HIV exposure and infection in health care workers

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Integrated Treatment Centre
CHP, DH
Postexposure Management

General measures

- First Aid
  - Wash wound
  - Squeezing of blood not necessary
  - Do not suck wound

- Reporting
  - Abide by institutional protocol
  - Observe confidentiality

Scientific Committee on AIDS and STI, Infection Control Branch, CHP, DH. Recommendations on the postexposure management and prophylaxis of needlestick injury or mucosal contact to HBV, HCV, and HIV. Sep 2007
Specific measure – HIV postexposure prophylaxis (PEP)

- The Holy Grail is an effective HIV vaccine
- The short cut is ART?
Origin of HIV PEP

- Followed documented seroconversion from occupational needlestick in US in 1980s
- Widely used by HCW
- AZT 1000-1200mg per day for 28 days
- Empiric; nil evidence
Oral mucosal challenge

Day 1  Day 2  Day 4

Blue – PCR –ve for SIV; orange - <50% PCR reactions +ve; red - ≥50% PCR reactions +ve

Takes time from exposure to infection

## Animal studies of PEP

<table>
<thead>
<tr>
<th>Animal model</th>
<th>Challenge</th>
<th>Results</th>
<th>Conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIV in macaque(^1)</td>
<td>IV</td>
<td>4 weeks of PMPA (tenofovir) up to 24h post-challenge prevented infection in all 5 macaques; all controls were infected</td>
<td>Proof of concept</td>
</tr>
<tr>
<td>SIV and HIV-2 in macaques(^2)</td>
<td>IV &amp; rectal</td>
<td>1-5 days of BEA-005 given up to 6 days post-exposure were evaluated. Prevention is better with longer treatment and if started earlier than 24 h.</td>
<td>Immediacy and length of treatment are important</td>
</tr>
<tr>
<td>SIV in macaque(^3)</td>
<td>IV</td>
<td>Delaying PMPA to 48 or 72 h postinoculation decreased significantly the efficacy of PEP; 10 d inferior to 28 d</td>
<td>PEP should be started within 72 h and continued for ≥28 d</td>
</tr>
</tbody>
</table>

Human study – no RCT

- Retrospective case control*
- HCW from US, UK, France and Italy
- Case = 33, controls = 665
- Risk factors for seroconversion
  - Deep injury
  - Injury with device visibly contaminated with blood
  - Needle having been in artery or vein
  - Source had AIDS
  - AZT use (OR=0.19 95%CI 0.06-0.52)

Indirect evidence – MTCT studies

Supports PEP effectiveness

- NY DOH retrospective study* – AZT post-delivery up to 48h reduces transmission from 26.6% to 9.3%

- Prospective randomized trial in Malawi# – transmission rates are 7.7% (with postnatal AZT+NVP) and 12.1% (with postnatal NVP)

## Risks

<table>
<thead>
<tr>
<th>Exposure to HIV +ve</th>
<th>Risk of transmission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Needlestick</td>
<td>0.2-0.4%</td>
</tr>
<tr>
<td>Mucosal membrane</td>
<td>0.1%</td>
</tr>
<tr>
<td>Receptive oral sex</td>
<td>0-0.04%</td>
</tr>
<tr>
<td>Insertive vaginal sex</td>
<td>≤0.1%</td>
</tr>
<tr>
<td>Insertive anal sex</td>
<td>≤0.1%</td>
</tr>
<tr>
<td>Receptive vaginal sex</td>
<td>0.01%-0.15%</td>
</tr>
<tr>
<td>Receptive anal sex</td>
<td>≤3%</td>
</tr>
<tr>
<td>Shared IDU</td>
<td>0.7%</td>
</tr>
<tr>
<td>Transfusion</td>
<td>90-100%</td>
</tr>
</tbody>
</table>
Assessment for PEP

- **Source**
  - General prevalence <0.1%
  - MSM 4-5%
  - IDU 0.5%
  - Rapid HIV test – result in 20 min
    - Obtain consent by another member of care team*
    - Beware window period

- **Assessment of risk factors**
  - Percutaneous vs mucosal
  - Viral load of source – AIDS? On ART?
  - Visible contamination with blood
  - Needle had been placed in vessel
  - Hollow bore
  - Deep injury

Antiretroviral PEP

- HAART with 3 drugs recommended in Hong Kong
  - (AZT + lamivudine + Kaletra) X 28 d
  - Start ASAP ≤72 h
  - Beware transmitted resistance

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**TABLE 1. Recommended HIV postexposure prophylaxis (PEP) for percutaneous injuries**

<table>
<thead>
<tr>
<th>Exposure type</th>
<th>Infection status of source</th>
<th>Source of unknown HIV status†</th>
<th>HIV-negative</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HIV-positive, class 1*</td>
<td></td>
<td>No PEP warranted</td>
</tr>
<tr>
<td>Loss severe†</td>
<td>Recommend basic 2-drug PEP</td>
<td>Generally, no PEP warranted; however, consider basic 2-drug PEP** for source with HIV risk factors††</td>
<td>No PEP warranted</td>
</tr>
<tr>
<td></td>
<td>Recommend expanded 3-drug PEP</td>
<td>Generally, no PEP warranted; however, consider basic 2-drug PEP** for source with HIV risk factors††</td>
<td>No PEP warranted</td>
</tr>
<tr>
<td>More severe‡‡</td>
<td>Recommend expanded 3-drug PEP</td>
<td>Generally, no PEP warranted; however, consider basic 2-drug PEP** in settings in which exposure to HIV-infected persons is likely</td>
<td>No PEP warranted</td>
</tr>
</tbody>
</table>

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From US CDC. MMWR 2005;54 (RR-9)
**Local protocol for PEP**

1. **DH and private sector HCW**
2. **A&E of public hospitals**
   - First Aid
   - Risk assessment
3. **Starter PEP**
   - Arrange FU
4. **Integrated Treatment Centre, Kowloon Bay**
   - Review regimen; (ART for 28 d)
   - Counseling
   - Monitor for toxicity, seroconversion
   - Medical report
5. **Special Medical Clinic, QEH**

**HCW of HA**
PEP in Integrated Treatment Centre

![Graph showing PEP in Integrated Treatment Centre from 1999 to 2010, with HCW with occupational exposure and PEP start highlighted.](image-url)
Conclusions

- PEP is available
- Effective (40%-80%)
- Earlier the better
- Has toxicity
- Needs followup
HIV infected health care worker
The case of Mike Sinclair

- Private dentist
- Self-declared HIV status in Nov 1992
- Publicly urged his patients to test for HIV
Mike Sinclair

- Public controversy
- Withdrew from practice
Exposed what was WRONG or ABSENT

Obvious issues

- Confidentiality
  - Disclosure to patients
  - Disclosure to employer
- Need of expert assessment of
  - job modification
  - lookback
- Followup
- Lack of guidelines and regulatory mechanism
Guidance today

Major Governing Principles:

- General ethical principles
- Disability Discrimination Ordinance (1995)
- Medical Council of Hong Kong (2009). Code of professional conduct
HIV-infected HCW

- General principles
  - Declaration of Geneva, 2006
    - THE HEALTH of MY PATIENT will be my first consideration
    - I WILL RESPECT the secrets that are confided in me, even after the patient has died
  - WMA. International Code of Medical Ethics 2006
    - A PHYSICIAN SHALL act in the patient’s best interest when providing care
    - A PHYSICIAN SHALL respect a patient’s right to confidentiality
HIV is included as one disability

Pre-employment screening has to be carefully justified
2.4 Health care workers are generally not required to disclose their HIV status to their patients or employers.

2.5 There is no justification for restricting practice of health care workers on the basis of the HIV status alone. Restriction, if any, should be determined on a case-by-case basis.

3.3.1 In exceptional circumstances, breach of confidentiality may be warranted, for instance when an HIV infected health care worker refuses to observe the restrictions and patients have been put at risk.

ACA guidelines

- 3.3.2 If work restriction is required, employers should make arrangement for alternative work, with provision for retraining and redeployment.

- 3.3.3 The attending doctor of an HIV infected health care worker should seek the advice of the expert panel formed by the Director of Health .... The doctor who has counselled an HIV infected colleague on job modification and who is aware that the advice is not being followed and patients are put at risk, has a duty to inform the Medical/Dental Council for appropriate action.
4. Fitness to practice

4.3.1 Responsibilities

- A doctor who has reason to suspect that he may be a carrier of a serious infectious disease... If confirmed, he must prevent the spread of infection to his patients. Where appropriate a doctor should seek counselling and act accordingly...

4.3.3 Confidentiality

- In general, a doctor is not required to disclose his infectious disease to patients. A doctor who treats or counsels another doctor should keep confidentiality. In exceptional circumstances, breach of confidentiality may be warranted, as for instance, when an infected doctor fails to observe certain restrictions putting patients at risk.

4.3.4 Right to work

- If work restriction is required, employers should make arrangement for alternative work, with provision for retraining and redeployment. Restriction... should be determined on a case-by-case basis.

Terms of reference (1994 – now)
1. To advise on job modification
2. To relay recommendations to the referring doctor, the respective professional body and the Director of Health
3. To advise on need of lookback and other public health intervention
4. ...

Current composition
- Public health specialist
- Infectious Disease and HIV physician
- Virologist
- Social work professional
- Occupational health expert
- (Co-opt members when necessary)
Referral to Panel

- Anonymous and confidential
- 3-page referral
- 3 areas of info
  - Work description
  - Infection control practice
  - Disease status
- Referring doc may be invited to give further details
**Description of Work**

1. Does the work require the use of sharp instruments? [ ] Y/N
2. Does the work involve handling of body fluids, in particular blood? [ ]
3. Does the work involve direct patient contact? [ ]
4. Are there procedures that involve entry into patients’ tissues? [ ]
5. How long has the health care worker been in the present work? _______________
6. List the procedures that involve the use of sharp instruments and direct contact with blood/body fluids.

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**Infection Control Practice**

1. Are there guidelines/protocols on infection control for the HCW’s work? [ ] Y/N
2. Is there any evidence that the HCW has not complied with the infection control practice? [ ]
3. Has there been any incident of needle-stick injury (or other exposure) to the worker resulting in direct blood-to-blood contact between the worker and his/her patients? If yes, please specify the details of the event(s).

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**HIV Infection**

1. When was the diagnosis of HIV infection first made? _______________
2. Was the diagnosis made in Hong Kong? _______________
3. When, approximately, was HIV infection contracted? _______________
4. Please elaborate on the current state of health, including its physical and mental aspects.

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5. Has there been job modification since the diagnosis of the infection? Please explain.

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Work done

- 19 cases referred (1999 – 2011)
  - doctors, dentists, nurses, allied health
- 4 required job modifications
- None required lookback
Some consideration factors of lookback and job modification

N.B.

- Lookback is not routine
- Poor yield and high cost
- Case by case evaluation: NO algorithm

Consideration factors

- Procedures
- Patient and disease
- Institution
Lookback - Procedures

- US classification of procedures
  - Cat 1: *de minimis* (trivial) risk
  - Cat 2: theoretically possible but unlikely
  - Cat 3: definite risk, ie *Exposure Prone Procedure*
    - General surgery, general oral surgery, cardiothoracic surgery, Neurosurgery, Obs-Gyn surgery

- UK classification of EPP
  - Cat 1: Hands and fingers usually visible
  - Cat 2: not visible at all times
  - Cat 3: usually not visible
    - eg hysterectomy, cesarean section, open heart surgery

- Duration, complexity, emergency vs elective
- Record of documented or suspected needlestick, eg glove changing during surgery

1. SHEA guideline for management of healthcare workers who are infected with hepatits B, hepatitis C virus and/or human immunodeficiency virus. Infect Control Hosp Epidemiol 2010;31(3):203-32
Lookback – some other factors

Patient and disease
- Disease stage; viral load
- Duration of infection
- Effectiveness of and adherence to therapy
- Mental capacity
- Physical limitation
- History of competence, infection control breaks

Institution
- Standard of Infection control practice, including occupational exposure
- Record keeping
Job modification

- Examples of possible job restriction
  - Avoidance of certain EPP
  - Extra precautions
  - Assurance of effective treatment with low or undetectable viral load

- Assistance from employer – N.B. ‘need-to-know’ basis
  - Accommodation
  - Redeployment/retraining

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Central role of attending physician

- Assist HCW in job modification
- Monitors compliance

Inform professional body

HIV+ve HCW

Attends HIV physician

Expert Panel

Case-specific recommendations

Anonymous (re) referral

Professional body, eg MCHK

Noncompliance

Risks to patients
Conclusions

- HIV infected HCW has
  - right to work, confidentiality as well as treatment
  - duty to protect patients
- Followed by attending HIV physician
- Advised by Expert Panel
- Governed by MCHK, etc
In HK, 5210 HIV infections reported by 2011:

- No iatrogenic HIV infection other than blood and blood product transfusion
- No occupational HIV infection in HCW
Postscript

Déjà vu?

Disclosure of HIV status was wrong

I am puzzled by the disclosure of the HIV status of a recently deceased doctor in the mass media.

I wonder how the information was given to the media, and to what end?

Shouldn't one's HIV status be kept in strict confidence, even after one's passing?

The HIV status of a person working in the medical or the nursing profession should be shown the same respect.

Secretary for Food and Health York Chow Yat-ngok had pointed out that the risk of passing the virus from a doctor to a patient is small.

The disclosure does nothing but create panic and paranoia. And I cannot start to imagine the negative impact this incident might have on someone who wants to get tested.

If one's HIV status can be leaked to the press, posthumously or otherwise, who will have the courage to find out if he has this heavily stigmatized infection?

The relevant specialist panel of the Department of Health should do a lot more than just containing the damage caused by this irresponsible disclosure.

It should enlighten the public about how people living with HIV should be respected in the community so that no one will target getting tested.

My Shun-sing Cheung