

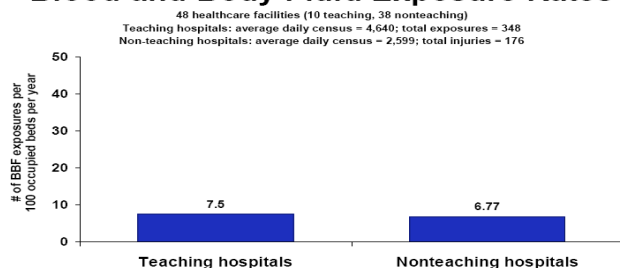
愛滋針扎與感染管制

中國醫藥大學附設醫院
感染科
林伯昌醫師

針扎可能遭遇的風險

風險暴露機率

U.S. EPINet 2003 Blood and Body Fluid Exposure Rates



International Health Care Worker Safety Center, University of Virginia, Charlottesville, VA

血液 VS. 體液

- 血液
 - Human Blood, Human Blood components, products made from human blood
- 體液
 - Cerebrospinal fluid, pleural fluids, pericardial fluid, peritoneal fluid, amniotic fluid, joint fluid
 - Semen, vaginal secretions

Bloodborne Pathogen (BBP)

- A specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious material (OPIM) that results from the performance of an employee's duties

可能造成風險暴露的體液

- 已知具有感染性
 - Blood
 - Any fluid visibly contaminated with blood
 - Semen
 - Vaginal secretions
 - Concentrated virus (used in labs)

可能造成風險暴露的體液

- 可能具有感染性
 - CSF
 - Pleural fluid
 - Pericardial fluid
 - Peritoneal fluid
 - Amniotic fluid
 - Synovial fluid
 - Tissue samples

可能造成風險暴露的體液

- 不具有感染性 (如果沒看到血)
 - Tears
 - Saliva (except in dental setting)
 - Urine
 - Feces
 - Sweat
 - Emesis

工作上的風險暴露

風險暴露如何發生...

- Exposures occur through
 - Needlesticks or cuts from other sharp instruments contaminated with an infected patient's blood
 - or
 - Contact of the eye, nose, mouth, or skin with a patient's blood.

風險暴露有哪幾種狀況？

- Exposures known to pose a risk of transmission for bloodborne pathogens:
 - Percutaneous injury (hollow needle > solid sharp)
 - Splash on mucous membrane
 - Splash on non-intact skin

The risk of transmission increases with larger volumes of fluid and more severe injuries

風險暴露有多嚴重？

- Difficult to assess: up to 70% of exposures go unreported
- 1990 estimate: 500,000 exposures/year
- Impossible to measure the psychological stress that an exposure places on a health care worker

Marcus, R. et al. *Ann Emerg Med* 1995;25:776
Henry, K. *Minnesota Medicine* 1995;78:41-44

風險暴露的感染機會

TABLE 303-4 Nosocomial Hepatitis: Transmission Rates and Interventions

Hepatitis	Outbreak or Needlestick Exposure Transmission Rate (%)	Prevention	Comment
A	10-30	Vaccine not given routinely to HCWs Immune globulin in outbreak setting HBV vaccination	ACIP advises vaccine "is or might be" indicated HBV vaccination acceptance for dialysis patients (58%) and staff (88%) has increased in recent years
eAg	3	HBIG if appropriate	
eAg*	20-40	HBV vaccination HBIG if appropriate	
C	1-10	Immune globulin not recommended Interferon therapy for acute disease appears promising	Prevalence in U.S. dialysis units: 8.4% (patients) and 1.7% (staff)
Delta	Unknown rate; outbreaks described only in dialysis units	HBV vaccination	Segregate HBsAg-positive dialysis patients by delta antibody status
E	None described	Unknown	Probably no increased seroprevalence among dialysis or other patients

ACIP, Advisory Committee on Immunization Practices; Ag, antigen; HBV, hepatitis B virus; HBIG, hepatitis B immune globulin; HBsAg, hepatitis B surface antigen.

醫療照顧者不可不知

- Most exposures do not result in infection.
- Following a specific exposure, the risk of infection may vary with factors, including:
 - The pathogen involved
 - The type of exposure
 - The amount of blood involved in the exposure
 - The amount of virus in the patient's blood at the time of exposure

職業上的傳染風險

Occupational HIV transmission

❖ 1997年, CDC曾發表一例因為被人咬傷而感染HIV的病例, 文獻中亦有極少見的相同報告, 但是這些感染個案均須有嚴重的創傷與組織撕毀並且可看到血液。所以, 咬傷並非傳播HIV的常見途徑, 事實上, 有許多被咬傷的人並未被傳染HIV。

Shirley LR et al. Risk of transmission of human immunodeficiency virus by bite of an infected toddler. *J Pediatrics* 1989; 115:424-427.
Andreo SM et al. HIV type 1 transmission by human bite retroviruses. *AIDS Res Hum Retroviruses* 2004; 20:349-350

❖ Possible saliva transmission, severe and bleeding site



Possible transmission of HIV infection due to human bite. *AIDS Research and Therapy* 2011;8:16

陽轉率(Pre-HAART)

	All Patients		HIV-1 infected Patients		Serconversion
	HCW report	Total Exposures	HCW report	Total Exposures	
Blood	309	10,008	136	2,712	0
Sputum	112	3,144	47	804	0
Urine	155	3,780	61	912	0
Feces	49	828	20	300	0
Other fluids	93	3,096	40	840	0
Total	337	20,856	149	5,568	0

職業暴露的風險

- ❖ Of 5 868 samples, 1.1% had reactive or borderline ELISA test
- ❖ Of 1 344 participants, 2.6% had positive ELISA, 2.1% false positive, and 7* had positive.
- ❖ Transmission 1 case per 179 exposures. (0.56% chance per exposure, CI:0.01%~3.06%)
- ❖ Different exposure risk
 - ❖ Mucous membrane 0.86%, Cutaneous exposure 0.11%
- ❖ Overall occupational risk 0.3%

Annals of Internal Medicine 1990;113:740-46

處理風險暴露

接觸到病人的血液...

- Immediately following an exposure to blood:
 - Wash needlesticks and cuts with soap and water
 - Flush splashes to the nose, mouth, or skin with water

No scientific evidence shows that using antiseptics or squeezing the wound will reduce the risk of transmission of a bloodborne pathogen. Using a caustic agent such as bleach is not recommended

處置感染源...

- Exposure site should be cleaned **IMMEDIATELY!** This may be the most important part of PEP.
- Skin wounds should be washed with soap and water
- No evidence that antiseptics are useful and caustic agents (bleach) may do more harm than good

處置感染源...

- Mucous membranes should be flushed thoroughly with water
- Eyes should be irrigated with a liter of saline

針扎後追蹤

HIV暴露後的次級預防

- HIV infects dendritic cells and then regional lymph nodes before becoming systemic
- AZT blocks infectivity of HIV infected dendritic cells
- Goal of PEP is to halt viral replication before systemic infection is established

HIV暴露後的次級預防有效嗎?

- Several animal studies showing efficacy
- Peri-natal prophylaxis has been effective
- Retrospective study showed that risk of seroconversion after exposure was 81% lower in HCWs who took AZT PEP.

時間就是病毒

- Animal studies show that PEP should be given within 2-8 hours of exposure for maximal effect
- PEP may have some benefit up to 36 hrs but seems to be ineffective if given later

JID 1991;163:625

JID 1993;168:825

HIV :風險暴露後的追蹤

- 規則的追蹤時間 (eg 6,12 weeks and 6 months)
- Testing should continue for 12 months if the HCW contracts HCV from the exposure
- Unclear if testing should be prolonged in exposures to pts with HIV and HCV or in HCW who have history of impaired Ab responses

HIV :風險暴露後的諮詢

- For 3 months following exposure HCW should avoid
 - Unprotected sex
 - Pregnant
 - Donate blood, organs, or semen
 - Sharing razors, toothbrushes
- HCW should consider stopping breast feeding (risk of perinatal transmission and drugs may get into breast milk)

HIV暴露後次級預防

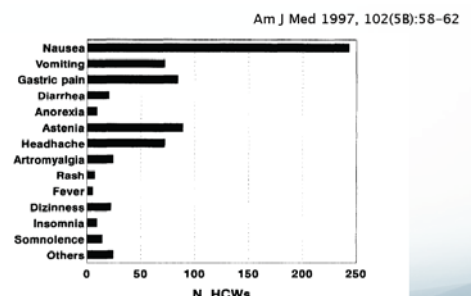
暴露來源病患的 HIV 感染狀態					
暴露的種類	第一級 (Class 1) 感染狀態	第二級 (Class 2) 感染狀態	病患的感染狀態 不詳	不知來源病患	未感染 HIV
較不嚴重者 ^(註一)	建議使用 基本 PEP ^(註二)	建議使用 加強 PEP	通常並不須要使用 PEP; 但若來源病患已感染 HIV 的危險性時, 可考慮使用基本 PEP	通常並不須要使用 PEP; 但若推測可能的來源病患已感染 HIV 的危險性時, 可考慮使用基本 PEP	不需使用 PEP
比較嚴重者 ^(註二)	建議使用 加強 PEP ^(註三)	建議使用 加強 PEP	通常並不須要使用 PEP; 但若來源病患已感染 HIV 的危險性時, 可考慮使用基本 PEP	通常並不須要使用 PEP; 但若推測可能的來源病患已感染 HIV 的危險性時, 可考慮使用基本 PEP	不需使用 PEP

次級預防用藥

- 一、 zidovudine + lamivudine (Combivir[®]複方) (優先選用之配方)
- 二、 lamivudine + didanosine (Videx[®] EC)
- 三、 lamivudine (3TC[®]) + stavudine (d4T)
- 四、 abacavir (ABC) + lamivudine (3TC[®]) or as fixed dose combination (Kivexa[®]複方) (需特別注意過敏的可能^(註A))

- 一、 lopinavir/ritonavir (Kaletra[®]複方; LPV/RTV) (優先選用之配方)
- 二、 atazanavir (Reyataz[®]; ATV)
- 三、 indinavir (Crixivan[®]; IDV) + ritonavir (Norvir[®]; RTV)
- 四、 nelfinavir (Viracept[®]; NFV)
- 五、 efavirenz (Stocrin[®]; EFV) (在已知懷孕或在生育年齡的婦女要注意致畸胎的可能)

藥物副作用



如何避免工作上的 風險暴露

風險暴露感染控制計畫

- 落實標準防護
- 硬體工程方面的感染控制
- 實際操作方面的感染控制
- 工作指示與訓練
- 風險標示與記號
- 疫苗注射(B型肝炎)
- 風險暴露後的處理計畫

硬體工程方面的感染控制

- Handwashing facilities
- Sharps disposal container
- Safety-engineering devices
- Clearly labeled leak-resistant containers for specimens, contaminated linen, medical waste

實際操作方面的感染控制

- To reduce the likelihood of exposure
 - Percutaneous injury (**hollow needle**> solid sharp)
 - Splash on mucous membrane
 - Splash on non-intact skin
 - The risk of transmission increases with larger volumes of fluid and more severe injuries

謝 謝 聆 聽