



# An infected healthcare worker

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# Public Opinion

Want to know whether their  
doctor or dentist is infected  
with HIV



89%



82%



38%

# Questions

- How many of you get your screening for BBV done in last one year?
- How many are aware that how many HCWs are infected with BBV?

# Questions

- Should healthcare providers who are infected with HBV/HCV/HIV be allowed to practice?
  - HBV
  - HCV
  - HIV
- Should any, or perhaps all, providers be routinely tested for HIV infection?

# Questions

- If allowed which procedures should they be allowed/ precluded from performing?
- If restricted – on what basis they should be restricted?

# Questions

- Should students, residents, fellows, and other trainees who are infected with HBV, HCV, and/or HIV be discouraged from entering certain specialties and/or subspecialties?
  - How and by whom should these decisions be made?

# Questions

- Should HCP be routinely required to notify patients of his or her bloodborne pathogen status
- Should an infected HCP be required to obtain informed consent that includes disclosure of the provider's serostatus from a patient prior to a procedure?

# Definitions

- HCP
  - includes trainee and student HCWs
- Exposure-prone procedure (EPP)
  - A procedure where there is a risk of injury to the HCP resulting in exposure of the patient's open tissues to the blood of the worker
    - *Include those where the worker's hands (whether gloved or not) may be in contact with sharp instruments, needle tips or sharp tissues (spicules of bone or teeth) inside a patient's open body cavity, wound or confined anatomical space where the hands or fingertips may not be completely visible at all times*



# Categories of EPPs by risk of transmission

- **Category 1**
  - Hands and fingertips of the HCW are usually visible and outside the body most of the time
  - Possibility of injury to the worker's gloved hands from sharp instruments and/or tissues is slight
  - This means that the risk of the HCW bleeding into a patient's open tissues should be remote, e.g. insertion of a chest drain
- **Category 2**
  - Finger tips may not be visible at all times
  - Injury to the HCW's gloved hands from sharp instruments and/or tissues is unlikely
  - If injury occurs it is likely to be noticed and acted upon quickly to avoid the HCW's blood contaminating a patient's open tissues, e.g. appendicectomy
- **Category 3**
  - Fingertips are out of sight for a significant part of the procedure, or during certain critical stages
  - There is a distinct risk of injury to the HCW's gloved hands from sharp instruments and/or tissues
  - In such circumstances it is possible that exposure of the patient's open tissues to the HCW's blood may go unnoticed or would not be noticed immediately, e.g. suturing of an episiotomy

## Categorization of Healthcare-Associated Procedures According to Level of Risk for Bloodborne Pathogen Transmission

- **Category I:** Procedures with *de minimis* risk of bloodborne virus transmission
- **Category II:** Procedures for which bloodborne virus transmission is theoretically possible but unlikely
- **Category III:** Procedures for which there is definite risk of bloodborne virus transmission or that have been classified previously as "exposure-prone"

# Evidence for HIV transmission risk

- In USA
  - 1992: A dental practitioner in Florida infected 6 of his patients
    - One additional report of probable transmissions of HIV to patients (one each) from infected HCWs performing EPPs in the 1990s from USA
- In France – 2 cases
  - Unaware orthopedic surgeon – of 983 patient one had HIV positivity who had undergone 3 surgeries
  - Nurse to patient – of 2293 cases one HIV positive
- In Spain – 1 case
  - Infected OBG surgeon – Of 250 patients screened one patient after LSCS

# Worldwide cases of HCW-patient transmission of HIV 1992 -2005

Year reported	Country	Occupation	Patients infected	Patients tested	% patients infected
1992	USA	Dentist	5	1,100	0.45%
1999	France	Orthopaedic surgeon	1	983	0.10%
2002	France	Gynaecologist	1	2294	0.04%
2003	Spain	Obstetrician	1	250	0.40%

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## ...HIV transmission risk

- UK
  - B/w 1988 and 2006: 28 look back exercises - 11,000 patients were tested
- Israel
  - 2007: 545 patients operated on by an HIV-infected cardiothoracic surgeon were tested

*No detectable transmission in any of these exercises*

## ...HIV transmission risk

- Infection risk - 0.09%
- Infection risk after sharps injury to a HCW from a HIV positive source patient - 0.3%

## ...HIV transmission risk

- Frequency with which providers sustain injuries that might present a risk for transmission to their patients
  - Good infection control practices
  - Students and trainees are more likely to sustain such exposure
- How frequently such an exposure occurs and is then followed by exposure to a patient (ie, the so-called “recontact” or “bleed- back” risk) ?

## ...HIV transmission risk

- Infected provider's circulating viral burden
  - Distinction between HBeAg-positive and HBeAg-negative
    - 5 studies attempted to measure the viral burden of the provider associated with transmission of infection
    - surgeons were found to have circulating HBV DNA levels between  $6.4 \times 10^4$  and  $5.0 \times 10^9$  GE/mL
    - Modeling study - viral burdens  $\sim 10^4$  GE/mL or less associated with exposures to fewer than 1 virion
  - Advanced AIDS - an elevated HIV viral load



## Evidence for HCV transmission risk

### – UK

- Cardiac Surgeon – 278 patients – 1 developed HCV
- OBG/Gynae – 3628 patients – 1 patient HCV+
- Anesthesiologist - 1 developed HCV
- Anesthesia Assistant - 5 developed HCV (open finger wound), Poor ICP

### – In Spain

- Cardiac Surgeon – 222 patients – 6 developed HCV

### – In Germany

- Orthopedic Surgeon – 207 patients - 1 developed HCV
- OBG/Gynae – 2286 patients - 1 developed HCV

## ...HCV transmission risk

### – USA

- Cardiac Surgeon – 14 of 937 patients
- Surgical Technician – 40 of 346 patients in 3 months
  - self- injecting anesthesia medications and then using the same syringe to administer drugs to patients
- Anesthetist – One patient (narcotic abuse)
- Nurse anesthetist – 15 of 164 patients (drug abuse)

### – Spain

- Anesthetist - infected 200 patients (drug abuse)

### – Israel

- Anesthetist - infected 33 patients (drug abuse)



## Worldwide cases of HCW-patient transmission of HCV – 1995-2005

Year reported	Country	Occupation	Patients infected	Patients tested	% patients infected
1995	UK	Cardiothoracic surgeon	38	278	0.36%
1996	Spain	Cardiothoracic surgeon	5	222	2.25%
1999	UK	Gynaecologist	7	3,628	0.19%
2000	UK	General surgeon	4	1,370	0.29%
2000	UK	General surgeon	2	750	0.27%
2001	USA	Cardiothoracic surgeon	14	937	1.49%
2001	UK	Obstetrician	1	n/a	n/a
2002	Germany	Orthopaedic surgeon	1	207	0.48%
2002	Germany	Obstetrician	1	2,286	0.04%
2002	USA	Anaesthetist	1	348	0.28%
2005	UK	Obstetrician	1	n/a	n/a
2005	UK	Dentist	0	2,665	0

## ...HCV transmission risk

TABLE 3. Summary of Reports of Provider-to-Patient Hepatitis C Virus Transmission from the United Kingdom

Year	Provider's occupation	Procedure	No. of patients tested	No. of probable cases	Transmission rate, % (95% CI)
1995	Cardiovascular surgery	Coronary artery bypass	270 <sup>a</sup>	1	0.37 (0.00–1.44)
1999	Gynecology	Gynecological procedure	3,628 <sup>b</sup>	7	0.19 (0.08–0.36)
2000	General surgery	Bowel surgery	627 <sup>c</sup>	2	0.32 (0.03–0.91)
2000	General surgery	Bowel surgery	1,145 <sup>d</sup>	4	0.35 (0.09–0.77)
2001	Obstetrics	Cesarean delivery	198 <sup>e</sup>	1	0.51 (0.00–1.97)
2002	Obstetrics and gynecology	Cesarean delivery	Investigation ongoing	Investigation ongoing	Investigation ongoing
2004	Obstetrics and gynecology	Cesarean delivery	Investigation ongoing	Investigation ongoing	Investigation ongoing
Overall	...	...	5,868	15	0.26 (0.13–0.38)

## ...HCV transmission risk

- The risk of transmission - 0 to 2.25% - transmission is highly variable and heterogeneous
- Hypothesis - “exposure-prone, invasive procedures” are likely to pose the largest risk for provider-to-patient transmission of HCV

## ...HCV transmission risk

- Risk factors for transmission include
  - Likelihood of a percutaneous injury
  - Active liver disease and high levels of viraemia in the surgeon
  - Number and complexity of surgical procedures performed
  - Surgeon's technique and experience

## Evidence for HBV transmission risk

- 42 instances of provider-to-patient transmission of HBV (375 patients)
- Average risk of **2.96% Vs 6-37%** in sharps injury
  - Higher rates if the source patient is HBeAg positive
  - All reported cases of transmission have occurred at levels  $>10^5$  geq/ml ( $>2 \times 10^4$  IU/ml), except for one questionable case at a level of  $4 \times 10^4$  geq/ml ( $8 \times 10^3$  IU/ml)
  - Transmission of HBV from HCWs with low levels of HBV DNA has yet to be documented but may occur

# Worldwide cases of HCW-patient transmission of HBV – 1991-2005

Year of report	Country	Occupation	Patients infected (probable, possible)	Patients tested	% patients infected (probable, possible)
1996	UK	Cardiothoracic surgeon	20	304	6.57
1996	UK	General surgeon	2	16	12.5
1996	USA	Cardiothoracic surgeon	19	144	13.19
1997	UK	Obstetrics trainee	1 (2)	92	1.1 (3.26)
1997	UK	Obstetrics trainee	1	111	0.9
1997	UK	General surgical trainee	1	189	0.53
1998	UK	Orthopaedic surgeon	1	189	0.53
1999	UK	General surgeon	1 (0, 10)	n/a	n/a
1999	UK	Orthopaedic surgeon	(0, 2)	n/a	n/a
1999	UK	Urologist	(0, 1)	n/a	n/a
2000	UK	Cardiothoracic surgeon	2	124	1.61
2002	Netherlands	General surgeon	8 (2, 18)	1,564	0.51 (0.64, 1.78)



## Risk for transmission from infected HCP to a patient

- During *provision of routine health care* that does not involve invasive procedures - negligible
- With invasive procedures and exposure-prone noninvasive procedures – risks still quite small
- BUT - *clearly elevated when compared with other routine patient-care activities that do not involve invasive procedures*

- Despite hepatitis B vaccine, HBV remains the most commonly transmitted bloodborne pathogen in the health care setting
- Lack of a hepatitis C vaccine, and with prevalence of HCV infection rising around the world risk increasing
- HCP-to-patient transmission of HIV has been extremely rare, with no cases reported worldwide since 2003

# Ethical Issues

- Ethical
- Professional
- Patient's trust
- Patient Safety

*Obligation to follow the accepted standards of practice to prevent the transmission of bloodborne pathogens to patients*

“Do No Harm”

INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY MARCH 2010, VOL. 31, NO. 3

SHEA GUIDELINE

**SHEA Guideline for Management of Healthcare Workers  
Who Are Infected with Hepatitis B Virus, Hepatitis C Virus,  
and/or Human Immunodeficiency Virus**

David K. Henderson, MD; Louise Dembry, MD, MS, MBA; Neil O. Fishman, MD; Christine Grady, RN, PhD;  
Tammy Lundstrom, MD, JD; Tara N. Palmore, MD; Kent A. Sepkowitz, MD; David J. Weber, MD, MPH;  
for the Society for Healthcare Epidemiology of America

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# 2012

**AUSTRALIAN NATIONAL GUIDELINES FOR THE  
MANAGEMENT OF HEALTH CARE WORKERS  
KNOWN TO BE INFECTED WITH BLOOD-  
BORNE VIRUSES.**



Health Workforce Directorate  
Employment and Retention Division



Dear Colleague

**Best Practice Guidance**  
**Hepatitis B infected healthcare workers and antiviral therapy**

**CEL 38 (2009)**

**Date 14/09/2009**

*HIV Infection and Health Care Workers -  
Recommended Guidelines*

**DRAFT**

**Hong Kong Advisory Council on AIDS**

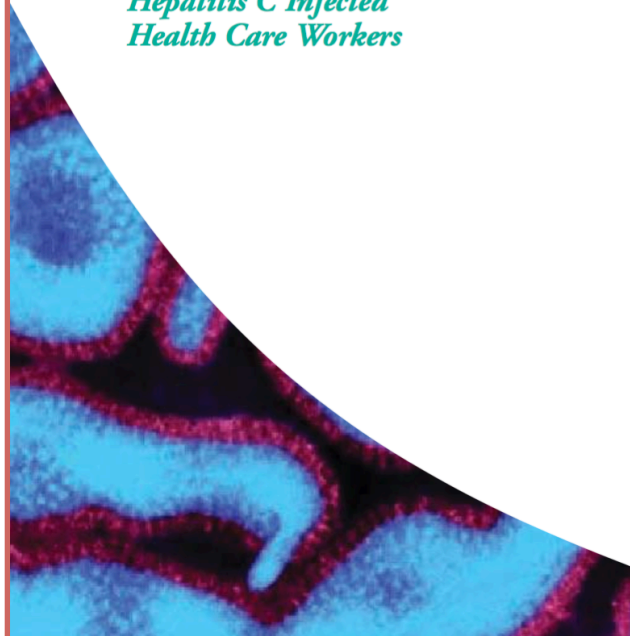
**June 2013**

## Hepatitis B Infected Health Care Workers

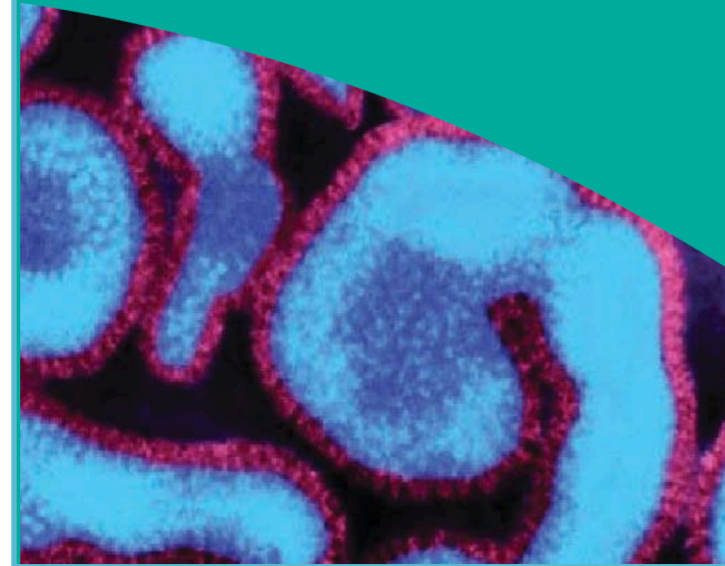
### Guidance on Implementation of Health Service Circular 2000/020



### *Hepatitis C Infected Health Care Workers*



### Hepatitis B infected healthcare workers and antiviral therapy





**Shaping attitudes  
Challenging injustice  
Changing lives**



## **Policy briefing**

# **Changes to employment restrictions for healthcare workers with HIV**

**August 2013**

## Guidelines consider each pathogen individually

- Risk of transmission varies
- Risk measurement can be done to some extent and is different for each pathogen
- Pre-exposure and post exposure management

# GUIDELINES

- Enforcement of Infection Control
  - Sound infection control practices to be implemented at all levels
  - Multidisciplinary infection control committee with written infection control guidelines on standard precaution for prevention of blood-borne pathogens
  - Quality control measures
  - Infection control training
  - Support and assistance at the institutional/employer level
- Standard Precaution against Blood / Body Fluid Exposure
- Counseling & related services for health care workers
- Rights & Responsibilities of BBV infected health care worker
  - *Confidentiality*
  - *Right to Work*
  - *Professional ethics*
  - *Expert Panel*
  - *Risk Communication*

# Mandatory Infection Prevention and Control Training for HCP



# Mandatory Infection Prevention and Control Training for HCP

- **All health care facilities** to train **all staff** in infection prevention and control techniques
  - Provide appropriate equipment
  - Enforce use of Standard Precautions
- All HCP to complete a course in infection control and barrier precautions **periodically**
- Medical students and medical residents to complete coursework or training in infection control practices

# Mandatory Infection Prevention and Control Training for HCP

- Training **tailored** to needs of specific health care specialties - include –
  - Work practices and engineering controls
  - Safe injection practices
  - Disinfection and sterilization procedures
- Evidence of training should be important for **licensure renewals** and **new job** inductions

# Enforcement of Infection Prevention and Control Standards

- Health care facilities are **responsible** for monitoring and enforcing IPC practices and Standard Precautions by HCW
- Any HCW who fails to use appropriate IPC techniques to protect patients or fails to ensure that HCW under his or her supervision do so may be subject to **charges of professional misconduct and disciplinary action**

# Protecting HCP from Infection

- Receive training in IPC techniques
  - In engineering and work practice controls, Standard Precautions, and work practices that help prevent sharps or other injuries and splashes of blood and body fluids
- Provided with a safe work environment
  - Protective equipment, clothing, and devices to reduce the risk of occupational exposure to blood and body fluids
- Offered and encouraged to receive the hepatitis B vaccine



## Protecting HCP from Infection

- **Informed of risk** of acquiring potentially life-threatening infections, including tuberculosis, from patients
- Informed of availability of voluntary and confidential counseling and testing for bloodborne pathogens

# Evaluating Infected HCP

- When evaluating be clear - bloodborne pathogen **infection alone is not sufficient** justification to limit the professional duties of HCP
- The determination of whether an individual HCP poses a significant risk to patients that warrants job modification, limitation, or restriction requires a **case-by-case evaluation** that considers the multiple factors that can influence risk

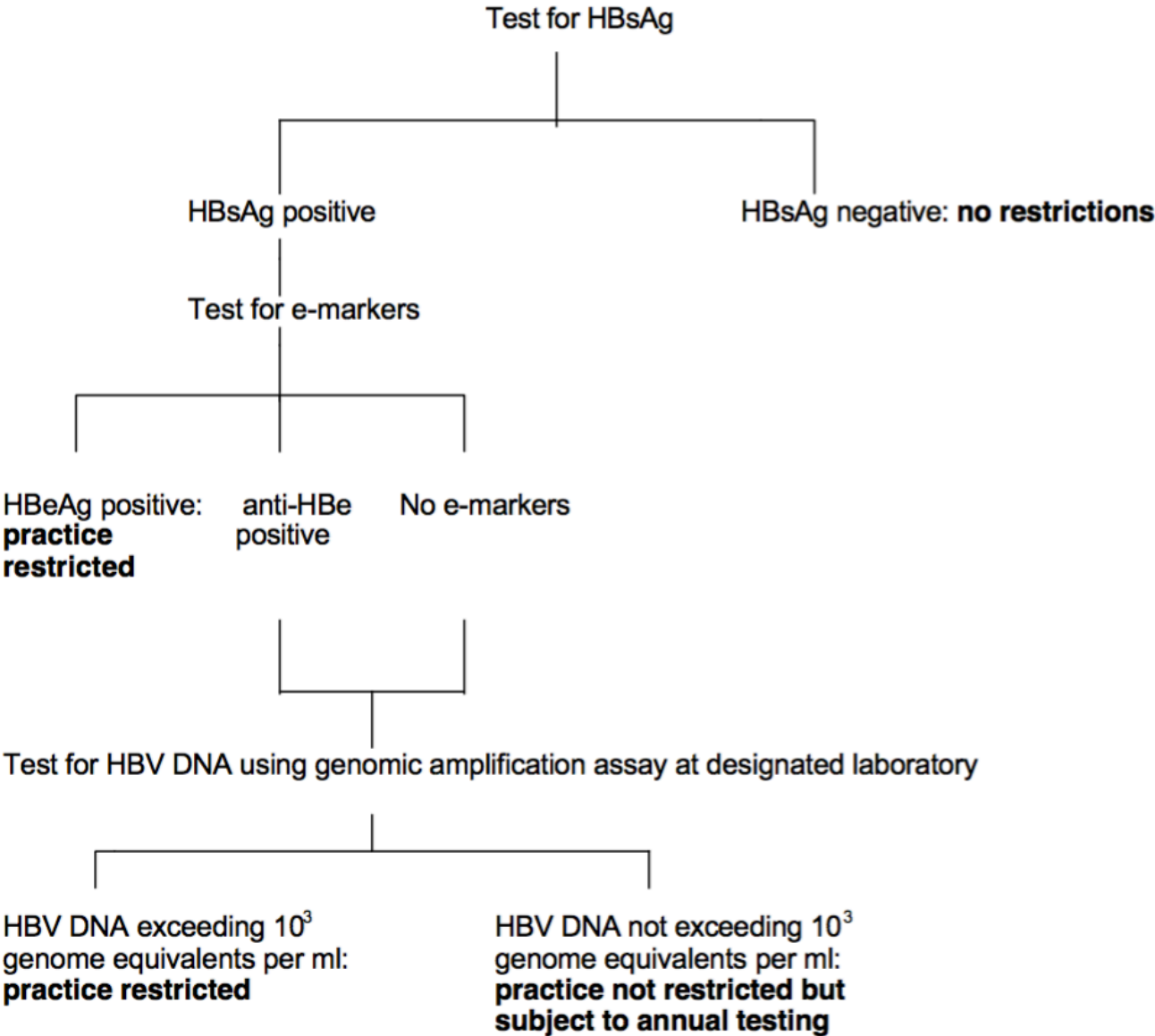
## ...Evaluating Infected HCP

- Any modifications of work practice must seek to impose the **least restrictive** alternative
- Any worker who believes that his/her employment has been restricted or terminated without just cause may ask for a **second opinion from a review panel** and/or file a complaint with the State Human Rights Commission

TABLE 1. Summary Recommendations for Managing Healthcare Providers Infected with Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), and/or Human Immunodeficiency Virus (HIV)

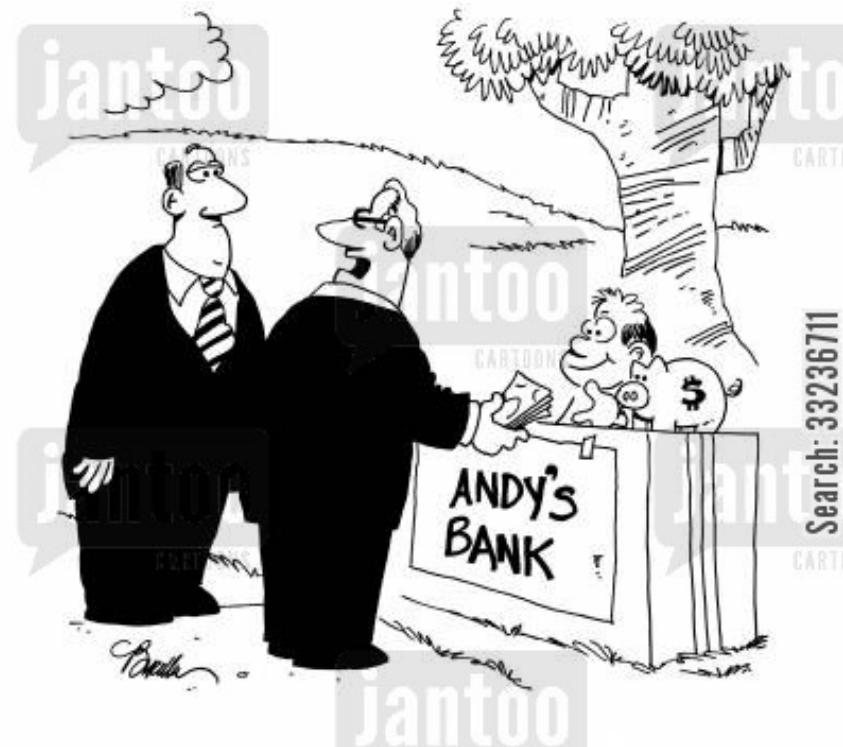
Virus, circulating viral burden	Categories of clinical activities <sup>a</sup>	Recommendation	Testing
<b>HBV</b>			
<10 <sup>4</sup> GE/mL	Categories I, II, and III	No restrictions <sup>b</sup>	Twice per year
≥10 <sup>4</sup> GE/mL	Categories I and II	No restrictions <sup>b</sup>	NA
≥10 <sup>4</sup> GE/mL	Category III	Restricted <sup>c</sup>	NA
<b>HCV</b>			
<10 <sup>4</sup> GE/mL	Categories I, II, and III	No restrictions <sup>b</sup>	Twice per year
≥10 <sup>4</sup> GE/mL	Categories I and II	No restrictions <sup>b</sup>	NA
≥10 <sup>4</sup> GE/mL	Category III	Restricted <sup>c</sup>	NA
<b>HIV</b>			
<5 × 10 <sup>2</sup> GE/mL	Categories I, II, and III	No restrictions <sup>b</sup>	Twice per year
≥5 × 10 <sup>2</sup> GE/mL	Categories I and II	No restrictions <sup>b</sup>	NA
≥5 × 10 <sup>2</sup> GE/mL	Category III	Restricted <sup>d</sup>	NA

# Evaluation on HBV infected HCW



# Evaluation on HIV infected HCW

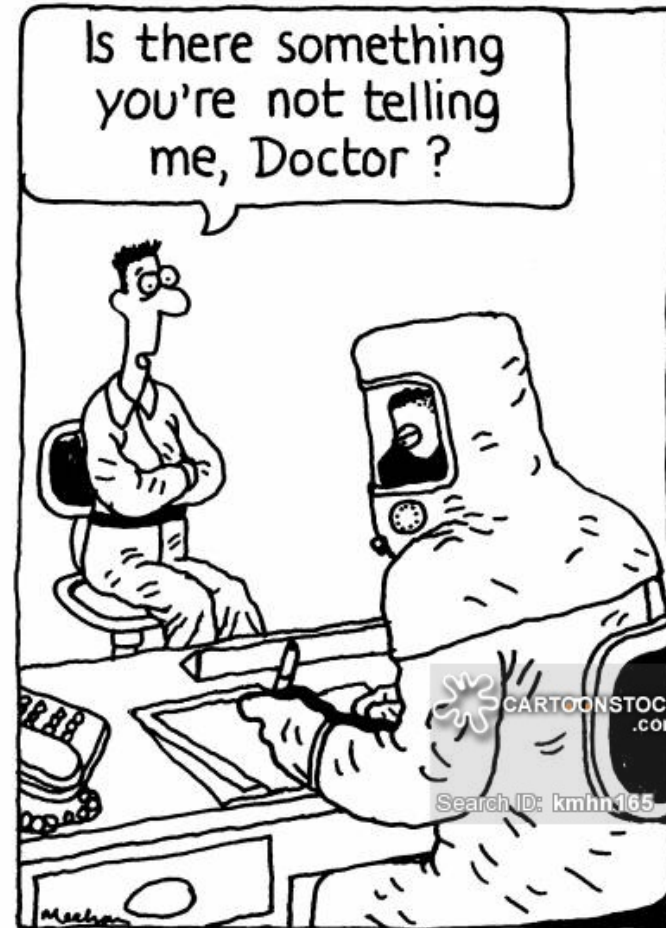
- Before healthcare workers with HIV are able start or resume EPP work, they will be expected to prove that they:
  - Are on combination antiretroviral drug therapy (cART)
  - Have an undetectable viral load (< 200 copies/ ml on two consecutive plasma samples)
  - Are regularly monitored every three months by their treating HIV physician to confirm that the viral load remains undetectable
  - If viral load rises significantly above 200 copies/ml - restricted from EPP work until the viral load returns to being stable at that level



"My accounts aren't insured, but it's the risk I take for higher interest rates."

## ...Evaluating Infected HCP

- HCWs who perform EPPs should **know their BBV status** and be encouraged and supported to undergo **regular testing**.
  - Annual testing is considered to be
  - Immediate retesting and follow-up care after a potential occupational or non-occupational exposure
- All HCWs infected with a BBV should remain under regular medical supervision



# Anaesthetics

## EPPs

- Placement of portacaths
- Insertion of chest drains in trauma cases such as patients with multiple rib fractures

## Non-EPPs

- Endotracheal intubation nor the use of a laryngeal mask
- Modern techniques for skin tunnelling involve wire guided techniques in full vision
- Arterial Cutdown



# Emergency Departments (ED)

## EPPs

- Rectal examination in presence of suspected pelvic fracture
- Deep suturing to arrest haemorrhage

*ED staff who are restricted from performing EPPs must not provide trauma care because of the unpredictable risk of injury from sharp tissues such as fractured bones*

## Management of infected HCW at CNBC, Delhi

Among vaccinated HCW's whose titre known	569	$(569/683*100)$ 83.3%
Among vaccinated HCW's with safe titre	547	$(547/569*100)$ 96.1%
Among vaccinated HCW's with unsafe titre	22	$(22/569)*100$ 3.86 %
Among vaccinated HCW's who are non responder	2	$(2/569)*100$ 0.35%
HCW's with HBV infection /1000 HCW's	5	$(5/683)*1000$ 7.32 per thousand HCW
HCW's with HIV infection/1000 HCW's	1	$(1/683)*1000$ 1.46 per thousand HCW
Among vaccinated HCW's with HCV infection /1000 HCW's	2	$(2/683)*1000$ 2.92 per thousand HCW

Condition	Incubation	Period of infectivity	Mode of spread	Precautions	Comment	Period of is isolation
<b>Influenza</b>	1-5 days.	24 hours before onset and 5 days after onset.	Droplet and direct contact.		Isolation room.	
<b>Chicken-Pox (Varicella)</b>	11-21 days.	1-5 days before symptoms start. 6 days after first rash vesicles appear.	Droplet and discharge from vesicles.	Gloves, plastic apron for contact. <b>Staffs who have not had Chicken-Pox should not nurse these patients.</b>	Preferably Single room.	6 days after occurrence of first rash
<b>Herpes Zoster</b>		7 days after appearance of vesicles.	Inhalation and contact.	Gloves/apron for direct contact. Single room.	Staffs who have not had Chicken-Pox /vaccinated should not nurse these patients.	
<b>Measles (including encephalitis)</b>	7-14 days	2 days before to 7 days after rash appears.	Droplets.	Gloves/apron in direct contact.	Isolation room.	7 days
<b>Meningococcal Meningitis</b>	Usually 1-3days.	Until 24hours after starting appropriate	Droplet	Masks not necessary.	Single room. Prophylaxis not given to staff	

# Take home message...

- The most effective means of preventing bloodborne pathogen transmission in health care settings is through strict adherence to Standard Precautions
- Established infection prevention and control practices that decrease the opportunity for direct exposure to blood and body fluids for both health care workers and patients
- Voluntary testing without fear of disclosure or discrimination is the best means of encouraging people at risk for bloodborne pathogens to seek counseling and testing

# Take home message...

- Mandatory screening of HCP for bloodborne pathogens is not recommended
- Negative antibody tests for HIV, HBV, and HCV do not rule out the presence of infection since it can take some time for measurable antibodies to appear

# Take home message...

- All patients and health care workers who have been potentially exposed to bloodborne pathogens should be strongly counseled to seek testing so they may benefit from medical management.
- Health care workers should also seek screening for bloodborne diseases - [recommends](#) - all persons aged 13–64 have routine screening for HIV
- Persons of all ages with ongoing risk factors for HIV should have periodic repeat screening and seek medical care if they are found to be HIV-infected. HBV and HCV screening recommendations are based on an assessment of individual risks

# Take home message...

- Bloodborne pathogen infection alone does not justify limiting a health care worker's professional duties.
- Limitations, if any, should be determined on a case-by-case basis after consideration of the factors that influence transmission risk, including inability or unwillingness to comply with infection prevention and control standards or functional impairment that interferes with job performance

# Take home message...

- Health care workers are not required to inform patients or employers that they have a bloodborne pathogen infection. Such disclosure might serve as a deterrent to workers seeking voluntary testing and medical evaluation.
- Strict adherence to Standard Precautions is an effective means of preventing transmission of bloodborne pathogens.



# Questions

- When developing a program for your own healthcare setting you may like to ask:
  - How many cases of infected surgeons or others conducting high risk procedures have you included in the program?
  - What problems you envisage in setting up and conducting the program?
  - What liability issues can emerge, if any?
  - How was your program received/perceived?
  - What would you have done differently?

- ACT TODAY!!
- Get yourself Tested!
- Establish Program at Your Healthcare Organization!