Old Issues, New Approaches: Prevention

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HIV Infection

Effective Prevention is imperative

- Due to the continued large numbers of new cases each year
- Available effective treatments for diagnosis & early intervention
HIV Prevention Efforts

- Abstain, Be faithful, Condoms, Counseling & testing
- Immunization
- HSV-2 suppressive treatment
- Genital tract infection control
- Female-controlled microbicides
- Circumcision
- Diaphragms
- Exposure prophylaxis (MTCT, PEP, PrEP)

Not Just from Sex!
Benefits of Universal Risk Assessment for HIV

- Open door to discuss risk
  - Patients want information but don’t get it
  - Basis for all behavior change (prevention) discussions
  - Opportunity: develop relationship w/patient & improve health
Benefits of Universal Risk Assessment for HIV

• Open the door to discuss risky behaviors

• **Normalize the process**
  • ALL patients will know to expect these questions
  • No one will feel singled out by the process
Benefits of Universal Risk Assessment for HIV

- Open the door to discuss risky behaviors
- Normalize the process
- **Find cases**
  - “hidden cases” – patients & providers who do not know of risks
Benefits of Universal Risk Assessment for HIV

- Open the door to discuss risky behaviors
- Normalize the process
- Find cases
- **Provide early treatment**
  - Early intervention provides best outcome
Why *aren’t* assessments done?

- Fear of offending patient
- Time
- Discomfort discussing sex/drugs
- Not knowing how
- Confidentiality issues
- Not considering risk to be relevant
- Fear of the answer “yes”
Process

• Set stage: introductions, private space
• Assure confidentiality
• Non-judgmental
• Imbed into comprehensive assessment
• Less threatening questions first
Substance Use

- “Legal” first!
- Have you ever used drugs from a non-medical source?
- When was the last time you used drugs?
- Do you now or have you ever injected drugs?
- Some of my patients use drugs, is that something you’ve ever done?
Ø Substance Use

You don’t use drugs, do you?
Club Drugs

- Alcohol
- Ecstasy
- Methamphetamine
- Inhalants

- LSD
- GHB
- Rohypnol
- Ketamine
Key Messages...

1. Our concern is for health and safety.
2. Not using is safest.
3. If you do use, there are ways to reduce harm.
4. There is less risk with less use, more risk with more use.
5. Mixing drugs increases risk for harm.
6. Everyone responds differently to drugs.
7. If you do use, learn as much as you can:
   - About your body.
   - About your supplier.
   - About the drug.
8. Use with trusted others, possibly even experienced others.
What is it and how does it work?

• Ethyl alcohol or ethanol.
• Natural product of fermenting sugars. It is usually made from grains such as hops, barley or rice and/or fruits.
• Central nervous system depressant.
• Passes from the stomach into the small intestine, where it is rapidly absorbed into the blood and distributed throughout the body.
Alcohol

- **Effects**: Feelings of relaxation, lowered inhibitions, increased sociability, dizziness, kills pain, nausea, slurred speech, slower reflexes, sleepiness, bad judgment, dehydration and a hangover the next day.

- **Serious Risks**: Loss of motor control, black-outs, temporary coma, brain/liver damage, death.
Alcohol

Cautions:

• Taking other medications and being fatigued can increase the alcohol’s effects.
• Highly addictive - tolerance develops quickly.
• Consuming too much alcohol at once can cause death.
• Long term use can damage the liver, brain and other organs.
Reducing Risks:

• Know your own limits and pace yourself.

• Know the alcohol content. A standard drink is:
  • 12 oz. of beer.
  • 5 oz. of table wine.
  • 1.5 oz. of liquor.

• EAT - food delays blood alcohol concentration.

• Avoid driving - designate a driver.

• Avoid mixing, particularly with other depressants.
Ecstasy
Ecstasy

What is it and how does it work?

- MDMA (3,4-methylenedioxymethamphetamine)
- An amphetamine analogue that produces euphoria, feelings of closeness to others and stimulant effects.
- Acts as a short term antidepressant by releasing large amounts of Serotonin (a neurotransmitter).
Ecstasy

- **Names**: XTC, X, E, Adam, Clarity, Lover’s Speed, hug-drug, E-bombs.
- **Method Used**: Swallowed: tablet or capsule. Normal dosage --100-125 mg.
- **The “High”**: Positive feelings and empathy for others, feelings of being close to others, decrease in anxiety, euphoria, decreased appetite, decreased thirst or need for sleep.
Ecstasy

- **Effects**: Increased energy, nausea, hallucinations, chills, sweating, shaking, blurred vision, rapid heart beat, high blood pressure, muscle cramping.
- **Serious Risks**: Heat stroke, severe dehydration, possible changes in brain functioning, memory problems, serious depression.
Ecstasy

Caution:

• Mixing Ecstasy with Ritonovir (HIV med) can cause death.
• Mixing X with other drugs can lead to adverse reactions.
• Be aware that other drugs are sold as Ecstasy, but they are not (DXM, PMA).
• Eventually, you “run out” of Serotonin, regardless of how much you take.
Ecstasy

Reducing Risks:

• Make sure you know what you are taking (use a test kit, if possible).
• Taking more may not give you a greater high and may only increase negative side effects.
• Watch for overheating and dehydrating. Drink water and cool off!
Methamphetamine
Methamphetamine

- **Names**: Speed, tina, ice, crystal, meth, crystal meth, crank, fire, glass.
- **Method Used**: Snorted, smoked, injected, swallowed.
- **The “High”**: Increased energy, elevated mood, increased sexual arousal, confidence and pleasure, appetite suppressant.
Methamphetamine

- **Effects**: Anxiety, rapid heart beat, sweating, energy.
- **Serious Risks**: Violence/aggression, hallucinations, paranoia, heart attack, HIV and other transmittable diseases, nerve damage, chronic depression, tooth loss, gum disease.
Methamphetamine

Cautions:

- Using a lot of meth can lead to serious emotional and physical problems.
- Smoking and injecting meth is the most dangerous.
- Meth contains a lot of dangerous chemicals.
Methamphetamine

Reducing Risks:

• Know your source.
• Eat and drink plenty of water before, during and after use.
• Don’t stay up longer than 2-3 days.
• Take some quite/relaxation time.
• Be aware of your own risk-taking behavior.
• If injecting, use brand new equipment.
Crash, Burn, Repeat

Meth makes you feel like
The king of the world---fearless,
Ecstatic, and full of energy.

Users often binge, staying high
For days without sleep or sustenance.

As the drug wears off, you feel
Drained, helpless and deeply depressed.

Long-term use erodes both body and mind.
Your Body on Meth

YOUR BODY ON METH
Beyond the psychic toll, which can include paranoia and hallucinations, long-term risks are stroke, liver damage, extreme weight loss plus increased exposure to HIV and hepatitis.

SKIN SORES: This IV user almost lost his arm to infection. Obsessive scratching also scars.

METH MOUTH: Corrosive smoke and constant grinding can disfigure the teeth of heavy users.
Meth Mouth
LSD

- **Names**: Acid, boomers, liquid sunshine, blotters.
- **Method Used**: Sucking on a “blotter” on the tongue, sugar cube.
- **The “High”**: Visual hallucinations.
LSD

- **Effects**: Dilated pupils, higher body temperature, increased heart rate and blood pressure, sweating, loss of appetite, sleeplessness, dry mouth, and tremors, numbness, weakness, or trembling, nausea, hallucinations, laughing.

- **Serious Risks**: Possible “flashbacks”; poor judgement leading to accidents (crashes, jumping off high places).
LSD

Reducing Risks:

• Use with those you know.
• Use in a safe environment.
• Do not drive!!!
Inhalants

Poppers

Solvents
Inhalants

- **Gases**: Lighter fluid, aerosols, embalming fluid (sherms).
- **Solvents**: Glue, degreasers, paint thinner.
- **Nitrites**: Poppers, snappers, rush, bold bullet, locker room.
- **Method of Use**: Sniffed, huffed, bagging.
- **The High**: Dizziness, sexual arousal, floating, sleepy, hyper---the high varies.
Inhalants

- **Effects**: Nausea, sneezing, fatigue, coughing, nose bleeds, rapid pulse, headaches, involuntary release urination or feces, impaired judgement.

- **Serious Risks**: Violent behavior, loss of consciousness, loss of feeling in hands and feet, Kidney damage, brain damage, loss of smell, hearing, memory and bone marrow; hepatitis.
Inhalants

Cautions:

- Huffing or using plastic bags increases your risk of overdosing/death.
- Inhalants can cause serious damage to lungs and brain.
- Poppers and Viagra can lower blood pressure, cause heart or brain damage and lead to death!!!
Sherms
(Embalming Fluid)

- **Names:** Sherms, Fry, Wet Sticks, Happy Sticks.
- **Method Used:** Cigarettes, cigars, joints soaked and smoked.
- **Content:** Embalming Fluid: Formaldehyde, methanol, alcohol or other solvents and sometimes PCP.
Sherms

• **The “High”:** Hallucinations: seeing colors, designs. A different reality.

• **Effects:** Paranoia, panic, anger, increased forgetfulness, vomiting, depression, swelling, change in depth perception.

• **Serious Risks:** Loss of consciousness, fever, heart attack, kidney damage, stops development, gets into spinal cord, coma, death.
Sherms

Reducing Risks:

• If you use, don’t use alone.
• Avoid streets, cars or areas where you can get hurt.
• Avoid “huffing”.
Date Rape Drugs

Don’t Be A Victim!
Blue Nitro and Renewtrient, liquid and pill form, have been removed from the market.
What is it and how does it work?

- Gamma-hydroxy-butyrate
- It acts as a “depressant” (slows heart, breathing, decreases release of NTs).
- Formally used as an “anti-depressant”.
- Also used in body building (muscle builder).
GHB

- **Method Used**: Clear liquid (dissolved in drinks), white powder, tablet and capsule.
GHB

- **Onset**: 10-20 minutes
- **Coming Up**: 15-30 minutes
- **Plateau**: 45 min - 1 1/2 hours
- **Coming Down**: 15-30 minutes
- **After Effects**: 2-4 hours
GHB

- **Effects:** Nausea, vomiting, headache, loss of consciousness, coma, seizures, convulsions, difficulty breathing.

- **Serious Risks:** Sexual assaults, death.
  - Mixing GHB with alcohol and other drugs is dangerous.
  - Dose safety range is narrow.
  - Don’t drive on GHB!!!
Reducing Risks:

- If someone is unconscious or vomiting, lay them on their side and call for help.
- Don’t mix GHB with other drugs, especially alcohol.
- Start by taking a small dose and wait.
- Be aware of any strange taste (salty) in your drink.
What is it and how does it work?

- Flunitrazepam - a prescribed sleeping pill 10X stronger than Valium.
- It is a sedative.
- Has a "paralysis" type effect in some people.
Names: Roofies, Rophies, Rope, Roach, “trip and fall”, the “Forget Pill”, “Date Rape Pill”.

Method Used: Mixed in drink, swallowed, snorted.

The “High”: Sleepy, dizzy, relaxed-drunk feeling. Duration of 10 minutes to 8 hours.
Rohypnol tablets are white and are single- or cross-scored on one side with "ROCHE" and "1" or "2" encircled on the other.

(Graphics courtesy of the U.S. Dept. of Justice)
Rohypnol

- **Effects:** Amnesia, can’t speak, loss of motor control, slurred speech, confusion, gastrointestinal problems, dizziness, urinary retention, blackouts, seizures.
- **Serious Risks:** Sexual assaults. Mixing with alcohol or other drugs can be very dangerous and lead to death.
Avoid becoming a victim!

- Drug Induced Rape Prevention Act of 1996:
  Increases penalty for use of ANY controlled substance to aid in a sexual assault.

- If you think you could have been poisoned, seek help immediately!

- GHB: Test within four to eight hrs, 12 hrs for urine tests (it leaves the system very rapidly).

- Rohypnol: Stays in system for up to 48 hrs.
Avoid becoming a victim!

Reducing risks:

• Be wary of drinks from anyone you don’t know or trust.
• If you accept a drink, make sure it’s from an unopened container.
• Don’t leave drink unattended.
• If you think that you have been a victim, notify authorities.
Ketamine

What is it and how does it work?

- Ketamine-hydorchloride
- Dissociative Anaesthetic.
- PCP, DXM, nitrous oxide (laughing gas) are also dissociative anaesthetics.
- It is an animal tranquilizer.
- Sometimes used as an anesthetic on young children and the elderly.
Ketamine

- **Names**: Special K, Vitamin K, Ketalar, Kit-Kat, K, Cat Valium.
- **Method Used**: Snorted, swallowed, smoked, injected (usually IM).
Ketamine

Ketamine HCl
photo copyright Erowid

Ketamine HCl
Photo by LoGikAL, © 2002 Erowid.org
Effects: Lack of coordination, confusion, seizures, high blood pressure, depression, numbness in legs.

Serious Risks: Sexual assault, respiratory collapse-death, kidney damage, difficulty moving, death.
Reducing Risks:

- Avoid mixing Ketamine with other drugs, especially alcohol and other depressants.
- Start by taking a small dose and wait.
- Avoid injecting.
- If injecting, use clean, sterile equipment.
HIV Prevention Efforts

Abstain, Be faithful, Condoms, Counseling & testing

ABC

Immunization

HSV-2 suppressive treatment

Genital tract infection control

Female-controlled microbicides

Exposure prophylaxis (MTCT, PEP, PrEP)

Circumcision

Diaphragms
WASHINGTON (Reuters) - Abstinence-only education programs meant to teach children to avoid sex until marriage failed to control their sexual behavior, according to a U.S. government report.

Abstinence-Only Does Not Work
April 14, 2007
Sex

• Are you now or have you ever been sexually active?

• When did you last have sex?
Ø Sex

• You don’t have sex, do you?
• So, you’re monogamous with your spouse, right?
• You’re married? Then you aren’t at risk for HIV, are you?
Sexual Partners

- Do you have sex with men, women, or both?
- Do you know about the drug using habits of your partner(s)?
- Do you know about the sexual activities of your partner(s)?
- Have you ever had anonymous sex?
Sexual Activities

- Do you have or have you ever had vaginal sex? Oral sex? Anal sex?
- Some people enjoy anal intercourse. Is this something you do?
- Have you ever exchanged sex for drugs or money?
Extent of Sexual Activity

• When did you have your first sexual intercourse?
• How many sexual partners have you had in the last week? Month? Year?
• How many sexual partners have you had in your life time?
Extent of Protection

- When you have sex, how do you protect yourself from STDs?
- Are there times when you are more likely to use protection? When? Less likely? When?
- Have you ever had sex when you were drunk or stoned?
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Circumcision

Ramjee G. XVI IAC; 2006 Toronto. Abstract TUPL02
Male Circumcision
Circumcision appears to reduce a man’s risk of contracting AIDS from heterosexual sex by half, United States government health officials said yesterday, and the directors of the two largest funds for fighting the disease said they would consider paying for circumcisions in high-risk countries.
Diaphragm for HIV Transmission Protection?

Substantial biological evidence suggest cervix is site of high susceptibility to HIV transmission.

Helen Rees, et al; Reproductive Health & HIV Research Unit, University of Witwatersrand, Johannesburg, South Africa. *Implications for Counselling of New Preventive Technologies.*

www2.fmg.uva.nl/assr/conferences/documents/ProfH.Rees.ppt
Old method New Potential?

Diaphragm

One/two size fits all products being developed

Arcing Spring with Jelly and Case
75 mm
Diaphragm’s As HIV Prevention Method?

March 1, 2007

- Researchers at the Women’s Global Health Imperative program at the University of California-San Francisco's Medical Center are conducting a large-scale clinical trial
  - 4,500 women in Zimbabwe and South Africa
  - to test the effectiveness of diaphragms in preventing the spread of HIV, the Chicago Sun-Times reports.
- The diaphragm being studied in the trial, called SILCS, is under development
  - "one-size fits most" silicone device
  - that likely will receive FDA approval by 2010

Source: Medicalnewstoday.com
HIV Prevention Efforts

Abstain, Be faithful, Condoms, Counseling & testing

ABC

Immunization I

HSV-2 suppressive treatment H

Genital tract infection control G

Female-controlled microbicides F

Circumcision C

Diaphragms D

Exposure Prophylaxis (MTCT, nPEP, PrEP) E

Ramjee G. XVI IAC; 2006 Toronto. Abstract TUPL02
Estimated Number of Perinatally Acquired AIDS Cases, by Year of Diagnosis, 1985-2003—United States

Note: Data adjusted for reporting delays and for estimated proportional redistribution of cases in persons initially reported without an identified risk factor.
Post Exposure Protocol
PEP

Definition

- needlestick or cut w/sharp object
- contact of mucous membrane/non intact skin
- prolonged contact w/intact skin
- extensive area w/blood, tissue, or other body fluids

Exposure Risk

- 0.3%\(^1\) Percutaneous blood
- 0.09%\(^2\) Mucocutaneous blood

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Rationale of PEP

➢ Systemic infection does not occur immediately, leaving a short period of time during which PEP may reduce viral replication.
PEP

- Therapy should be initiated as soon as possible - *ideally within 1-2 hours after the exposure*
- Therapy may be altered if the source has known/suspected resistance to antiretroviral agents
- HIV testing
### TABLE 1. Estimated per-act risk for acquisition of HIV, by exposure route*

<table>
<thead>
<tr>
<th>Exposure route</th>
<th>Risk per 10,000 exposures to an infected source</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood transfusion</td>
<td>9,000</td>
<td>74</td>
</tr>
<tr>
<td>Needle-sharing injection-drug use</td>
<td>67</td>
<td>75</td>
</tr>
<tr>
<td>Receptive anal intercourse</td>
<td>50</td>
<td>76, 77</td>
</tr>
<tr>
<td>Percutaneous needle stick</td>
<td>30</td>
<td>78</td>
</tr>
<tr>
<td>Receptive penile-vaginal intercourse</td>
<td>10</td>
<td>76, 77, 79</td>
</tr>
<tr>
<td>Insertive anal intercourse</td>
<td>6.5</td>
<td>76, 77</td>
</tr>
<tr>
<td>Insertive penile-vaginal intercourse</td>
<td>5</td>
<td>76, 77</td>
</tr>
<tr>
<td>Receptive oral intercourse</td>
<td>1</td>
<td>77†</td>
</tr>
<tr>
<td>Insertive oral intercourse</td>
<td>0.5</td>
<td>77†</td>
</tr>
</tbody>
</table>

* Estimates of risk for transmission from sexual exposures assume no condom use.
† Source refers to oral intercourse performed on a man.
PrEP – Pre–Exposure Prophylaxis

- Conceptually, any prevention
  - Vaccine
  - Circumcision
  - Microbicides
  - Abstinence
  - Prevention Education
  - Condoms
  - Harm Reduction, Needle Exchange
  - Treatment

Source: Paul Arons, M.D., Florida Department of Health, Division of Disease Control Bureau of HIV/AIDS. HIV Exposure Prophylaxis: From P- to Pre- presented at the Sixteenth Annual HIV Conference of the Florida/Caribbean AIDS Education and Training Center; March 31, 2007
Goals of the PrEP Program

- To learn what is needed to guide and promote prevention program implementation
  - Not settle for “clues” and “recommendations”
  - Level of Efficacy Matters
    - 0 vs 30% vs 70%
  - Minimum lab monitoring required for safety
- Inclusion of many risk groups
  - Women, Men, Heterosexual, MSM, IDU

www.plosmedicine.org
PrEP Meds

• Studies use tenofovir (TDF) and emtricitabine (FTC); other ARVs could also be OK
• Two drugs more effective than one in simian model (CROI 2004-06)
• Concern about development of resistance with periodic use
• Concern about unintended use; sex workers, chronic risk takers, cocktail with ED and party drugs

HIV Prevention Efforts

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Exposure prophylaxis (MTCT, PEP, PrEP)

HSV-2 suppressive treatment

Ramjee G. XVI IAC; 2006 Toronto. Abstract TUPL02
Microbicides

- Strong rationale as female controlled method
- Microbicides containing ARVs in pipeline
HIV Prevention Efforts

- Abstain, Be faithful, Condoms, Counseling & testing

- ABC

- Immunization (I)
- Circumcision (C)
- Diaphragms (D)

- Exposure prophylaxis (MTCT, PEP, PrEP) (E)

- HSV-2 suppressive treatment (H)

- Female-controlled microbicides (G)

- Genital tract infection control

Ramjee G. XVI IAC; 2006 Toronto. Abstract TUPL02
Infection with *Trichomonas vaginalis* Increases the Risk of HIV–1 Acquisition

- A prospective study among women in Mombasa, Kenya
- Among 1335 HIV-1 sero-negative women monitored for a median of 566 days
  - 806 incident *T. vaginalis* infections (23.6/100 person years)
  - 265 women seroconverted to HIV-1 (7.7/100 person years)
Infection with *Trichomonas vaginalis* Increases the Risk of HIV–1 Acquisition

Trichomoniasis was associated with a 1.52-fold (95% confidence interval, 1.04 - 2.24-fold) increased risk of HIV-1 acquisition after adjustment for potential confounding factors.

Treatment and prevention of *T. vaginalis* infection could reduce HIV-1 risk in women.
HIV Prevention Efforts

Abstain, Be faithful, Condoms, Counseling & testing

ABC

C Circumcision

D Diaphragms

G Female-controlled microbicicides

F Exposure prophylaxis (MTCT, PEP, PrEP)

E

H HSV-2 suppressive treatment

Genital tract infection control

I Immunization

Ramjee G. XVI IAC; 2006 Toronto. Abstract TUPL02
Prevalence of HSV-2 in Women Throughout the World
(pregnant or sexually active adult women)
Herpes Simples Virus

- A drug used to control herpes simplex virus and keep genital herpes in check lowers HIV in the blood and genital secretions of women infected with both viruses

Source: JAMA, March 21, 2007 – Vol 297, No. 11
**HIV Prevention Efforts**

- **A**bstain, **B**e faithful, **C**ondoms, **C**ounseling & testing
- **ABC**
- **C** Circumcision
- **D** Diaphragms
- **E** Exposure prophylaxis (MTCT, PEP, PrEP)
- **F** Female-controlled microbicides
- **G** Genital tract infection control
- **H** HSV-2 suppressive treatment
- **I** Immunization

Ramjee G. XVI IAC; 2006 Toronto. Abstract TUPL02
Vaccines

- Researchers have been conducting clinical trials to develop a safe and effective vaccines for HIV/AIDS.
- Proposed Strategies:
  1. Stimulate cellular immune response
  2. Use other viruses or bacteria as “vectors”
  3. Prime-Boost models
  4. Stimulate antibody response
- There are two advanced stage trials currently underway…

Benefit of ART
New Directions of Study...
Data analysis also showed that increase in malaria coincides with a significant increase in HIV viral load.

The findings imply the importance of concerted efforts to prevent HIV and malaria in areas where both diseases are endemic.

Still A Ways To Go...