

# Adolescent focused HIV care in South Africa

Melissa Lawler

Paediatric Infectious Disease

King Edward VIII hospital/UKZN

- Pre – ART → Perinatally infected children – DIE before 2 years
- Post ART – living longer
  - Developed world - ART since 1996
  - survival into adolescence is now the norm

# Adolescents in South Africa

- growing population of vertically infected
- youth at greatest risk of HIV acquisition
- VCT Uptake is low in adolescents
  - only 20% of youth ever having had an HIV test
  - even fewer CD4 monitoring and health maintenance
- Cape Metropole - testing uptake is 85%
- two-thirds go on to receive CD4 counts

- Mid of 2008
  - Approximately 6 000 youth aged 10 - 19 were receiving ART
  - Further 6 000 met entry criteria for HAART
- National Strategic Plan target
  - providing ART 80% of all individuals progressing to AIDS
  - adolescents receiving ART can be expected to increase to 153 000 by 2020

- 10 - 19 year olds - 1% of the total number on ART in 2008
- By 2020 - 5% by 2020
  - vertically infected children surviving into adolescence
- Vs other chronic illness eg. rheumatic heart disease
  - 46 cases of acute rheumatic fever were reported in 2002 in adolescents aged 10 - 19 years
  - some develop rheumatic heart disease

# HIV positive Adolescents

- Physiological and psychosocial transitions
  - Delaying physical and intellectual development
- Extra challenges
  - Concerns about medication regimens
  - Doctors' appointments
  - Life expectancy
  - Social upheaval
  - Disclosure
  - Stigmatisation
  - Transmission of virus to others
  - Fear of being 'abnormal'

- HIV-related issues that are common to any age group
- Extensive and rapid changes of adolescence
- Exceptional and formidable challenge
- Young people themselves
- Adults who care for them

# Disclosure

- Knowledge and understanding of their HIV status
- Disclosure - paramount, not easy to accomplish
- Frank ongoing communication and education
  - Understanding of the implications
  - Acceptance of living with their illness
- Disclosure crucial during adolescence as individuals approach cognitive maturity
- Significant adults may need to be guided and supported in this process



# Mental Health

- Multiple stressors of HIV
  - Side-effects from medication
  - Chronic illness
  - Real or perceived stigma
  - Death of family members
- North american research - high rates of mental disorders among HIV-infected adolescents
- Appropriate psychological services for adjustment and survival of the youth into adulthood
- Mental health status affects HAART adherence and engagement in risky sexual behaviour

# Support groups

- Social, emotional, spiritual, and often material support
- Often alienated from their peers
- Support groups can provide this support
- Cannot replace support for daily living

# Adherence

- Adherence integral for sustaining positive health outcomes
- Childhood - caregivers are often heavily involved in their children's daily routines, and provide instrumental help in taking tablets
- Children grow up - expectations for increasing responsibility
  - Adherence is a major problem

- Compliance during this period is lower than in other stages of life
  - Disease denial
  - Peer pressure and social norms
  - Rebelliousness
  - Risk-taking behaviour
- Private sector, sub-saharan african programme
  - Adolescents were treated similarly to adults
  - Adolescent patients were 1.5 times less likely to be virologically suppressed at one year
- Targeted interventions that enhance adherence and promote responsible treatment management

# Reproductive and sexual health

- Maturing sexually
- Ability to date and engage in sexual activity
- Chance to live, grow up and enjoy life, including sex
- Sexual behaviour of HIV-positive youths is not substantially different from that of HIV-uninfected peers

- Sexual behaviour
  - Unwanted pregnancy
  - Other STD
  - Re-infection with more pathogenic virus
  - Transmission of the virus to others
- High cost of unsafe sex
- Age-specific sexual and reproductive health services, and information
- minimise risky sexual behaviour
- encourage positive sexual identities

- Young and inexperienced but curious, and sometimes under the influence of substances
- USA studies
  - 2001 - 400 girls between 13 and 19 years of age from the Reaching for Excellence in Adolescent Care and Health (REACH) cohort
  - 100 pregnancies over a period of three years
  - No significant difference in pregnancy incidence was detected between HIV infected and uninfected participants

# Right to fertility

- Desire to have children remains strong
- Romantic relationship is typically not regarded as legitimate unless it produces a baby.
- Cultural value placed on having children
- Adolescents living with HIV engage in early relationships to fulfil their obligation to have children before they die
- Uganda
  - Rate of pregnancy among adolescents living with HIV was similar to that recorded in the general population
- Only a few sexually active adolescents report disclosing their HIV status to their current partner (29% in young people age 15–17 years and 42% in adults age 18–19 years)



**TABLE 1**  
**ELEMENTS OF A SEXUAL RISK ASSESSMENT FOR**  
**HIV-INFECTED FEMALE ADOLESCENTS**

- Whether patient is sexually active or has plans to initiate sexual activity
- Age at initiation of sexual intercourse
- Number of sexual partners
- Gender(s) and ages of partners,<sup>a</sup> length of relationships
- HIV and STI status of partners
- Disclosure to partner(s) of HIV status<sup>b</sup>
- History of STIs and treatment
- Sexual practices (oral, anal, vaginal, digital, use of sex toys) with and without protection
- Contraceptive history and current practices, specifying frequency and condom use
- Self-assessment of safer-sex practices
- Pregnancy history
- Sexual abuse (personal or family)
- History of exchanging sex for housing, food, money, or drugs
- Drug or alcohol use

Inquiring about the age of partners may be useful when obtaining a sexual risk assessment because it is often more difficult for younger women to be assertive regarding safe-sex practices with older partners.

If HIV status has not yet been disclosed to partner(s), the clinician should offer assistance with partner disclosure.

# What contraceptive methods are suitable for HIV-positive adolescents?

- Abstinence
- Barrier methods
- Natural methods
- Hormone contraceptives
- Intrauterine devices (IUD)
- Sterilization
- Spermicides

# PERFECT

- Effective contraception
- STDS prevention
- No side effects
- Completely accepted by users in **all** situations

# When advising

- Young age and inexperience
- Dynamic pattern of life and sexual relationships
- Concomitant condition of HIV infection and ARV use
- As early as possible before young people get used to risky behaviour; ideally before their first sexual intercourse

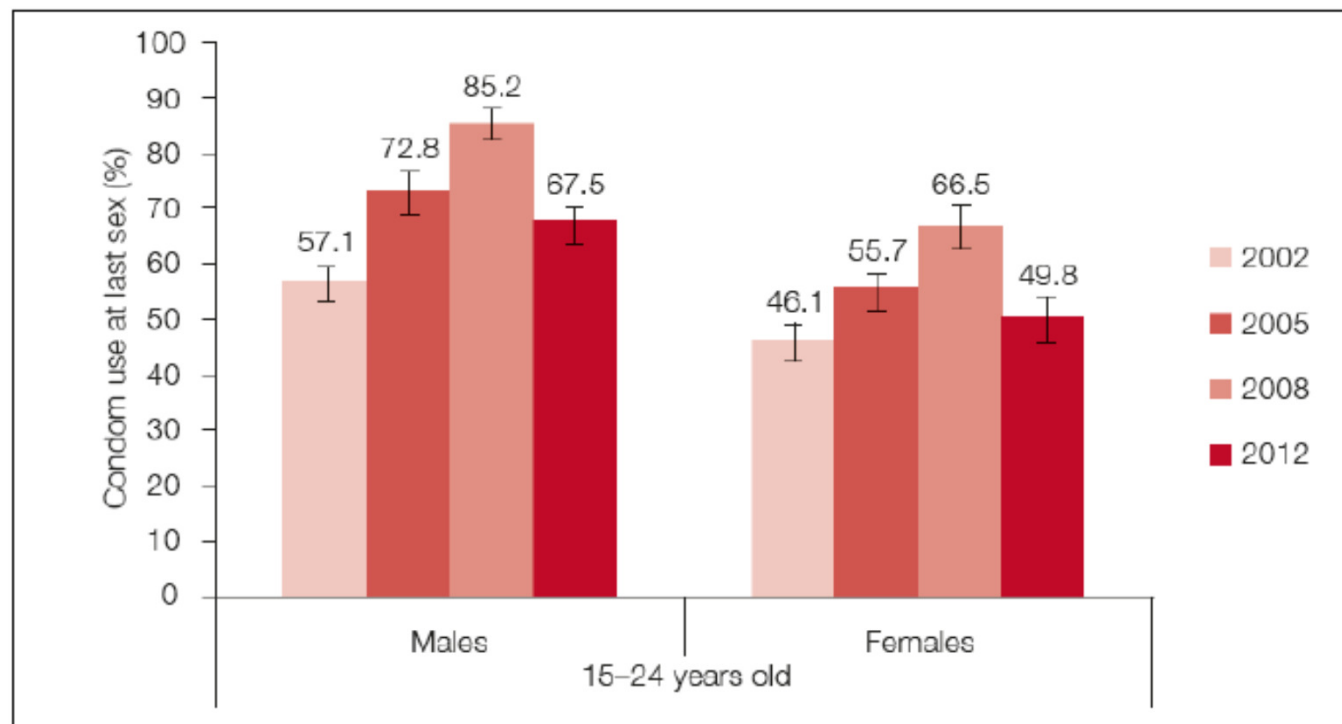
# What choice

- Not enough evidence related to the choice of contraceptive method for this group
- Empiric advice
  - Contraceptive use in adolescents in general, or
  - Contraceptives in HIV-positive women of any age

# Barrier method

- Prevention of STD/HIV transmission - barrier method
- Male condom
  - Not used as recommended, especially by young people
- Barriers to use of condoms
  - fear of rejection, peer pressure, poverty, alcohol use, poor negotiation skills, possible disclosure of HIV status through insistence on condom use, ambivalence about becoming a parent, and impulsivity
- Oral and anal sexual intercourse is also reported frequently → avoid pregnancy and to preserve virginity

## Condom use at last sex by age, sex



58.3% 15-24 year olds using condoms,  
highest percentage age-wise

HSRC Report 2012

# Dual Protection

- Barrier + other
- March 2010
- Population estimate
- All women in the united states with 1 contraceptive
- Added second
- 80% of unintended pregnancies and abortions among these women could be prevented
- Reduction of 786,000 unintended pregnancies and nearly 152,000 abortion



# IUD

- Copper or progestin
- Most popular reversible long acting contraceptive method used in the world.
- Advantage vs hormonal
  - Lacking pill burden
  - Need for regular application a
  - Adverse events associated with hormonal components
- Progestin-releasing IUD - reducing menstrual bleeding

# Studies IUD HIV positive

- Zambia in 2007
  - IUD is a safe and effective method of contraception in HIV-positive women
  - HC were more likely to become pregnant than those who were assigned to IUD (4.6 vs. 2.0/100 woman-years)
  - One woman IUD group experienced PID
- Earlier reports showed higher incidence of adverse events such as dysmenorrhea, expulsion, impaired restoration of fertility with prolonged use of IUD in nulliparous and young women

# HC for HIV-positive adolescents

- Two main types of HC
  - Combined oestrogen and progestin type - combined oral contraceptive pill (coc), the skin patch or the vaginal ring
  - Progestin-only type- pill, a depot injection or an implant (single rods containing etonorgestrel (Implanon NXT<sup>®</sup> used for 3 years)

# HIV-positive adolescents

1. HIV disease progression
2. Genital tract HIV shedding and infectivity
3. Pharmacokinetic (PK) interactions between hormones and ARVs
4. Metabolic outcomes

# 1. HIV disease progression and HC

- To date is still inconclusive
- Sex steroid hormones influence the immune system
  - Progesterone can have a suppressive effect
  - Oestrogens can have the reverse
  - Exact mechanisms are not clearly understood
- Oestrogens and progesterone have an effect on the structure of the vaginal epithelial wall and the vaginal microorganisms

- Studies in humans and challenge studies in ovariectomized macaques
  - Progesterone-based contraceptives increase the transmission risk of HIV-1 infection in humans and of simian immunodeficiency virus (SIV) infection in macaques
  - Increase viral shedding in the genital tract of humans

- Baeten et al. in the Mombasa cohort
  - Use of depot at the time of HIV infection → higher plasma HIV-1 viral load set point
  - Faster progression of the HIV-1 disease
  - HC, COC or DMPA, at the time of HIV infection → multiple HIV viral genotypes
  - Higher HIV plasma viral load set point and faster CD4 T cell decline
- Zambia
  - HC might enhance disease progression if administered in HIV-positive women prior to ARV initiation

- Other data from a multi-country cohort analysis involving 4,000 women
  - Did not find an effect of exogenously administered progesterone on HIV-1 acquisition and disease progression
- Several other studies published in recent years which confirm the same observation
- Uganda
  - 625 women finds that HC is not associated with progression to death and is actually associated with reduced progression to AIDS
- In HIV-infected postpartum Kenyan women,
  - no significant immediate or longer-term effects of the use of COC or DMPA on HIV-1 plasma viral load and CD4 T-cell counts
- The role of HC in the effectiveness of HAART
  - Women's Interagency HIV Study
  - no substantial evidence that use of HC strongly affected responses to HAART.



Scientific evidence is currently not  
conclusive about HIV progression  
and contraceptive use

# PK interactions between hormones and ARVs

- Sex steroid hormones - metabolized via the cytochrome P450 system
- Change the PK of oestrogens and progestins
  - Decrease the contraceptive effect
  - Increase in hormone-related side effects (e.g. thromboembolism).
- AUC and the maximal concentration of any drug
  - age, body weight, hormonal cycles of exposure to the drug (HC, ARVs), the specific drug molecule and its dosage
- Adolescents- physical and sexual development
- PK vs direct indicators of pregnancy risk eg ovulation

# Metabolic outcomes of HC in female adolescents and adults

- Body metabolism in HIV influenced by
  - HIV infection
  - ARV
- Sex hormones themselves have effect on body metabolism
- Plasma lipids and glucose tolerance in HIV-positive women using HC
  - Progestin-only HC

- Womack et al - Women's Interagency HIV Study (WIHS )
  - HIV-infected and uninfected women in the
  - Progestin-only
    - Lower high density lipoprotein (HDL) and greater insulin resistance in HIV-infected and uninfected women
  - Combined HC
    - Higher HDL in HIV-infected and uninfected women

# Bone density

- HC, especially DMPA
  - Loss of bone mineral density (BMD) in adolescents regardless of their HIV status
- 2004, the US (FDA)
  - Black box warning
  - Significant BMD loss
  - Unknown if the use of the DMPA during adolescence or early adulthood → reduce peak bone mass and increase the risk of osteoporotic fracture later in life
  - Recommendation – not to use for more than two years
  - Additive factor carries a risk of osteoporosis eg smoking

- Multicentre study in the USA - 98 long term DMPA users ages of 12 to 18 years
  - BMD loss is substantially or fully reversible in most girls following discontinuation of DMPA
- Thailand
  - Long-term use of DMPA had a negative impact on lumbar spine BMD

# Effect in HIV positive women

- No similar studies in this group
- DMPA is considered safe to use with HIV infection
  - favourable interaction with ARVs
- Low BMD in HIV infected women
  - Start of HAART → 2% to 6% decrease in BMD over the first 2 years
  - multiple factors
    - HIV infection
    - ARVs
    - traditional osteoporosis risk factors
    - increased fracture rates in the HIV-infected population.

- Mora et al.
  - HAART-treated children
  - Higher levels of bone formation and bone resorption
  - Association between ARV and enhancement of bone metabolic rate
  - An increased rate of bone turnover causes BMD decrease



# NDOH Contraceptive Guidelines

- Dual method
  - Strongly recommended
  - Condom use, in addition to any other contraceptive method, should be promoted to prevent pregnancy, STI and HIV reinfection.
  - Barrier methods should be combined with a LARC method if pregnancy is either contraindicated or not desired
- Combined hormonal contraceptives (COCs, patches, rings and combined injectables)
  - Can be used safely by women who are living with HIV and AIDS (WHO MEC Category 1).
  - Can be used by women on ART (WHO MEC Category 2) unless their therapy includes ritonavir or ritonavir-boosted PIs

- Progestogen-only pills
  - Can be used safely by women who are living with HIV and AIDS.
  - Can be used by women on ART (WHO MEC Category 2) unless their therapy includes ritonavir or ritonavir-boosted PIs
- Progestogen-only injectables (DMPA and NET-EN)
  - HIV-positive women and those who have AIDS, including those on ART, can safely use progestogen only injectables (WHO MEC Category 1 for DMPA and Category 2 for NET-EN).
- Subdermal implants
  - Can be used by women who are living with HIV and AIDS, including those on ART (WHO MEC Category 2)

- Intrauterine contraception

- Women living with HIV, but who do not have AIDS, can safely have the Cu IUD/LNG-IUS inserted (WHO MEC Category 2).
- Women who have AIDS but are on ART and are clinically well can safely have the Cu IUD/LNG-IUS inserted (WHO MEC Category 2).
- Women who have AIDS but who are not on ART, and those who are not clinically well while on ART, should not have the Cu IUD/LNG-IUS inserted (WHO MEC Category 3).
- If a woman develops AIDS while she has a Cu IUD/LNG-IUS in place, she can continue using the method..