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Occupational Health and Infection Control

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Disclosures

- No financial relationships to disclose
- No off-label or investigational use of medications and/or devices
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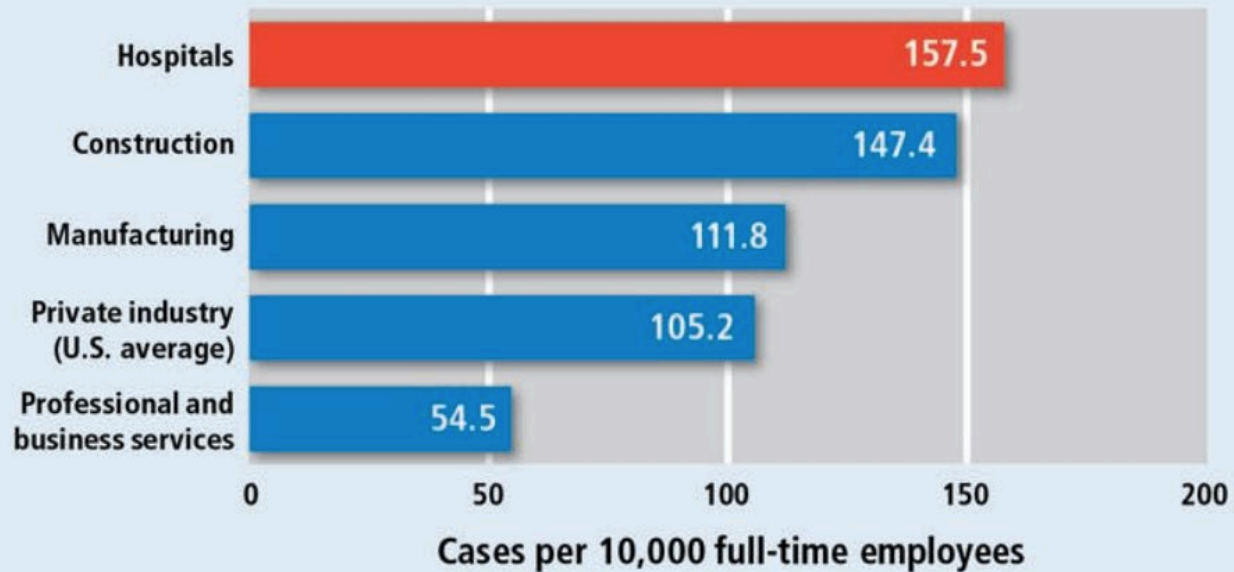
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Workplace Safety

Traditional View of Workplace Safety



Figure 2. Injuries and Illnesses Resulting in Days Away from Work, 2011³



Data source: Bureau of Labor Statistics

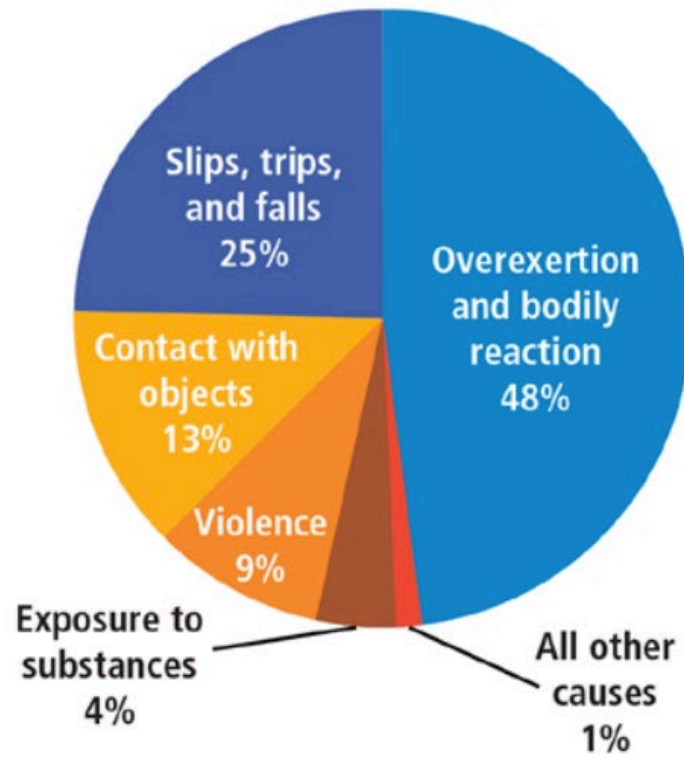
This graph compares hospitals with selected other industries in terms of injuries and illnesses resulting in days away from work in 2011. It shows rates in terms of cases per 10,000 FTEs.

Facts About Hospital Worker Safety

September 2013



Top Five Causes of Injury Among Hospital Workers



Data source: Bureau of Labor Statistics, 2011 data

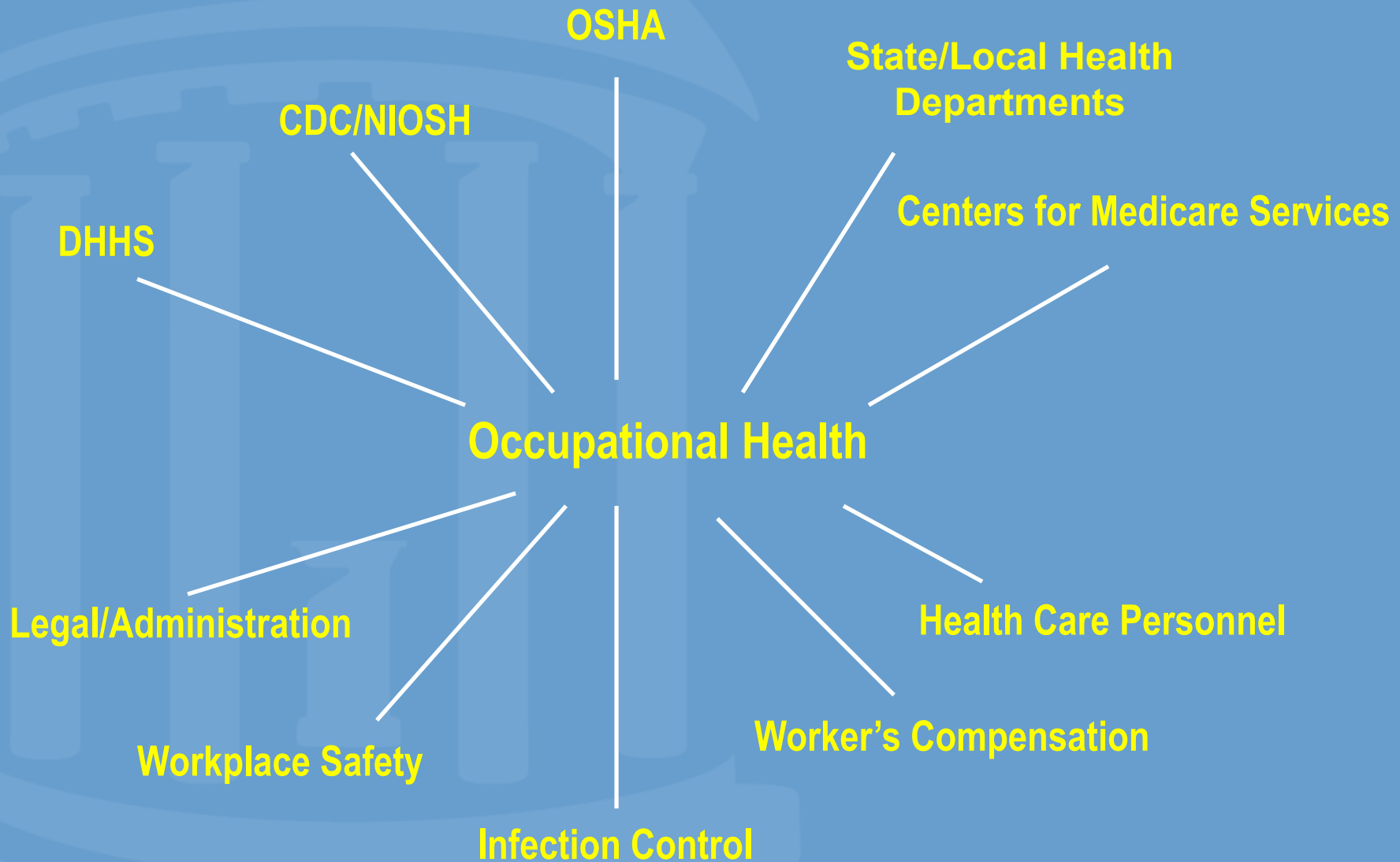
Facts About Hospital Worker Safety

September 2013

 **OSHA**
Occupational Safety
and Health Administration
U.S. Department of Labor
www.osha.gov • (800) 321-OSHA (6742)

Workplace Safety

- **Goals**
 - » To provide a safe environment for patients and health care personnel (HCP)
 - » To minimize risk of injury
 - » To minimize risk of exposure to infectious disease
- **How?**
 - » Commitment to health and safety
 - » Formal organized program to evaluate risks in the workplace
 - » Formal organized program to provide effective, efficient care to the affected patient and/or HCP





Occupational health programs related to infection control



Should I require healthcare personnel to get the influenza vaccine?



Influenza vaccines

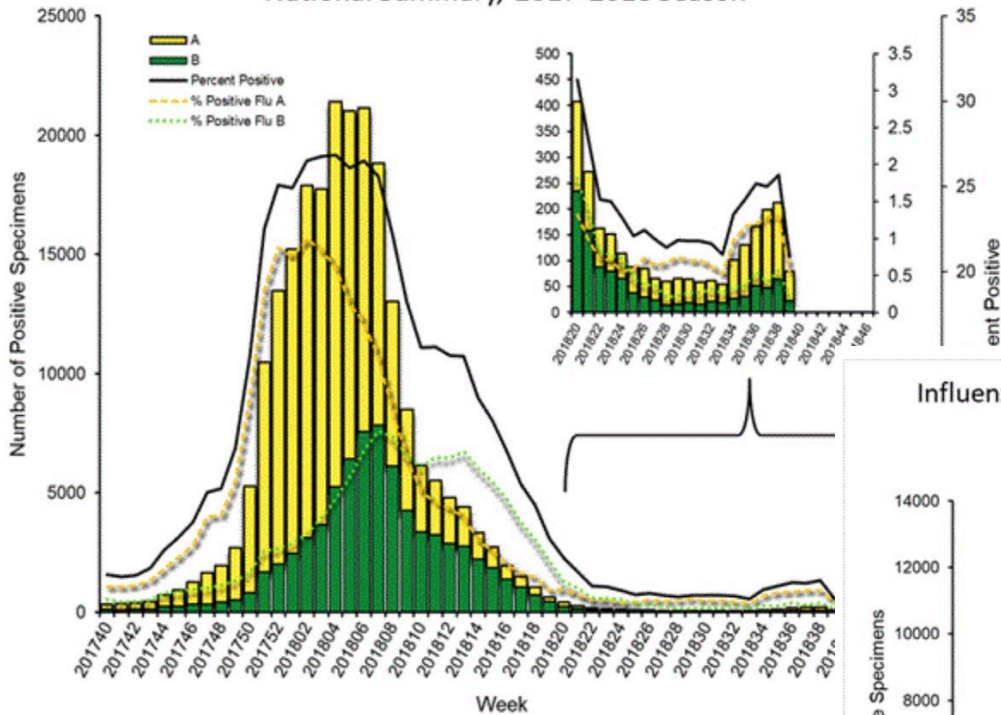
- ACIP recommendations
 - » 1 annual dose for all persons \geq 6 months of age
 - » Immunize as soon as vaccine becomes available for the current season

Influenza vaccines

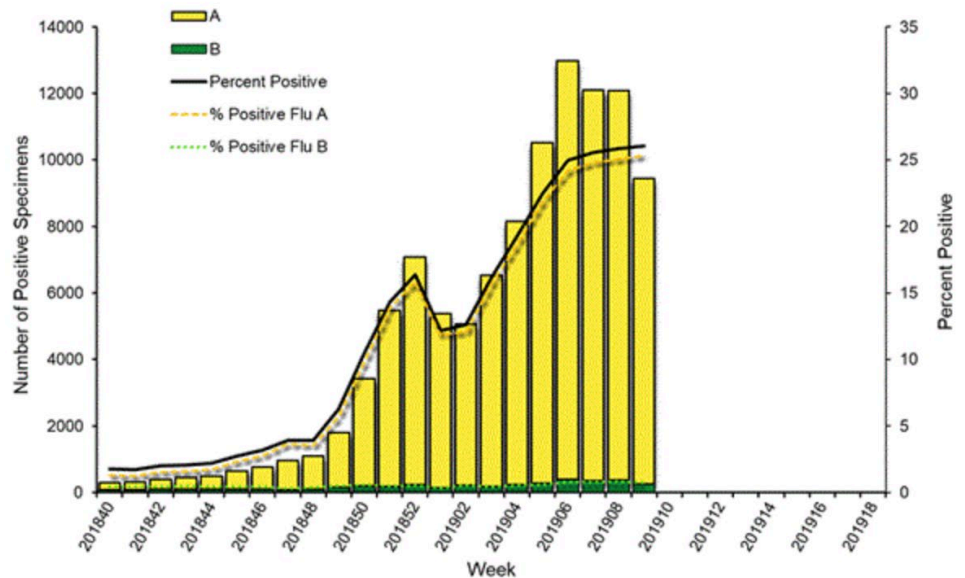
- Standard IM inactivated influenza vaccine (IIV3, IIV4)
- Other formulations
 - » High-dose influenza vaccine (IIV3) (> 65 years)
 - » Cell culture-based influenza vaccine (IIV4) (> 4 years) (egg-free)
 - » Recombinant influenza vaccine (RIV4) (>18 years)
 - » Live attenuated vaccine (LAIV4) (2-49 years)

CDC National Summary 2017-2018 and 2018-2019 Season

Influenza Positive Tests Reported to CDC by U.S. Clinical Laboratories,
National Summary, 2017-2018 Season



Influenza Positive Tests Reported to CDC by U.S. Clinical Laboratories,
National Summary, 2018-2019 Season



Efficacy

- Demicheli V, et al. Vaccines to prevent influenza in healthy adults. *Cochrane Reviews* March 2014
 - » Over 200 viruses cause influenza AND influenza-like illness (IFI)
 - » Vaccine covers 10% of circulating viruses
 - » 40 people need to be vaccinated to avoid 1 case of influenza-like illness
 - » 71 people need to be vaccinated to prevent one case of influenza
 - » Vaccine has not been shown to reduce lost workdays or hospitalizations

Mandatory vaccines?

- Risk to individual vs. benefit to the public
 - » # needed to harm is very low
 - » Probable benefit to patients age > 65
- Who has public health power?
- Cost-effective? For who?
- Is this the best use of our limited resources?

So, do I have to get vaccinated?

- 10A NCAC 13D .2209 INFECTION CONTROL
 - » (a) A facility shall establish and maintain an infection control program for the purpose of providing a safe, clean and comfortable environment and preventing the transmission of diseases and infection.



VACCINES AND RECOMMENDATIONS IN BRIEF

Hepatitis B – If previously unvaccinated, give 3-dose series (dose #1 now, #2 in 1 month, #3 approximately 5 months after #2). Give intramuscularly (IM). For HCP who perform tasks that may involve exposure to blood or body fluids, obtain anti-HBs testing 1–2 months after dose #3.

Influenza – Give 1 dose of influenza vaccine annually. Inactivated injectable vaccine is given IM. Do not use when using the intradermal influenza vaccine. Live attenuated vaccine (LAIV) is given intranasally.

MMR – 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 before 1957, see below. Give subcutaneously (Subcut).

Varicella (chickenpox) – For HCP who have no serologic proof of immunity, prior vaccination, or diagnosis for verification of a history of varicella or herpes zoster (shingles) by a healthcare provider, give 2 doses of varicella vaccine, 4 weeks apart.

Tetanus, diphtheria, pertussis – Give 1 dose of Tdap as soon as feasible to all HCP who have not received Tdap previously and to pregnant HCP with each pregnancy. Give Td boosters every 10 years thereafter. Give IM.

Meningococcal – Give both MenACWY and MenB to microbiologists who are routinely exposed to isolates of *Neisseria meningitidis*. Every 5 years boost with MenACWY if risk continues. Give MenACWY and MenB IM; if necessary to use MPSV4, give Subcut.

Immunization documentation

Vaccine	Birth before 1957	MD Dx	+ Serology	Self Report	Documented Vaccination
Mumps	✓ ¹	Yes ³	✓	No	✓
Measles	✓ ¹	Yes ³	✓	No	✓
Rubella	✓ ^{1,2}	No	✓	No	✓
Varicella	No	Yes	✓ ⁴	No	✓
Hepatitis B	No		≥10 MIU/mL ⁴	No	✓
Pertussis	No	No	No	No	✓
Influenza	No	No	No	No	✓

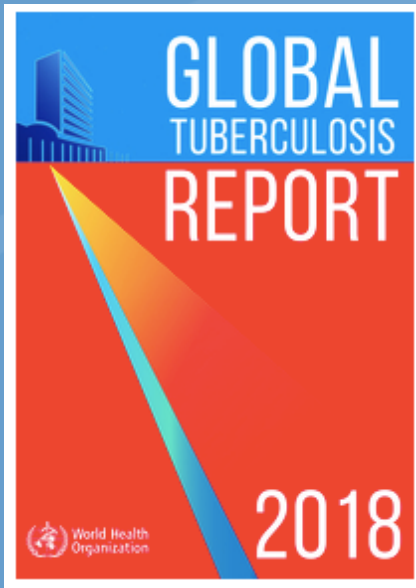
¹Consider immunization of HCP born before 1957, recommend during an outbreak; ²All HCP of childbearing potential should be immunized;

³requires lab confirmation; ⁴Obtain 1-6 months post last vaccine dose
Weber DJ, Schaffner W. ICHE 2011;32:912-4

Vaccine	19-21 years	22-26 years	27-49 years	50-64 years	≥65 years
Influenza inactivated ⓘ (IIV) or Influenza recombinant (RIV)	1 dose annually				
or Influenza live attenuated ⓘ (LAIV)	1 dose annually				
Tetanus, diphtheria, pertussis ⓘ (Tdap or Td)	1 dose Tdap, then Td booster every 10 yrs				
Measles, mumps, rubella ⓘ (MMR)	1 or 2 doses depending on indication (if born in 1957 or later)				
Varicella ⓘ (VAR)	2 doses (if born in 1980 or later)				
Zoster recombinant ⓘ (RZV) (preferred)				2 doses	
or Zoster live ⓘ (ZVL)					or 1 dose
Hepatitis B ⓘ (HepB)	2 or 3 doses depending on vaccine				
Meningococcal A, C, W, Y ⓘ (MenACWY)	1 or 2 doses depending on indication, then booster every 5 yrs if risk remains				
Meningococcal B ⓘ (MenB)	2 or 3 doses depending on vaccine and indication				

Vaccines for HCP

- There are minimal difference between the adult and HCP schedules, all of which go away when you include recommended childhood vaccinations.
 - » Meningococcal vaccines (recommended at age 11-12 with a booster at 16)
 - » MMR – adults can have 1 dose, children should have two doses (age 1 with booster at age 6)
 - 2017 ACIP update allows for a 3rd dose of MMR to be given to individuals with 2 MMRs who are at increased risk for mumps due to a local outbreak.



Should I do annual TB testing for HCP?

TB IS THE TOP INFECTIOUS KILLER IN THE WORLD

IN 2017

**1.6 MILLION
TB DEATHS**



INCLUDING
0.3 MILLION DEATHS AMONG
PEOPLE WITH **HIV**



**TB IS THE
LEADING KILLER
OF PEOPLE WITH HIV**



AND **MAJOR CAUSE**
OF **DEATH** DUE TO
ANTIMICROBIAL RESISTANCE

**10 MILLION
PEOPLE
FELL ILL
WITH TB**



**5.8
MILLION
MEN**



**3.2
MILLION
WOMEN**



**1
MILLION
CHILDREN**



TB transmission in health care settings

- 1994 – CDC publishes guidance for health-care facilities (i.e., hospitals and specific areas in those hospitals), focusing on active TB case management and infection control
- 2005 – updated guidance expanding the locations where screening was recommended – entire facility, laboratories, outpatient facilities, correctional facilities, homeless facilities
- January 2017 – everything you thought you knew about TB changed

Guidelines recommend that persons at low risk for *Mtb* infection and disease progression NOT be tested for *Mtb* infection. We concur with this recommendation. However, we also recognize that such testing may be obliged by law or credentialing bodies. If diagnostic testing for LTBI is performed in individuals who are unlikely to be infected with *Mtb* despite guidelines to the contrary:

- We suggest performing an IGRA instead of a TST in individuals 5 years or older (*conditional recommendation, low-quality evidence*). Remarks: A TST is an acceptable alternative in settings where an IGRA is unavailable, too costly, or too burdensome.
- We suggest a second diagnostic test if the initial test is positive in individuals 5 years or older (*conditional recommendation, very low-quality evidence*). Remarks:

The confirmatory test may be either an IGRA or a TST. When such testing is performed, the person is considered infected only if both tests are positive.

Clinical Infectious Diseases

IDSA GUIDELINE



Official American Thoracic Society/Infectious Diseases Society of America/Centers for Disease Control and Prevention Clinical Practice Guidelines: Diagnosis of Tuberculosis in Adults and Children

Official American Thoracic Society/Infectious Diseases Society of America/Centers for Disease Control and Prevention Clinical Practice Guidelines: Diagnosis of Tuberculosis in Adults and Children

	Groups with Increased Likelihood of Infection with Mtb	Benefit of Therapy	LTBI Testing Strategy	
Risk of Infection ↑	Household contact or recent exposure of an active case	Yes	Likely to be Infected Low to Intermediate Risk of Progression (TST ≥ 10mM)	Likely to be Infected High Risk of Progression (TST ≥ 5mM)
	Mycobacteriology laboratory personnel	Not demonstrated		
	Immigrants from high burden countries (>20 / 100,000)	Not demonstrated		
	Residents and employees of high risk congregate settings	Yes	Unlikely to be Infected (TST > 15mM)	
	None	Not demonstrated		
Risk of Developing Tuberculosis if Infected →				
		Low	Intermediate (RR 1.3 -3)	High (RR 3-10)
		No risk factors	Clinical predisposition Diabetes Chronic renal failure	Children age less than 5 HIV infection

	Progressed	Did not progress
QuantiFERON-TB Gold In-Tube		
Test positive	47/1444 (3.3%)	1397/1444 (96.7%)
Test negative	30/4936 (0.6%)	4906/4936 (99.4%)
Positive vs negative	..	..
T-SPOT.TB		
Test positive	52/1235 (4.2%)	1183/1235 (95.8%)
Test negative	25/5145 (0.5%)	5120/5145 (99.5%)
Positive vs negative	..	..
TST-5		
Test positive	64/2957 (2.2%)	2893/2957 (97.8%)
Test negative	13/3423 (0.4%)	3410/3423 (99.6%)
Positive vs negative	..	..
TST-10		
Test positive	58/2151 (2.7%)	2093/2151 (97.3%)
Test negative	19/4229 (0.4%)	4210/4229 (99.6%)
Positive vs negative	..	..
TST-15		
Test positive	52/1485 (3.5%)	1433/1485 (96.5%)
Test negative	25/4895 (0.5%)	4870/4895 (99.5%)
Positive vs negative	..	..

Prognostic value of interferon- γ release assays and tuberculin skin test in predicting the development of active tuberculosis (UK PREDICT TB): a prospective cohort study

*Ibrahim Abubakar, Francis Drobniowski, Jo Southern, Alice J Sitch, Charlotte Jackson, Marc Lipman, Jonathan J Deeks, Chris Griffiths, Graham Bothamley, William Lynn, Helen Burgess, Bobby Mann, Ambreen Imran, Saranya Sridhar, Chuen-Yan Tsou, Vladyslav Nikolayevskyy, Melanie Rees-Roberts, Hilary Whitworth, Onn Min Kon, Pranab Halder, Heinke Kunst, Sarah Anderson, Andrew Hayward, John M Watson, Heather Milburn, Ajit Lalvani on behalf of the PREDICT Study Team**

Tuberculin Skin Test Conversions and Occupational Exposure Risk in US Healthcare Workers

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Background. Healthcare workers (HCWs) undergo occupational tuberculosis screening at regular intervals. However, the risk of contracting tuberculosis at the workplace in a setting with a low background tuberculosis incidence is unclear. We aimed to evaluate the risk of tuberculin skin test (TST) conversion and the risk of occupational tuberculosis infection among HCWs in such a setting.

Methods. We conducted a retrospective cohort study of employees of a large tertiary medical center in the US Midwest who had undergone TST screening during the study period 1 January 1998 to 31 May 2014.

Results. Among 40 142 HCWs who received a TST, only 123 converted over 16.4 years. Only 9 (7%) of the converters had a suspected tuberculosis exposure at the workplace and none developed active tuberculosis. The majority of TST converters (66%) had a negative QuantiFERON-TB test at the time of the conversion.

Conclusions. In one of the largest cohorts of HCWs in a low-tuberculosis-incidence setting, we demonstrated an extremely low risk of occupational tuberculosis exposure among TST converters and no resulting active tuberculosis cases. In this setting, the approach of testing HCWs at baseline and after tuberculosis exposure, rather than at regular intervals, should be considered.

Keywords. tuberculosis; work place; screening; transmission.

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NC TB Control Manual

Situation	Preferred test
Person 2 years or older born outside the U.S.	IGRA
Person known to have received BCG (vaccine or bladder cancer treatment)	IGRA
Person unlikely to return for TST reading	IGRA
Child under 2 years old	TST*
Person at low risk for TB infection (e.g. administrative screening)	IGRA
Testing in settings where the TST is infrequently performed	IGRA

The following children and adults are legally required (10A NCAC 41A.0205) to receive a TST:

- a. household and other close contacts of active cases of pulmonary and laryngeal tuberculosis
- b. persons reasonably suspected of having tuberculosis disease
- c. inmates in the custody of, and staff with direct inmate contact, in the Department of Corrections upon incarceration or employment, and annually thereafter
- d. patients and staff in long term care facilities upon admission or employment, using the two-step skin test method
- e. staff in adult day care centers providing care for persons with HIV infection or AIDS upon employment, using the two-step skin test method
- f. persons with HIV infection or AIDS

What's next?

- Last CDC update to TB testing in health care settings was 2005
- Guidelines are under review
 - » Baseline testing- IGRA or two-step TST will likely remain
 - Positive test in low-risk HCP needs a second test
 - » Serial testing of HCP based on facility-level risk will no longer be recommended
 - » Serial testing/screening of HCP in high risk groups (determined by your facility data) can be considered

Not so fast

- State health departments determine TB testing requirements
- NC Tuberculosis Policy Manual
- <https://epi.publichealth.nc.gov/cd/lhds/manuals/tb/toc.html>



Why do employees come to work when they are sick?



The Illusion of Precision

- Over 200 viruses cause influenza AND influenza-like illness (IFI)
- Sore Throat?
 - Group A streptococcus
 - » 20%-30% of sore throats in children
 - » 5%-15% of sore throats in adults
 - » People with group A strep pharyngitis should stay home from work, school, or daycare until afebrile and until at least 24 hours after starting appropriate antibiotic therapy.

The Illusion of Precision

- Cold?
 - Respiratory syncytial virus (RSV)
 - » Circulates fall, winter, and spring
 - » 177,000 adult hospitalizations in adults older than 65, compared with 300,000 hospitalizations for influenza
 - » No post-exposure prophylaxis. People are contagious for 3 to 8 days, spreads by droplet.
 - Adenovirus
 - » Transmits by droplet (and through stool), persists in the environment
 - » No post-exposure prophylaxis

The Illusion of Precision

- Employees want to be tested for strep, RSV, adenovirus, influenza, etc.
- Does a negative test mean they are not sick? Infectious?

Sick Day

- What if we ask them to stay home?
 - » Stay home if you have an oral temperature > 101.5
 - » Stay home until you are afebrile for 24 hours (and off of antipyretics)
- Good in theory
 - » Are these absences excused? Do we give them additional sick time?
 - » Do we test employees to prove they are sick?
 - » Do we take random temperatures to see if the employees are sick but not telling us?
 - » Do we have to clear employees to return to work after an illness?



You showed up to work anyways



I'm ok.... Are you?

- **Sleep deprivation**
 - » Subjective alertness is a weak predictor of vigilant or cognitive performance (Bermudez EB, et al. 2016)
- **Medications**
 - » OTC – Benadryl can impair performance during the first four hours (more than alcohol)
NHTSA
 - » Prescription – oxycodone (6 hours until trend to baseline)
 - » Illicit – occasional marijuana use impairs performance up to 72 hours (smoke on Friday night, still slow on Monday)

I'm ok.... Are you?

- Depression
 - » Psychomotor retardation includes slowed speech, decreased movement, and impaired cognitive function
- What other medical conditions would you be worried about?

Can I prove you are ok?

- **Fitness-for-duty**
 - » Legal drug use
 - » Illicit drug use
 - » Work and non-work stress
 - » Shift-work
 - » Childcare issues
 - » Poor sleep hygiene
 - » Substance abuse
 - » Cognitive fatigue

Probably not...

- Alcohol testing
 - » Yes & Yes
- Drug testing
 - » Does not report prescription drugs
- Poor sleep
 - » Can try to limit by administrative controls, limited help from stimulants
- Childcare issues
 - » See me after the presentation
- Substance abuse



Should I send you home?



Skin integrity

- Ability to perform hand hygiene
- Ability to properly wear gloves (PPE)
- Infection risk to patients
 - » What if the area can be covered?
 - » What if the condition is not-infectious (e.g., contact dermatitis)?
 - » What if the condition is possibly infectious (e.g., shingles)?

Hand Hygiene

- Which method is more effective at reducing bacterial counts on the hands: soap & water or alcohol-based products?
 - » Soap & Water
 - 1.8–2.8 \log_{10} reduction (30 seconds)
 - » Alcohols
 - 3.5 \log_{10} reduction (30 seconds)
- Alcohol-based products are more effective for standard handwashing or hand antisepsis by HCWs than soap or anti-microbial soaps

Guideline for Hand Hygiene in Health-Care Settings

Recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force

Hand Hygiene

- How much alcohol-based hand-hygiene product should I use?
 - » Trick question. While 3 ml has been shown to be superior to 1 ml, there are not specific recommendations based on volume. Recommended that if the hands feel dry after rubbing hands together for 10-5 seconds, an insufficient volume was used.

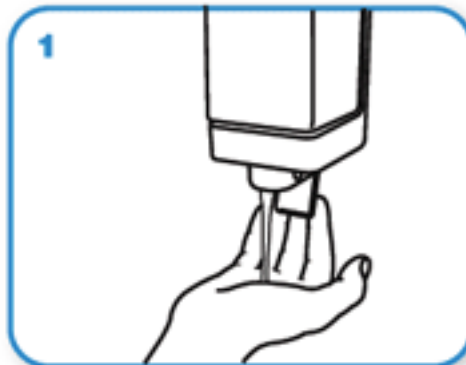
Guideline for Hand Hygiene in Health-Care Settings

Recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force

You are washing your hands wrong



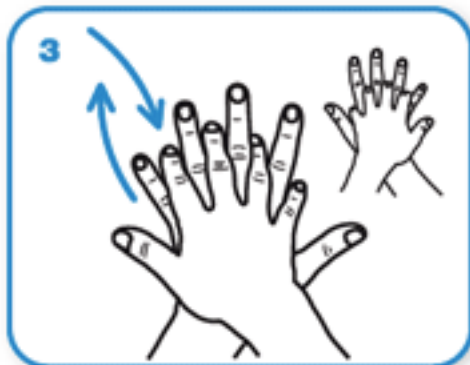
Wet hands with water



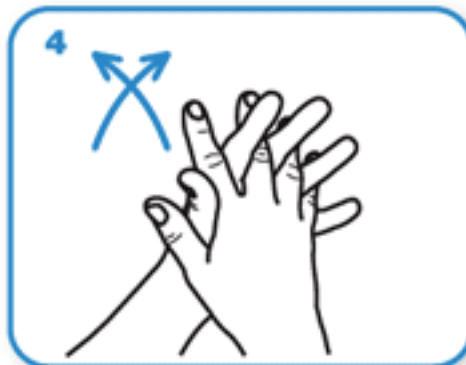
apply enough soap to cover all hand surfaces.



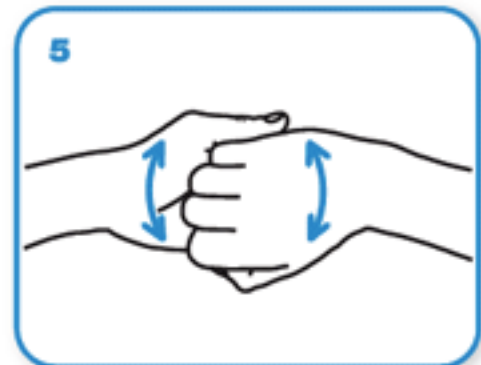
Rub hands palm to palm



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

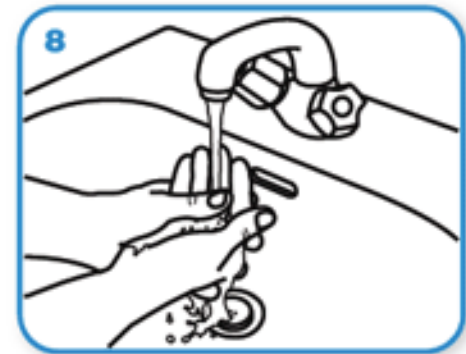
You are washing your hands wrong



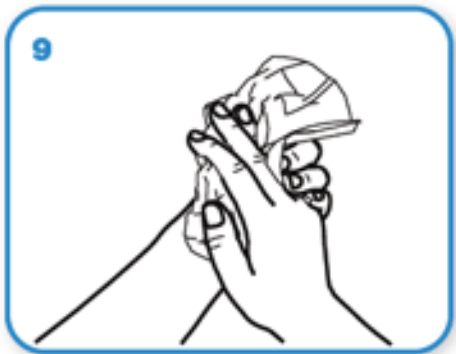
rotational rubbing of left thumb clasped in right palm and vice versa



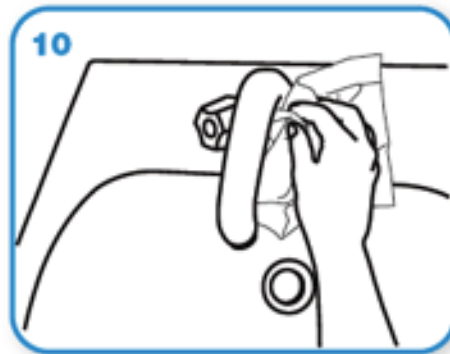
rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa.



Rinse hands with water



dry thoroughly with a single use towel



use towel to turn off faucet



...and your hands are safe.

Can you work with a short-arm cast/brace?

- Is there a lifting restriction?
- Are you in a high-risk infection area (e.g., operating room)?
- Can you perform hand hygiene? Wear gloves?
- We don't allow
 - » Artificial nails/nail art
 - » Long fingernails
- What about
 - » Band-Aids?
 - » Open cuts?
 - » Dry, cracked skin?

Can you work if you are not on your “A” game?

- **Migraines?**
 - » 68% of migraine sufferers report some work productivity impact in the form of absenteeism or presenteeism (Landy SH, et al *JOEM* 2011)
- **Walking boot?**
 - » Slip and fall risk? Are you able to safely perform patient handling tasks?
- **Lifting restriction?**
 - » How much? How long? Is this temporary?
- **Back/knee/ankle brace**
 - » Protective? Required?
- **Crutches?**
 - » Do you need use of both of your hands?
- **Having a non-medical bad day?**



As the employer, do I have to accommodate your request for job modifications/restrictions?

Accommodations

- Not everyone with a medical condition is protected by the law.
 - » In order to be protected, a person must be qualified for the job and have a disability as defined by the law.
- Conditions that last for only a few days or weeks and are not substantially limiting with no long-term effect on an individual's health (i.e., colds, influenza, broken bones and sprains) are not considered disabilities under the Act.
- While covered employers are required to provide FMLA, they are not required to provide intermittent FMLA.

Americans with Disability Act Amendments Act (ADAAA)

- A person may be disabled if he or she has
 - » A physical or mental condition that substantially limits a major life activity (such as walking, talking, seeing, hearing, or learning).
 - » A history of a disability (such as cancer that is in remission).
 - » Is believed to have a physical or mental impairment that is not transitory (lasting or expected to last six months or less) and minor (even if he does not have such an impairment).



ADAAA

- **Modifications**
 - » making existing facilities accessible;
 - » job restructuring;
 - » part-time or modified work schedules;
 - » acquiring or modifying equipment;
 - » changing tests, training materials, or policies;
 - » providing qualified readers or interpreters;
 - » reassignment to a vacant position

ADAAA

- Reasonable modifications
 - Modifications or adjustments to a job application process that enable a qualified applicant with a disability to be considered for the position such qualified applicant desires; or
 - Modifications or adjustments to the work environment, or to the manner or circumstances under which the position held or desired is customarily performed, that enable a qualified individual with a disability to perform the essential functions of that position;
 - Modifications or adjustments that enable a covered entity's employee with a disability to enjoy equal benefits and privileges of employment as are enjoyed by its other similarly situated employees without disabilities.

ADAAA

- The employer does not have to
 - » Eliminate an essential function of the job
 - » Adopt a lower production standard
 - » Provide personal use items for use on or off the job (may provide job-related items)
 - » Provide personal use amenities (unless they are provided to employees without disabilities)

ADAAA

- Undue hardship
 - » No change or modification is required if significant difficulty or expense will be incurred and focuses on the resources and circumstances of the particular employer in relationship to the cost or difficulty of providing a specific accommodation.
 - » Undue hardship refers not only to financial difficulty, but to reasonable accommodations that are unduly extensive, substantial, or disruptive, or those that would fundamentally alter the nature or operation of the business.
 - » This is decided on a case-by-case basis



Bloodborne Pathogens

Bloodborne Pathogens

- Approximately 385,000 needle sticks and other sharps-related injuries to hospital-based healthcare personnel each year.
- 88% (50/57) of the documented cases of occupational HIV transmission from 1985-2004 involved a percutaneous exposure. Of those, 45/57 involved a hollow-borne needle.
- 41% of sharp injuries occur during use; 40% after use/before disposal; 15% during/after disposal

OSHA Bloodborne Pathogens Standard

- Employers must establish a written exposure control plan and provide annual training
- Mandates use of universal precautions (all body fluids assumed contaminated except sweat)
- Employers must utilize engineering and work practice controls to minimize/eliminate exposure
 - » Needleless devices, single-hand recapping, handwashing stations, sharps containers, laundry, disposal of contaminated material

(29 CFR 1910.1013)

OSHA Bloodborne Pathogens Standard

- Requires offering hepatitis B vaccine to persons with the potential for exposure
- Testing of exposed employees for Hepatitis B and HIV
- Post-exposure prophylaxis must be immediately available as per CDC guidelines

(29 CFR 1910.1013)

OSHA Bloodborne Pathogens Standard

- All work-related needle stick injuries and cuts from sharp objects that are contaminated with another person's blood or other potentially infectious material are OSHA-reportable regardless of the source patient disease status.

Bloodborne Pathogens

- Risk (percutaneous exposure)
 - » HBV
 - 22.0 – 30.0% (HBeAG⁺)
 - 1.0 – 6.0% (HBeAG⁻)
 - » HCV
 - 1.8%
 - » HIV
 - 0.3% (1 in 300)
- Risk (mucous membrane)
 - » HBV
 - Yes (rate unknown)
 - » HCV
 - Yes (rate unknown but very small)
 - » HIV
 - 0.1% (1 in 1000)
 - < 0.1% (non-intact skin)



R
I
S
K

Post-exposure pathway

- Test source for hepatitis B (HBsAg), hepatitis C, HIV (consider rapid test)
- Provide hepatitis B prophylaxis, if indicated
- Provide follow-up for hepatitis C, if indicated
- If source HIV+ or at “high risk” for HIV, offer employee HIV prophylaxis per CDC protocol

Post-exposure pathway

- 10A NCAC 41A .0202
- CONTROL MEASURES – HIV
 - » When the source case is known, the attending physician or occupational health provider responsible for the exposed person shall notify the healthcare provider of the source case that an exposure has occurred.
 - » This healthcare provider shall arrange HIV testing of the source person (unless known to be HIV+) and notify the OHS provider of the test results.
 - » Source patient consent is **not required**

Current HIV PEP

- Three-drug regiment
 - » Tenofovir-emtricitabine (Truvada) + raltegravir (Isentress) for 4 weeks
 - » Other regiments are available for known HIV-source patients with specific drug resistance but these cases are rare.

Hepatitis B

- Universal; HCP with potential blood exposure (OSHA required or HCP may decline)
 - » No need to routinely obtain Hep B titers if an employee has documented vaccine series and a positive titer
 - » In practice, we usually titer and give a booster if titer is < 10
 - » For known non-responders, they should get Hepatitis B Immune Globulin (HBIG) within 24 hours (up to 7 days after exposure)

Hepatitis B

Vaccination and antibody response status of exposed person	Treatment		
	Source HBsAg-positive	Source HBsAg-negative	Source not tested or status unknown
Unvaccinated	HBIG x 1; Initiate HB vaccine series	Initiate HB vaccine series	Initiate HB vaccine series
Previously vaccinated – known responder	No treatment	No treatment	No treatment
Previously vaccinated – known nonresponder after 3 doses	HBIG x 1 and initiate revaccination	No treatment	If known high-risk source, treat as if source were HBsAg-positive.
Previously vaccinated – known nonresponder after 6 doses	HBIG x 2 (separated by 1 month)	No treatment	If known high-risk source, treat as if source were HBsAg-positive.
Antibody response unknown	Test exposed person for anti-HBs – If adequate,* no treatment, – If inadequate,* HBIG x 1 and vaccine booster	No treatment	Test exposed person for anti-HBs – If adequate,* no treatment – If inadequate,* HBIG x 1 and vaccine booster

Centers for Disease Control and Prevention. Epidemiology and Prevention of Vaccine-Preventable Diseases. Hamborsky J, Kroger A, Wolfe S, eds. 13th ed. Washington D.C. Public Health Foundation, 2015.

Figure 3.1. Reported number of acute hepatitis B cases— United States, 2001–2016



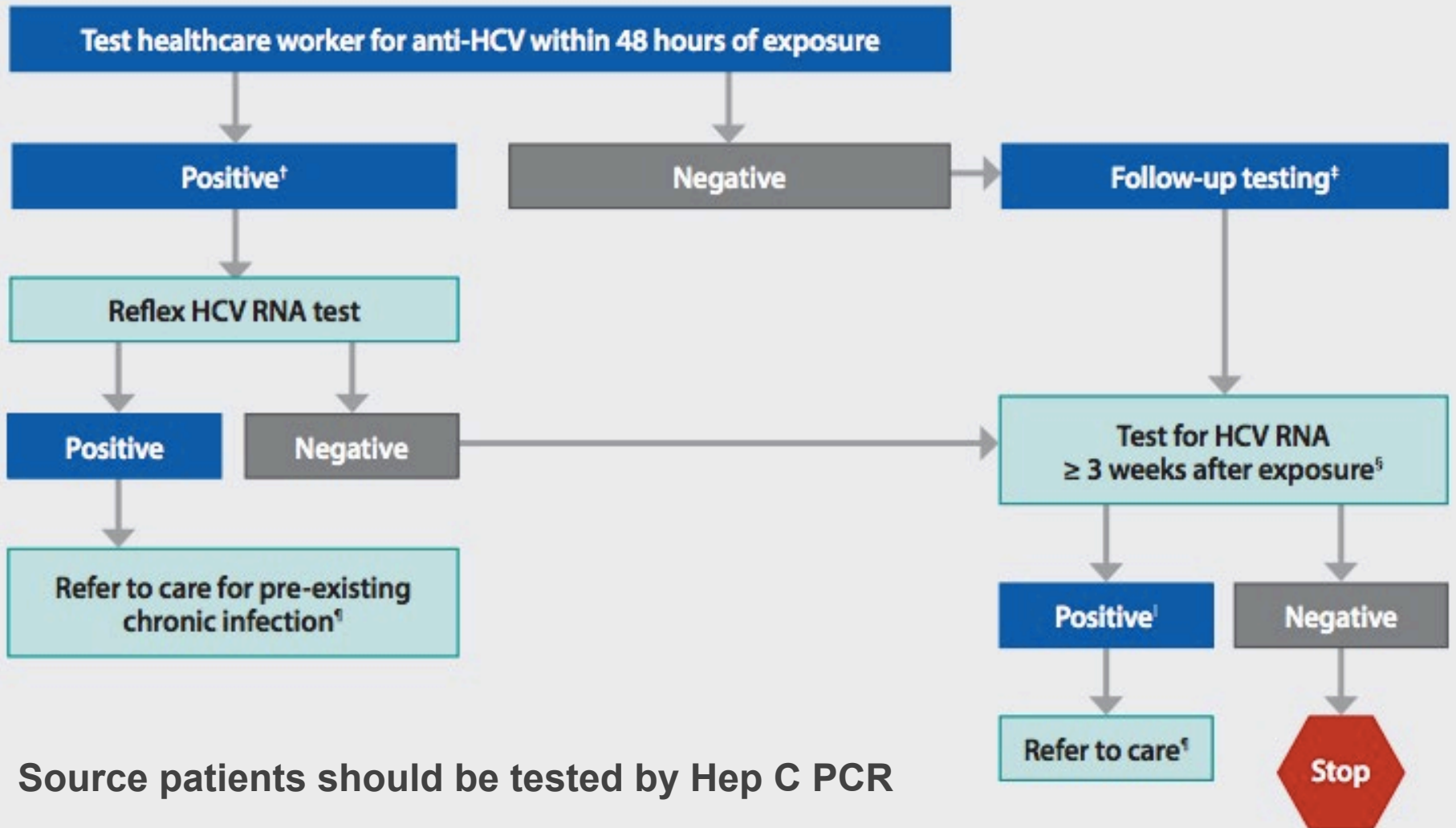
Source: National Notifiable Diseases Surveillance System (NNDSS)



Hepatitis C

- No post-exposure prophylaxis

Hepatitis C



Follow-up testing

- **Hepatitis B**
 - » Not required if employee has immunity
- **HIV**
 - » Dependent on source patient and available testing
- **Hepatitis C**
 - » Dependent on source patient, test for HCV antibodies and HCV RNA

Take your son to work day



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