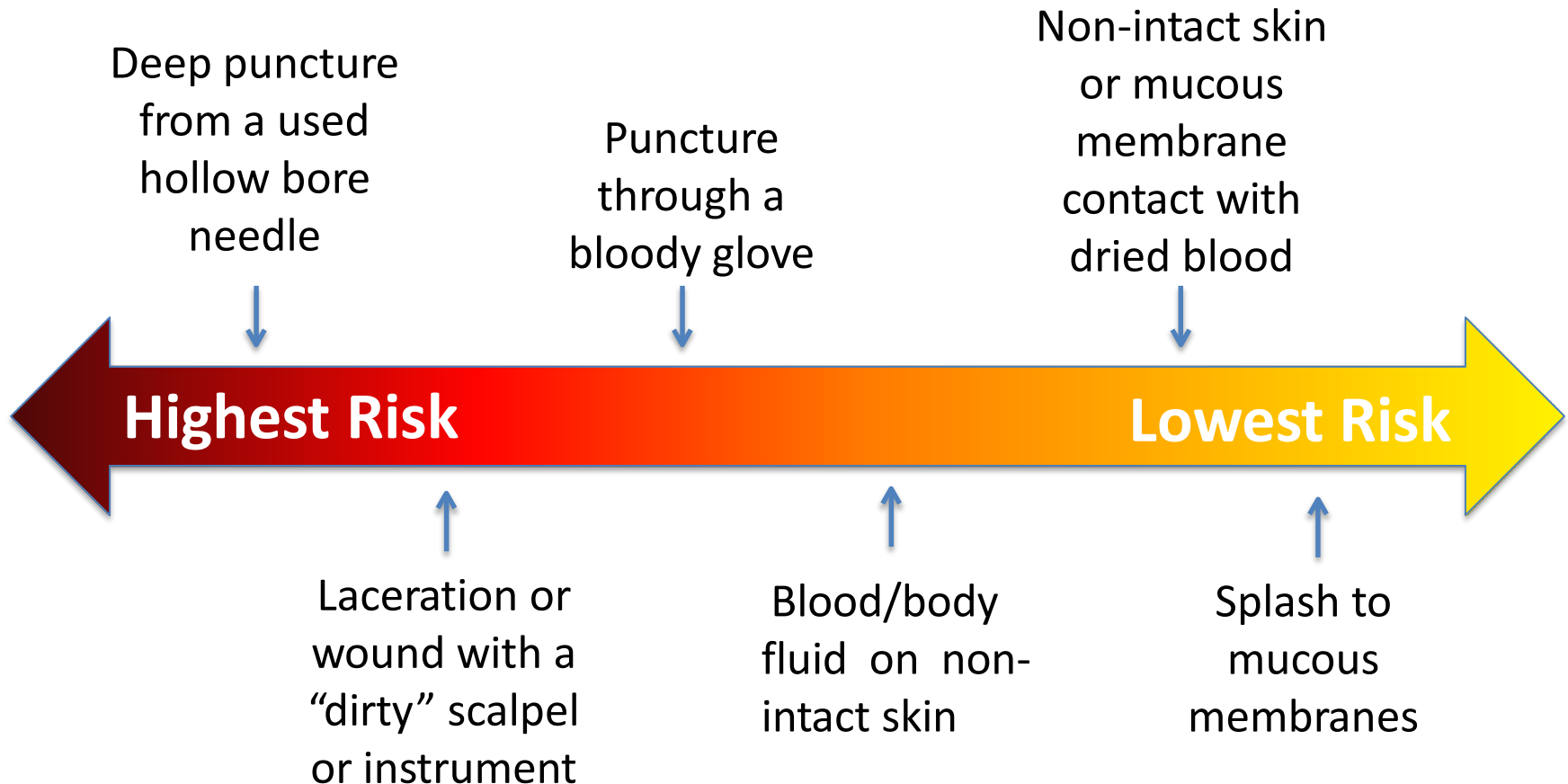
## Low/No Risk\* body fluids

- Sweat
- Tears
- Feces
- Saliva
- Urine
- \*Unless visibly contaminated with blood



# EXPOSURE RISK BY INJURY TYPE:

*Infection risk is dependent on type of exposure*





# OSHA BLOODBORNE PATHOGEN (BBP) STANDARD

Prescribes safeguards to protect workers against the health hazards caused by bloodborne pathogens

- Addresses items such as
  - Exposure control plans
  - Universal precautions
  - Engineering and work practice controls
  - Personal protective equipment
  - Housekeeping
  - Laboratories
  - Hepatitis B vaccination
  - Post-exposure follow-up
  - Hazard communication and training
  - Recordkeeping
- Requirement placed on employers whose workers can be reasonably anticipated to contact blood or other potentially infectious materials (OPIM), such as unfixed human tissues and certain body fluids



# NEEDLESTICK SAFETY AND PREVENTION ACT

- Signed into law on November 6, 2000
- Modification of OSHA's Bloodborne Pathogens standard
  - Make more specific OSHA's requirement for employers to identify, evaluate and implement safer medical devices such as needleless systems and sharps with engineered sharps protections
- Mandated additional requirements for
  - Maintaining a sharps injury log
  - Involvement of non-managerial healthcare workers in identifying, evaluating and choosing effective engineering and work practice controls
    - These are workers who are responsible for direct patient care and be potentially exposed to injuries from contaminated sharps



# SHARPS INJURIES

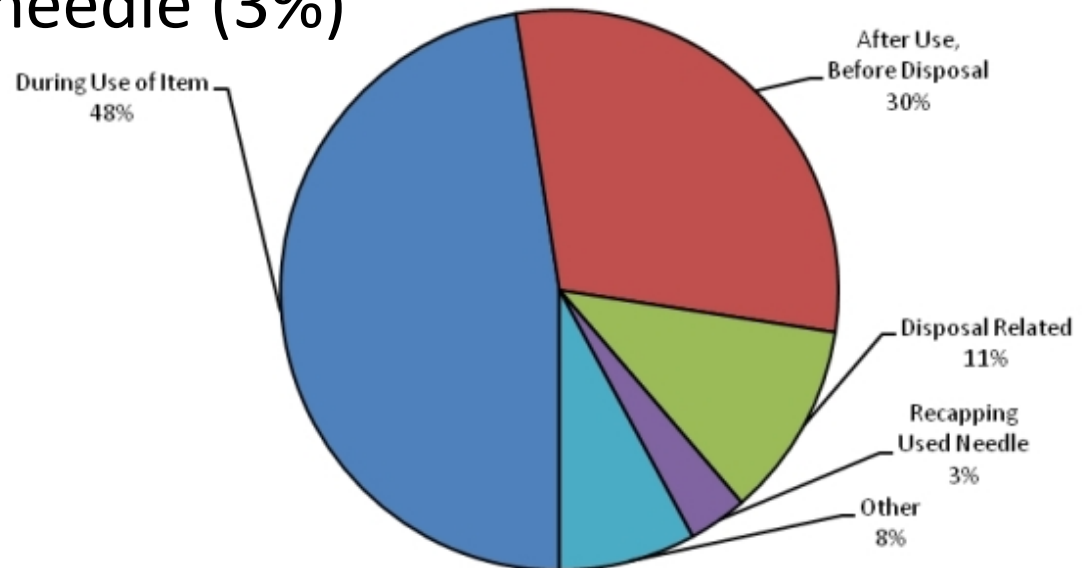


Approximately 385,000 needle sticks and other sharps injuries occur in hospital-based healthcare personnel each year

# HOW DO SHARPS INJURIES OCCUR

Injuries occur most frequently due to work practices and inappropriate sharps disposal

- During use of sharp (48%)
- Activities after use and prior to disposal (30%)
- Disposal-related activities (11%)
- Recapping a used needle (3%)
- Other (8%)





# PREVENTING BLOODBORNE PATHOGEN EXPOSURE

- Standard Precautions mandatory
- Hepatitis B Virus (HBV) vaccination series offered to all staff with potential for blood exposure
- Hierarchy of prevention methods applies
  - Engineering controls: needless devices
  - Work practice controls – no recapping
  - Appropriate cleaning, linen-handling, disposal of sharps
- BBP Training required upon hire, annually and as needed
- Facilities must have a BBP Exposure Control Plan
  - Employees must be given opportunity to contribute to product evaluation for sharps safety
- Post-exposure prophylaxis (PEP) immediately available

# SHARPS DISPOSAL

Sharps disposal containers must require minimal training to use, and they must be

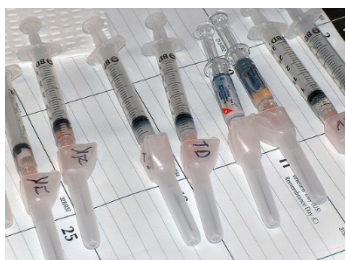
- Puncture-resistant
- Durable during installation and transport
- An appropriate size and shape for the task
- Clearly visible
- Easy to access
- Placed in an upright position
- Easy to operate
- Easy to store and assemble





# How Would You Select Safety Sharps?

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# FOLLOWING BLOOD OR BODY FLUID EXPOSURES - NEEDLESTICK OR SPLASH TO MUCOUS MEMBRANES

Wash the site with soap and water until clean

Flush splashes



skin with water

Irrigate eyes with

sterile irrigant



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**Immediately seek medical evaluation per facility policy**



# BBP POST-EXPOSURE MANAGEMENT: MEDICAL EVALUATION

Immediate testing:

Source	Employee
Rapid HIV	Rapid HIV
HBsAG	HBsAB (if status unknown)
Hepatitis C Antibody	Hepatitis C Antibody
	Hepatic Function Panel

- Employee follow up:
  - At 6 & 12 weeks and 6 months (4 months with newer PEP therapies)
  - Test for HCV antibody, HIV, liver function



# POST-EXPOSURE PROPHYLAXIS FOR HEPATITIS B

Vaccination and antibody status of <u>Exposed</u>	Treatment for <u>Employee</u> when <u>source is HBsAg-</u>	Treatment for <u>Employee</u> when <u>source is HBsAg+</u>
Unvaccinated	Initiate Hepatitis B vaccine series	HBIG x1 & initiate Hepatitis B vaccine series
Previously Vaccinated:		
Known Responder	No treatment	No treatment
Known-non-responder	If known high risk source, treat as if source were HBsAg positive	HBIG x1 & initiate re-vaccination –or– HBIG x 2
Antibody Response unknown	Test exposed person for anti-HBs <ol style="list-style-type: none"><li>1. If adequate, no treatment</li><li>2. If inadequate vaccine booster and recheck titer in 1-2months</li></ol>	Test exposed person for anti-HBs <ol style="list-style-type: none"><li>1. If adequate, no treatment</li><li>2. If inadequate HBIG x1 &amp; vaccine booster</li></ol>





# POST-EXPOSURE PROPHYLAXIS FOR HEPATITIS C

- Prompt wound care or flushing of mucous membranes
- Prophylaxis not recommended
  - Immunoglobulin not effective
  - No data support use of antivirals (e.g. interferon) for preventing infection; may be effective only with established infection
  - Antivirals not FDA-approved for this setting
- Consider expert consultation



# POST-EXPOSURE PROPHYLAXIS FOR HIV

- If indicated, send to MD for assessment for PEP management as soon as possible after exposure
  - Regard as an urgent medical concern; hours rather than days
  - Ensure CBC, liver panel, pregnancy test done prior to initiation of meds
  - Provide counseling about potential side effects of medications
    - Monitor for potential toxicity
- Interval after which PEP is no longer effective is unknown
  - Initiating days or weeks after exposure might be considered for higher risk exposure



# AEROSOL TRANSMISSIBLE DISEASES





# AEROSOL TRANSMISSIBLE DISEASES (ATD)

- A disease or pathogen for which droplet or airborne precautions are required
- Diseases or pathogens requiring **Airborne Infection Isolation**
  - Tuberculosis (*Mycobacterium tuberculosis*)
  - Measles Virus
  - Varicella disease
  - Avian influenza
  - Other less common pathogens



# AEROSOL TRANSMISSIBLE DISEASES (ATD)

- A disease or pathogen for which droplet or airborne precautions are required
- Diseases or pathogens requiring **Droplet Precautions**
  - Influenza (seasonal)
  - Mycoplasma pneumonia
  - Pertussis (whooping cough)
  - Other less common pathogens

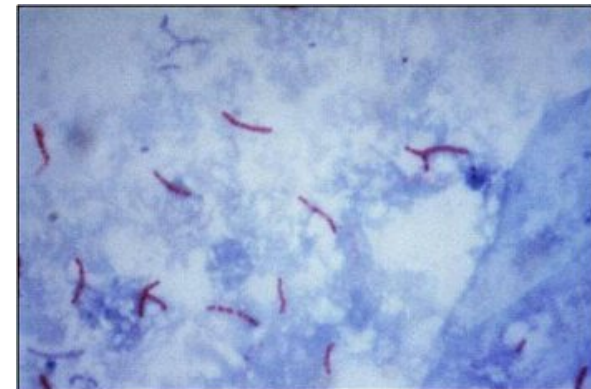


# **PULMONARY TUBERCULOSIS (TB) IN LONG-TERM CARE**

- In 2014 there were 62 cases of Tuberculosis diagnosed in long-term care facilities in California
- More than 30% of all cases reported in persons 65 years of age and older

# PULMONARY TUBERCULOSIS (TB)

- Caused by bacteria *Mycobacterium tuberculosis*
- **A**cid **F**ast **B**acilli (**AFB**) can be seen on a stained slide
- Serious chronic illness; can be fatal if untreated
- Transmitted by airborne route
  - Resident contact not required for exposure
  - Droplets can stay afloat for hours and travel on air currents
- Likelihood of transmission affected by
  - Infectiousness of resident
  - Environmental conditions
  - Duration of exposure
  - Most persons exposed do not become infected





# TB INFECTION AND DISEASE

## Latent Tuberculosis

- Exposed to TB bacillus
- No symptoms
- TB skin test positive
- Chest x-ray negative
- **Is not communicable**
- **No isolation required**

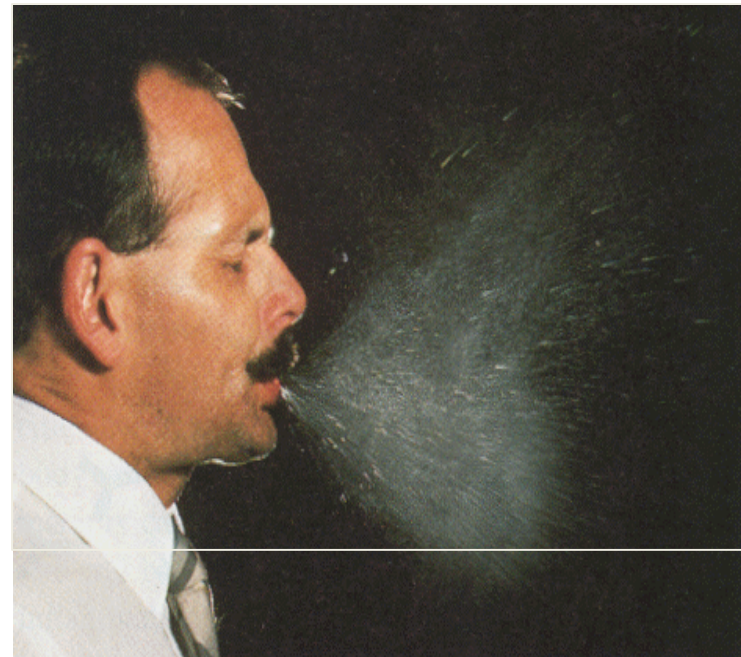
## Active Tuberculosis

- Exposed to TB bacillus
- Manifests symptoms of Tuberculosis
- TB skin test positive
- AFB smears positive
- Abnormal chest x-ray
- **Is communicable**
- **Airborne Infection Isolation required**



# TRANSMISSION OF TB

- Increased risk of transmission
- From infection person with
  - Forceful cough
  - Acid-fast bacilli (AFB) in sputum
  - Laryngeal disease
  - Cavitation on chest xray
- Undergoing cough-inducing procedures
- In small closed spaces with poor ventilation
- Failing to cover nose/mouth when coughing





<https://youtu.be/9112brXCOVc>



CDC Tuberculosis (TB) Transmission  
and Pathogenesis Video



# SYMPTOMS OF ACTIVE PULMONARY TUBERCULOSIS

- Cough
- Hemoptysis
- Shortness of breath or dyspnea
- Fever
- Night sweats
- Fatigue
- Unexplained weight loss



# AIRBORNE TRANSMISSIBLE DISEASE (ATD) STANDARD

Preventing and protecting employees from occupational exposures to known and novel pathogens that may cause illnesses through aerosol generation

- Applies to all health care settings, including
  - Hospitals
  - **Skilled nursing facilities**
  - Hospices
  - Private medical offices
  - Paramedic and emergency services
  - Other settings



# ATD REQUIREMENTS

- Written ATD Plan
- Policies & Procedures addressing ATD
  - Education & training for prevention
  - TB Screening
  - Post exposure management
- Provide seasonal influenza vaccination to all employees with potential for occupational exposure
- Engineering controls for management of residents with ATDs
- Fit testing for respiratory protection
- Maintenance of employee health records



# PREVENTION OF AIRBORNE TRANSMISSIBLE DISEASES (ATD) IN HCW

Risk reduction strategies include

- Standard Precautions
  - Routinely wear mask if resident coughing or has uncontained respiratory secretions
- Cough etiquette by residents, visitors, health care workers
- TB screening upon hire and annually
- Annual influenza vaccination
- Comply with Aerosol Transmissible Disease (ATD) Standard
- Isolation of residents with suspect or confirmed ATDs

# TB SCREENING OF HEALTHCARE WORKERS

## On Hire

- 2-step PPD skin test
  - Negative reading required on first PPD before beginning work
  - Second step 1-3 weeks after first
- Interferon-Gamma Release Assay (IGRA)
- TB symptom review questionnaire

## Annual

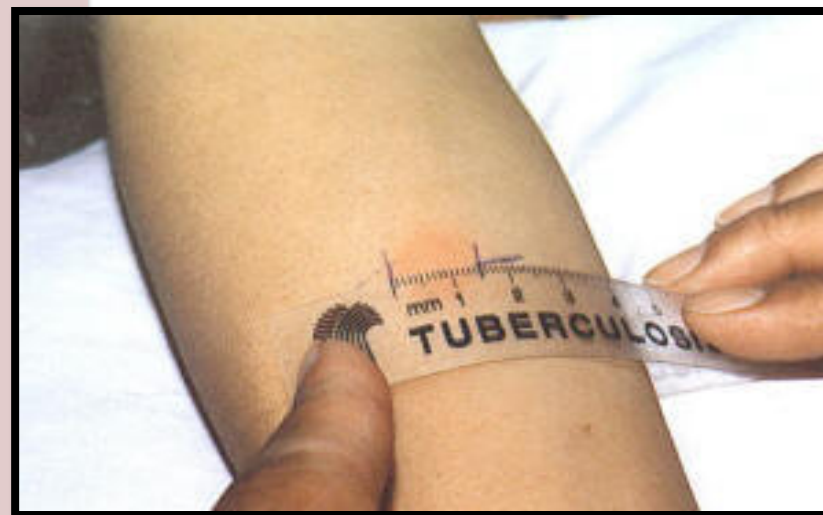
- Prior negative PPD
  - One step PPD
- Prior positive PPD
  - TB symptom review questionnaire
- Chest X-ray not required unless
  - Sign or symptom present or
  - Positive answers to TB questionnaire



# TB SCREENING OF HEALTHCARE WORKERS

## Interpretation of PPD

- PPD test read 48-72 hours after administration
- Read only by trained personnel
- Measure only by induration
- Document results in millimeters of induration
  - Not “positive” or “negative”
    - 5mm or greater = positive if recently exposed to active TB care or immunocompromised (e.g., HIV)
    - 10mm or greater = positive for everyone else







# TB POST-EXPOSURE FOLLOW-UP FOR HCWs

## Exposure Follow-Up

### Unprotected exposure

- Baseline PPD
- Re-test 8-10 weeks later
  - If negative – no further follow-up
  - If positive – refer to health care provider



# AIRBORNE INFECTION ISOLATION

**For residents  
known or  
suspected to be  
infected with  
pathogens  
transmitted by  
the airborne  
route**

- **Place in Airborne Infection Isolation Room (AIIR)**
  - **Private room with negative pressure air flow**
    - **Daily verification negative pressure is maintained**
    - **6-12 air exchanges per hour**
    - **Air exhausts to the outside – does not recirculate in facility**
  - **Use N-95 respirator upon entering room**
  - **Cough etiquette**
  - **If AIIR is not available**
    - **Transfer as soon as possible to a facility with AIIR**



## **DROPLET PRECAUTIONS**

**For residents known or suspected to be infected with pathogens transmitted by respiratory droplets generated when coughing, sneezing, or talking**

- **Place in private room, if available**
  - **Cohort - evaluate case-by-case basis considering risk to other residents**
- **Use personal protective equipment (PPE) appropriately**
  - **Don procedure mask upon entry to room or resident space (i.e., within 3 feet of resident)**
- **Cough etiquette**



# REFERENCES AND RESOURCES

- *Updated U.S. Public Health Service Guidelines for the Management of Occupational Exposures to HBV, HCV and HIV and Recommendations for Postexposure Prophylaxis*, CDC, MMWR, June 29, 2001 / Vol 50 / No. RR-11
- Updated U.S. Public Health Service Guidelines for the Management of Occupational Exposures to HIV and Recommendations for Postexposure Prophylaxis. (2013). <http://stacks.cdc.gov/view/cdc/20711>
- California Code Regulations, Title 8, Section 5193 (BBP ECP)
- CAL-OSHA ATD Standard <http://www.dir.ca.gov/title8/5199.html>
- CDC Guidelines for Preventing the Transmission of Mycobacterium tuberculosis in Health-Care Setting  
[http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5417a1.htm?s\\_cid=rr54\\_17a1\\_e](http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5417a1.htm?s_cid=rr54_17a1_e)
- Cal/OSHA Guidance for the 2010-2011 Influenza Season regarding the Application of the Aerosol Transmissible Diseases Standard (Issue Date: 11/5/2010)
- PEPline at <http://nccc.ucsf.edu/clinician-consultation/post-exposure-prophylaxis-pep>; telephone 888-448-4911
- Joint Guidelines for Prevention and Control of Tuberculosis in CA Long Term Health Facilities. California Department of Public Health [www.cdph.ca.gov/](http://www.cdph.ca.gov/)
- <http://stacks.cdc.gov/view/cdc/20711>



**Questions?**

**Thank you**

