Adolescent focused HIV care in South Africa

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• 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)
<p>| TABLE 1 |</p>
<table>
<thead>
<tr>
<th>ELEMENTS OF A SEXUAL RISK ASSESSMENT FOR HIV-INFECTED FEMALE ADOLESCENTS</th>
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<tbody>
<tr>
<td>• Whether patient is sexually active or has plans to initiate sexual activity</td>
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<tr>
<td>• Age at initiation of sexual intercourse</td>
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<tr>
<td>• Number of sexual partners</td>
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<td>• Gender(s) and ages of partners,(^a) length of relationships</td>
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<td>• HIV and STI status of partners</td>
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<td>• Disclosure to partner(s) of HIV status(^b)</td>
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<tr>
<td>• History of STIs and treatment</td>
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<tr>
<td>• Sexual practices (oral, anal, vaginal, digital, use of sex toys) with and without protection</td>
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<td>• Contraceptive history and current practices, specifying frequency and condom use</td>
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<tr>
<td>• Self-assessment of safer-sex practices</td>
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<td>• Pregnancy history</td>
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<td>• Sexual abuse (personal or family)</td>
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<tr>
<td>• History of exchanging sex for housing, food, money, or drugs</td>
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<td>• Drug or alcohol use</td>
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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
  – 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® 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 $\rightarrow$ 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.