HIV & the Healthcare Worker

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Challenges

• Disease burden
• HIV transmission
• Universal precautions
• Exposure to HIV
• Decision-making
• Legal and ethical aspects
• Conclusion
## HIV transmission

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Country</th>
<th>Transmission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robinson</td>
<td>1986</td>
<td>USA</td>
<td>Homosexual</td>
</tr>
<tr>
<td>Wilson</td>
<td>1989</td>
<td>USA</td>
<td>Homosexual</td>
</tr>
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<td>Wakeman</td>
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<td>UK</td>
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<td>Kalima</td>
<td>1990</td>
<td>Zambia</td>
<td>Heterosexual</td>
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<td>Dietrich</td>
<td>1992</td>
<td>USA</td>
<td>Homosexual</td>
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<td>Yii</td>
<td>1995</td>
<td>Australia</td>
<td>Heterosexual</td>
</tr>
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<td>Savioz</td>
<td>1996</td>
<td>Switzerland</td>
<td>Drug</td>
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<td>Consten</td>
<td>1996</td>
<td>The Netherlands</td>
<td>Homosexual</td>
</tr>
<tr>
<td>Hewitt</td>
<td>1996</td>
<td>USA</td>
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<td>Bhagwanjee</td>
<td>1997</td>
<td>South Africa</td>
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<tr>
<td>Tran</td>
<td>2000</td>
<td>USA</td>
<td>Homosexual</td>
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<tr>
<td>Lewis</td>
<td>2000</td>
<td>Malawi</td>
<td>Heterosexual</td>
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<tr>
<td>Čačala</td>
<td>2006</td>
<td>South Africa</td>
<td>heterosexual</td>
</tr>
</tbody>
</table>

Surgeon

Seroconversion: 0.2-0.5%

Exposure 13-60%

Patient

Patient
Exposure

- Blood splashes
- Needle-stick injury
Exposure frequency

Jagger et al, AORN 1998
Needle-stick Injury during surgery
High-risk practices

- Mostly self-inflicted
- During wound closure (esp. mass closure)
- Inadequate assistance
- Holding tissues while stitching
- Excessive adipose tissue
- Manipulation of instruments deep
- Poor visibility
- Re-capping of needles
Blood inoculum

Needle type and depth of penetration

Bennet & Howard, JACS, 1994
NSI risk by device type

## Rate of sero-conversion

<table>
<thead>
<tr>
<th>Exposure type</th>
<th>HIV</th>
<th>Hepatitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percutaneous</td>
<td>0.14</td>
<td>0.4</td>
</tr>
<tr>
<td>Hollow needle</td>
<td>0.14</td>
<td>0.6</td>
</tr>
<tr>
<td>Blood filled</td>
<td>1.21</td>
<td>0.9</td>
</tr>
<tr>
<td>No blood</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>Solid needle</td>
<td>0.11</td>
<td>-</td>
</tr>
<tr>
<td>Muco-cutaneous</td>
<td>0.43</td>
<td>0.4</td>
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</tbody>
</table>

Sero-conversion: HIV < Hepatitis
Percutaneous injury
Risk factors for sero-conversion

• Injury
  • Interval between needle use and exposure
  • Depth or severity of exposure
  • Quantity of blood injected
  • Type and bore of needle

• Source patient
  • Clinical status
  • Titre of circulating virus
  • Use of anti-viral agents

• Healthcare worker
  • Use of Universal Precautions (e.g. barriers)
  • Post-exposure management
HIV and treatment outcome
HIV infected patients

- CD4>200: No difference for
  - Admission type
  - Hospital stay
  - Complications

- Higher viral loads
  - Lower CD4 counts
  - Longer hospital stay
  - More complications

HIV-infected patients
Decision making

- HIV positive patients have a similar surgical course to the non-infected patients

- Surgical outcome similar
  - HIV +ve
  - HIV –ve

- HIV +ve patients → Higher incidence of:
  - MODS
  - Wound sepsis

- HIV status should not influence:
  - Admission to hospital or special units
  - Management decisions

References:
- Bhagwanjee et al, Durban, BMJ 1997
- Madiba et World J Surge 2008

National Health Act
Health Professions Act
Surgeon General (USA)
Protection for HCW
Universal precautions

• The scrub up ritual

• Protective clothing
  • Waterproof gown
  • Double-gloving
  • Eye protection (visors or goggles)
  • Footwear protection

• Practice modification
  • No hand-to-hand passage of sharps
  • Minimise use of sharps
  • Correct disposal of sharps
  • Needles not to be re-sheathed
  • Finger not to be used as needle guide
Blunt tip needles
Sharp & blunt suture needles?

Dauleh et al, 1994
Mingoli et al, 1996

P < 0.0001
P = 0.02
Wide-angle visor
Closed loop blood sampling
IV Catheter with locking needle tip
I-V Stylet catheter
Self Sheathing Safety Syringe

- Clear needle sheath
- Three-piece rigid pack
- Heat-staked cap provides tamper evidence and assurance of sterility
- Colour-coded cap
- Ultra-sharp, tri-bevelled, anti-coring needle
- Self-sealing Latex-Free rubber plunger tip
- Bold, easy-to-read graduations
- Stainless steel cannula
- Translucent, colour-coded hub shows blood "flashback"
- Clear rigid safety shield
- Positive plunger stop
- Restrictive end collar
- Safety syringes are not autoclavable

Safety syringes are designed for enhanced safety and efficiency in medical procedures.
Self-blunting needles
Needle-free valves
Need-free tubing
Self Capping Safety Needle

1. Open MONOJECT MAGELLAN package by peeling back paper tabs.
2. Remove protective needle sheath.
3. Draw up medication and administer injection, according to Institutional protocol.
4a. thumb
4b. finger
4c. flat surface

--- Lock the safety shield using any of the following methods (4a - 4b - 4c) ---

5. Insert needle into patient.
6. Place used needle in sharps container.
Skin staples

Non-suture wound closure
  e.g. Dermabond
Skin closure

Skin staples

Non-suture wound closure
e.g. Dermabond
Double-gloving

Virucidal, 2-layered glove
Barriers to compliance

• Familiarity with needle-stick and cutting injuries

• Forgetting of safety protocols during crucial times

• Variable acceptance of double gloving and eye protection

• Discomfort and loss of sensitivity in the fingers

• Under-estimation of sero-conversion rates

• Budgetary constraints
After exposure
After HIV exposure

• Wash exposure site with soap & water

• Flush exposed mucous membranes:
  • Clean water
  • 0.9% sodium chloride
  • Sterile irrigants

• Report exposure to infection control person

• Screening for HIV status within 24 hours:
  • Healthcare workers
  • Patient

WHO & CDC
After HIV exposure (Cont’d)

- Post-exposure prophylaxis (PEP).
- First dose as soon as possible after exposure
- Recommended duration 28 days
- Post-exposure follow-up of the HCW
- CDC → Follow-up testing at:
  - 6 weeks
  - 12 weeks
  - 6 months

CDC
PEP Counselling

• Expected adverse events & how to manage
• Advise → PEP not 100% effective
• Patients who test negative → Window period
• Need for continued prophylaxis.

CDC
Routine HIV Testing

**Pros**
- Epidemiologic data
- Education of HIV+
- Reduce risk
- Precautions

**Cons**
- Universal precautions
- Window period
- Emergency operations
- False -ve results

Solution: Universal precautions
Respect for persons
Including patients with HIV infection

Ethical principles

• Autonomy
• Beneficence
• Non-maleficence
• Justice

Patient protection

• The SA Constitution
• National Health Act
• Health Professions Act
Informed consent

• Requirements
  • Voluntary (not coerced)
  • Adequate information
  • Mentally and legally competent patient

• Consent may be given:
  • Expressly
    » Oral
    » Written
  • Tacitly
    » By conduct
Informed Consent
Testing for HIV *

• Patient must:
  • Understand the nature of the test that is proposed
  • Know the benefits, risk and alternatives
  • Know medical and social implications of a positive test
  • Know his/her responsibilities in case of a negative result
  • Give permission for the test willingly

• Mandatory:
  • Pre-test counselling
  • Post-test counselling
  • If no counselling – refer

National Health Act
Confidentiality
Ethical and legal guidelines

• Health care workers must keep all patient information confidential

• Information to others:
  • Can be given under following circumstances:
    » Only with express consent of the patient
    » Minors: parent or guardian has given consent
    » Dead: Next of kin has given consent
Confidentiality  
Waiver?

• Information to others
  • No
  • Only with express consent of the patient

• Health care workers
  • Professionally – No!
  • Socially – No!
    » McGeary case

• Next of kin – No!
  – Exceptions:
    • Danger to spouse
Needle-Stick Injury

Dilemma

• Patient awake, gives consent - no problem

• Dilemma
  – Patient under anaesthetic
  – Patient awake but refuses consent
    • No testing without consent

• Anaesthetic
  • Wait until patient awakes

• Refuses or unconscious for long periods
  • Use of store blood
Conclusion

- HIV & AIDS are here to stay
- HIV status does not affect outcome
- Universal precautions
- Testing only with informed consent
- Lobbying of authorities
Universal precautions!!

Let's get to the point. Sharps Safety begins with you.