HIV and Women “Issues”; Primary Care Management of Women Infected with HIV

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A FEW FACTS....
New HIV Infections in Women

- Women made up 20% (9,500) of the estimated 47,500 new HIV infections in the United States in 2010. Eighty-four percent of these new infections (8,000) were from heterosexual contact.

- When comparing groups by race/ethnicity, gender, and transmission category, the fourth largest number of all new HIV infections in the United States in 2010 (5,300) occurred among African American women with heterosexual contact (see bar graph).
Estimated New HIV Infections in The United States for the Most-Affected Subpopulations, 2010

Source: CDC, HIV Surveillance Supplemental Report 2012; 17 (4)
HIV Infection in Women

- Of the total number of estimated new HIV infections (from any cause) among women, 64% (6,100) were in African Americans, 18% (1,700) were in whites, and 15% (1,400) were in Hispanic/Latina women.

- Not all US women who are living with HIV are getting the care they need. Of all women living with HIV in 2011, only 45% were engaged in care, and only 32% had achieved viral suppression.
Women “Issues”

- Cervical cancer screening
- Contraception
- PreP
- Menopause
- Osteoporosis
- Breast Cancer
CERVICAL CANCER SCREENING
Pap Smear Abnormalities in HIV

• In the setting of HIV infection 30%–60% of Pap smears exhibit cytologic abnormalities and 15%–40% have evidence of dysplasia; these rates are 10–11 times greater than those observed among women who are not HIV infected (J Natl Cancer Inst Monogr 1998;23:43).
HIV and Human Papillomavirus

- The spectrum of human papillomavirus (HPV) disease includes subclinical disease, classic genital warts and other HPV-related skin lesions, lower anogenital-tract intraepithelial neoplasia, and invasive cancers of the lower genital tract and anal canal.

- Compared with women who are not HIV infected, women with HIV have higher prevalence and incidence of HPV (Int J STD AIDS 2003;14:417;)
  1-higher HPV VL (Am J Obstet Gynecol 2002;186:21),
  3-a higher likelihood of infection with multiple HPV subtypes (Am J Obstet Gynecol 2002;186:21; Acta Cytol 2009;53:10)
HIV and Cervical Dysplasia:

• The frequency and severity of abnormal Pap smears, as well as histologically documented dysplasia, increase with declining CD4+ cell counts and have also been associated with higher HIV RNA levels.

• HIV is also associated with more extensive and/or a larger volume of cervical involvement (Gynecol Oncol 1990;38:377).

• Progression and regression of Pap smear abnormalities have been associated with level of immunosuppression and plasma viremia, as reflected in the CD4+ cell count and HIV VL (J Acquir Immune Defic Syndr 2001;27:432; J Infect Dis 2003;188(1):
Invasive Cervical Cancer in HIV disease:

• Recent data from Africa indicate that in the absence of high-risk HPV, there was no increased risk for cervical cancer among HIV infected women (J Infect Dis 2003;188:555).

• Analysis of matching data from AIDS and cancer registries in 15 regions in the United States indicates an increased risk of ICC among women with AIDS relative to HIV uninfected women (J Natl Cancer Inst 2009;101(16):1120)

• Cervical cancer affects HIV infected women at younger ages than it does uninfected women (about a decade earlier). and present at more advanced stages
HIV- and HPV-related dysplasia outside of the cervix:

- Compared with high-risk uninfected women, HIV infected women have about a 10-fold increase in the prevalence and incidence of vulvar (VIN), vaginal(VAIN), and perianal (PAIN) dysplasia or intraepithelial neoplasia.

- Anal HPV has been reported in up to 90% of HIV infected women and is more common with lower CD4+ cell counts and in the presence of cervical HPV and/or cervical dysplasia. Abnormal anal cytology or anal squamous intraepithelial lesions (ASIL) have been reported in up to 26% of HIV infected women. Risk factors include a lower CD4+ cell count, increased HIV VL, high HPV VL, history of receptive anal intercourse, and concurrent abnormal cervical cytology.

- The incidence of invasive anal cancer is seven- to 20-fold greater among women with HIV/AIDS than among women in the general population, with the highest incidence observed among women with AIDS.
Recommendations

• HIV-positive women should be provided cervical cytology screening twice (every 6 months) within the first year after initial HIV diagnosis and, if both tests are normal, annual screening can be resumed thereafter.

• HIV-positive women with ASC-H, LSIL, or HSIL on cytologic screening should undergo colposcopic evaluation. Recommendations for management of HIV-positive women with ASC-US vary. HHS recommends a more conservative management approach (i.e., immediate colposcopy), whereas ASCCP recommends that these women be managed like HIV-negative women with ASC-US (reflex testing for HPV DNA).

• Annual: Careful visual inspection of the vagina and vulva; look for evidence of HPV infection (e.g., warts, hyperpigmented or hyperkeratotic lesions).

• Annual: question about anal symptoms. Anal paps
Prevention of Human Papillomavirus Infection

• **HPV vaccine:** Given existing evidence that the vaccine is safe and immunogenic, and because of the potential benefit in preventing HPV associated disease and cancer in HIV-infected women, either the bivalent or quadrivalent HPV vaccine is recommended for HIV-infected females aged 13 through 26 years.

• **Condoms:** Consistent and correct use of condoms has been associated with a reduced risk of acquiring genital HPV infection (including genital warts), CIN, and cervical cancer (*N Engl J Med* 2006;354:2645;
Contraception

• An ideal strategy for HIV infected women is simultaneous protection against both unintended pregnancy and HIV transmission or STI acquisition, often called “dual protection.” Dual protection can be accomplished through avoidance of penetrative sex, condom use alone, or use of condoms in combination with another more effective method of contraception.

• In general, HIV infected women can use all available contraceptive methods. Condom use, while less effective at preventing pregnancy than other contraceptive methods, is the only method that reduces the risk of HIV/STI transmission or acquisition. Dual protection may be optimal, particularly for serodiscordant couples,
Advantages of Dual Protection

- Condoms alone have a higher failure rate in prevention of pregnancy than most other methods of birth control.
- Hormonal methods may have significant non-contraceptive benefits, such as decrease in iron deficiency anemia, decreased risk of PID, and decreased risk of some cancers.
- HIV infected women may be taking medications that have teratogenic potential (e.g., EFV, warfarin, tetracyclines, statins) and need more reliable contraception than is provided by condoms alone.
- Seroconcordant couples may be less likely to use condoms consistently, while also wishing to prevent pregnancy.
- Drug interactions between hormonal contraceptives and ART may decrease contraceptive effectiveness, creating a greater need for use of a back-up method.
Disadvantages of Dual Protection

• Possible reduction in consistent condom use
• Adverse effects and/or safety considerations or contraindications with hormonal methods
Contraception

- Condoms- male and female
- Spermicides- may INCREASE HIV acquisition and causes increase inflammation and colposcopic abnormalities
- Hormonal :
  - Combined estrogen/progestin-potential interactions between ARV drugs and hormonal contraceptives that could lower contraceptive efficacy through cyt p450. Several PIs and NNRTIs decreased estrogen levels potentially leading to decreased contraception efficacy. Recommendation: use a formulation containing a minimum of 30 mcg ethinyl estradiol.
Contraception

• **Progestin-only contraceptives:** Although data are limited, there is no evidence of significant drug interactions between depot medroxyprogesterone acetate (DMPA) and ARVs. Long-term use of DMPA has been associated with diminished bone mineral density (BMD), although recent studies indicate that the rate of bone loss is greatest in the first 24 months of use and decreases thereafter;

• **IUDs**
Medication Review

• Should take into consideration current medications, including ART, as well as fetal safety should contraception fail.

• EFV is the only current ARV agent that is a proven teratogen. Anencephaly, anophthalmia, microphthalmia, and cleft palate were seen in primates. Reports of CNS defects in infants of women who received EFV at conception and during the first trimester- is the only ARV agent labeled as FDA pregnancy category D.
Pre-exposure Prophylaxis in HIV

NOT CONTRACEPTION
# HIV PreP in Women: Mixed Results

<table>
<thead>
<tr>
<th>STUDY</th>
<th>POPULATION</th>
<th>OUTCOME</th>
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</thead>
<tbody>
<tr>
<td>CAPRISA 004(coitally applied TFV1% gel)</td>
<td>889 heterosexual women (18-40yrs)</td>
<td>39% reduced HIV incidence overall. 54% reduction with &gt;80% adherence</td>
</tr>
<tr>
<td>TDF2 (daily TDF/FTC)</td>
<td>1219 heterosexual men and women (women-46%) (90% 21-29y)</td>
<td>62.2% reduced HIV incidence</td>
</tr>
<tr>
<td>Partners PreP (daily TDF or daily TDF/FTC)</td>
<td>4747 heterosexual serodiscordant couples. 38% hiv neg women</td>
<td>TDF alone: overall 67% reduced HIV incidence (71 F, 63M) TDF/FTC overall 75% reduction (66F, 84M)</td>
</tr>
<tr>
<td>FEM-PreP(daily TDF/FTC)</td>
<td>2120 heterosexual women (18-35yr)</td>
<td>Stopped for futility April 2011</td>
</tr>
<tr>
<td>VOICE (MTN 003)</td>
<td>5029 heterosexual women</td>
<td>Oral TDF stopped for futility</td>
</tr>
</tbody>
</table>
There is a clear dose-response between evidence of PrEP use and efficacy.

<table>
<thead>
<tr>
<th>Study</th>
<th>PrEP Detection in Blood Samples From Nonseroconverters</th>
<th>HIV Protection Estimate as Related to High Adherence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partners PreP(Kenya, Uganda)</td>
<td>81%</td>
<td>86% (TDF), 90% (FTC/TDF) with detectable TDF levels</td>
</tr>
<tr>
<td>TDF2</td>
<td>79%</td>
<td>78% excluding follow-up periods when subjects had no PrEP refills for .30 days</td>
</tr>
<tr>
<td>Fem-PreP</td>
<td>35-38%</td>
<td>Trial investigators assessed use of PrEP as too low to evaluate efficacy</td>
</tr>
<tr>
<td>VOICE</td>
<td>&lt;30%</td>
<td>Trial investigators assessed use of PrEP as too low to evaluate efficacy</td>
</tr>
</tbody>
</table>
Other Prep Considerations

• Safety (individuals with pre-existing renal conditions were excluded from studies)
  – TDF and TDF/FTC were both well tolerated
  – AE balanced out between placebo and PreP arms
  – Nausea was the major side effect (<10%) - mild and self-limited
  – Mild increases in Cr - no correlation clinically
  – Small but significant decrease in BMD
CDC- MMWR

• Jan 2011 – interim guidance : PreP for the prevention HIV in MSM

• Aug 2012- interim guidance: for clinicians considering use of PreP for the prevention of HIV in heterosexually active adults
Prior to Initiation of PreP

- HIV uninfected
  - Confirmed to be HIV negative immediately prior to initiating and periodically (at least every 3 mos) during use
  - If clinical symptoms consistent with acute viral infection are present and recent (< 1 mo) exposures are suspected, delay starting PrEP for at least 1 mo and reconfirm HIV-1 status
  - Determine if women plan to be pregnant, currently pregnant or breast feeding

- Adequate renal function
  - Creatinine clearance ≥ 60 mL/min (Cockcroft-Gault)

- Additional recommended actions
  - Screen for hepatitis B infection
    - If HBV uninfected and susceptible → vaccine (MSM in US should be vaccinated against HBV)
    - If HBV infected, treat for HBV (potentially with TDF/FTC)
  - Treat all STDs

Prescribing PrEP

• Coformulated TDF 300 mg/FTC 200 mg, 1 tablet daily
• No more than 90-day supply
• Renewable only if HIV testing confirms the patient remains HIV uninfected
  – If symptoms consistent with acute HIV-1 infection develop following a potential exposure event, PrEP should be discontinued until negative infection status is confirmed

Counseling

• Continued behavioral risk reduction
• Importance of PrEP adherence
  – No data on intermittent, “event-driven” use
• Adverse events
  – Very well tolerated and safe
  – May experience mild nausea in first few wks
Preconceptional PreP?

- 53 discordant couples (males is HIV +)
  - HIV<50 copies for at least 6 months
  - Daily determination of LH – peak in urine to optimize intercourse
  - Two doses of TDF (300mg) taken 36 and 12 hrs prior to intercourse by the HIV neg women
- 244 documented unprotected events of vaginal intercourse with 0 seroconversions
- Pregnancy rates: 1st attempt 25%, 5 attempts 60%, 12 attempts 75%

Vernazza et al. AIDS 2011, 25, 2005
The Use of Prep

- Another tool for HIV prevention, but should be part of a comprehensive risk reduction package
- Good adherence is critical-otherwise will not be effective
- In women, must take into account the risk of conception, and fertility plans and desires
MENOPAUSE
Aging and HIV Infected Women

- HIV infected women are living longer
- Older women are also among those newly diagnosed with HIV
- More HIV+ women are/will experience menopause
Estimated numbers of women living with HIV infection, 46 states, United States, 2011.
Estimated rates of women living with HIV infection, by age groups, 40–44, 45–49, and 50–54 years, among all women, by race/ethnicity in 46 states, United States, 2011.
Menopause

• Defined retrospectively as cessation of menstrual periods for one year; not associated with other causes.

• Result of the natural decline of estrogen production from ovaries

• The average age of menopause in the US is about 52 years with a range of 40 to 58 years (North American Menopause Society, NAMS, 2015).

• In the general population, women who achieve menopause at an earlier age are at higher risk for morbidity and mortality due to loss of the protective effects of estrogen.
  • Cardiovascular Risk
  • Fracture Risk
HIV and Menopause

• A few studies to date suggest HIV is a risk factor for earlier than average age at menopause.
• Risk factors for earlier menopause are often found in HIV+ women and may confound the association of HIV with early menopause
  ➢ Tobacco use
  ➢ Substance abuse
  ➢ Low BMI
  ➢ Low socioeconomic class
  ➢ Stress
  ➢ At least 2 studies showed that CD4<200 was associated with early menopause- age 42
HIV and Menopause

• Episodes of irregular bleeding or amenorrhea are common in HIV+ women
  – Stress, low BMI, serious illness
• May need evaluation if age<40 years
• In one study -de Pommerol et al. evaluated premature menopause (onset before age 40 years) and reported that 12% of postmenopausal HIV-infected women sampled had experienced premature menopause. This prevalence of premature menopause among HIV-infected women was higher than the reported prevalence of 1.1–6.3% among women in the general population of HIV-uninfected women enrolled in the American Study of Women’s Health Across the Nation cohort.
Menopausal symptoms

- The core symptoms associated with menopause in all women are vasomotor symptoms (hot flashes, night sweats), sleep disturbance, vaginal dryness, sexual dysfunction.
- Women are also at risk for depressive symptoms in the menopause transition period (period prior to final menstrual period).
- HIV infected women may experience more menopausal symptoms than the general population, particularly psychological symptoms and vasomotor symptoms.
- HIV+ women report more hot flash severity and greater interference of hot flashes with daily activities (Looby, et al, 2014).
Effective treatments in general population: (very little data in HIV+ women)

- Hormone Therapy (HT): low dose, short term (potential interactions between estrogen and PI or NNRTI)

- Nonhormononal therapy:
  - SNRI (venlafaxine, desvenlafaxine)
  - SSRI (fluoxetine, citalopram, escitalopram)
  - Gabapentin

- Parkland Hospital
- Weight loss
OSTEOPOROSIS
Prevalence of Bone Disease

• Osteoporosis is a significant health issue in the general population\(^1\)
• Rates of low BMD are higher among people with HIV compared with controls who are not infected with HIV\(^2,3\)
• There is also an increased risk of fracture among people with HIV compared with controls who are not infected with HIV\(^4-7\)
• In studies of the general population, fractures have been associated with decreased quality of life, decreased mobility, and death\(^1\)

In a meta-analysis of 11 studies, the overall prevalence of osteoporosis (T-score ≤ -2.5) in patients infected with HIV (n=884) was 15%, 3.7 times greater than in HIV-uninfected controls (n=654).
Fracture Rates in Patients With HIV vs Controls

- **Triant, et al.**\(^1\): patients with HIV had higher rates of fracture than uninfected patients, regardless of sex and age

- **Womack, et al. (VA)**\(^2\): incidence rate of fragility fractures was significantly higher among people with HIV compared with matched controls

- **Young, et al. (HOPS)**\(^3\): sex- and age-standardized fracture rates were higher among people with HIV compared with general US population

- **Hansen, et al.**\(^4\): patients with HIV had a higher rate of low-energy fractures than matched controls

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Data on Bone Loss in HIV-Infected, Post-Menopausal Women

- Cross-sectional, longitudinal study of post-menopausal, HIV-infected women of Hispanic or African-American heritage compared with uninfected controls with similar comorbidities
  - Enrollment: 2002 to 2007 from 2 sites in New York City

*At Baseline*¹

- 95 HIV+
- 92 Controls

  - After adjustment for differences between groups in age, race/ethnicity, and BMI, women with HIV infection had lower BMD at both the spine and hip
  - Bone turnover was higher in women with HIV and was independently associated with lower BMD

*After a Median Follow-up of 15.4 Months*²

- 73 HIV+
- 55 Controls

  - Women with HIV had greater annualized rates of bone loss at the lumbar spine and forearm compared with uninfected women
    - Results did not depend on the ART status of the women with HIV infection
  - In multivariate analysis containing traditional risk factors for osteoporosis, HIV infection was associated with bone loss at spine, hip, and wrist

Antiretroviral Exposure and Risk of Osteoporotic Fractures: HAART Era

MV Model 1: Controlling for CKD, age, race, tobacco use, diabetes and BMI;
MV Model 2: Controlling for Model 1 variables + concomitant exposure to other ARVs.

Fracture Risk in HIV

Traditional risk factors
- Hypogonadism
- Glucocorticoids

Disease specific factors
- Advancing age, Improved Survival
- Tobacco, EtOH, Drugs
- Race/Ethnicity, Genetics

OSTEOPOROSIS and FRACTURE RISK

HAART (TDF)

Potential mechanisms of TDF-induced effect on bone:
- Renal insufficiency with 2ry hyperparathyroidism
- Fanconi-like syndrome- phosphate wasting, metabolic acidosis
Risk Assessment

• Making an initial assessment of a patient’s risk for osteoporosis does not require a DXA scan\(^1\)
• Consider common risk factors, such as\(^1,2\):
  – Age
  – Low BMI
  – Personal and family fracture history
  – Smoking
  – Alcohol use (≥3 drinks/day)
  – Physical activity level
  – Chronic steroids
• FRAX\(^\circledR\) is a free online tool that calculates the 10-year probability of a major osteoporotic fracture or hip fracture\(^1\)
  – Developed by the World Health Organization
  – DXA measurement (femoral neck) is optional
  – www.shef.ac.uk/FRAX/index.jsp

Calculation Tool

Please answer the questions below to calculate the ten year probability of fracture with BMD.

Country: US (Caucasian)  Name/ID:  About the risk factors

Questionnaire:
1. Age (between 40 and 90 years) or Date of Birth
   - Age: __________________________
   - Date of Birth: Y: _____ M: _____ D: _____

2. Sex
   - Male  Female

3. Weight (kg)
   __________________________

4. Height (cm)
   __________________________

5. Previous Fracture
   - No  Yes

6. Parent Fractured Hip
   - No  Yes

7. Current Smoking
   - No  Yes

8. Glucocorticoids
   - No  Yes

9. Rheumatoid arthritis
   - No  Yes

10. Secondary osteoporosis
    - No  Yes

11. Alcohol 3 or more units/day
    - No  Yes

12. Femoral neck BMD (g/cm²)
    Select BMD

Clear  Calculate

Weight Conversion
- Pounds  →  kg

Height Conversion
- Inches  →  cm

03528129
 Individuals with fracture risk assessed since 1st June 2011

Print tool and information
Next Steps for At-Risk Patients

• For patients at risk for osteoporosis, consider lifestyle counseling, eg\(^1\):
  – Stop smoking
  – Decrease alcohol intake
  – Increase physical activity level

• Review all of the patient’s medications for drugs that may disrupt normal bone turnover\(^1\)

• Complete Falls Risk Assessment Tool (FRAT)\(^2\)
  – Factors assessed include history of falls, medications, psychological conditions, cognitive status, vision, mobility, and environment
  – Validated in the general population

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## Guidelines for DXA Scanning

<table>
<thead>
<tr>
<th></th>
<th>Recommend DXA regardless of risk factors</th>
<th>Recommend DXA when risk factors present</th>
</tr>
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<tbody>
<tr>
<td><strong>NOF 2008(^1)</strong></td>
<td>• Women ≥65</td>
<td></td>
</tr>
<tr>
<td>(general population)</td>
<td>• Men ≥70</td>
<td></td>
</tr>
<tr>
<td><strong>IDSA 2009(^2)</strong></td>
<td></td>
<td>• Younger postmenopausal women</td>
</tr>
<tr>
<td>(HIV+ population)</td>
<td></td>
<td>• Women in menopausal transition</td>
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<tr>
<td></td>
<td></td>
<td>• Men aged 50 to 69</td>
</tr>
<tr>
<td><strong>McComsey, et al. 2010(^3)</strong></td>
<td>• Postmenopausal women ≥65</td>
<td>• Younger postmenopausal women</td>
</tr>
<tr>
<td>(HIV+ population)</td>
<td>• Men ≥50</td>
<td>• Anyone ≥50</td>
</tr>
<tr>
<td><strong>EACS 2011(^4)</strong></td>
<td>• Postmenopausal women</td>
<td></td>
</tr>
<tr>
<td>(HIV+ population)</td>
<td>• Men ≥50</td>
<td></td>
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<tr>
<td></td>
<td>• History of low impact fracture</td>
<td></td>
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<tr>
<td></td>
<td>• High risk for falls</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Clinical hypogonadism</td>
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<tr>
<td></td>
<td>• Oral glucocorticoid use</td>
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</table>

EACS = European AIDS Clinical Society; IDSA = Infectious Diseases Society of America; NOF = National Osteoporosis Foundation.

**Approach to Bone Disease in HIV**

**Screening**
- Adult with HIV infection
  - No risk factors
  - History of fragility fracture
  - Glucocorticoid use (≥5 mg x 3 months)
  - High risk of falls at any age

**Assessment**
- Younger than 40 years
- 40–50 years
- All postmenopausal women
  - Men ≥50 years

- **No screening necessary**
- **Calculate fracture risk by FRAX®**
  - Use country-specific FRAX® algorithms
  - Check ‘secondary cause’ box when using the FRAX® calculator tool
  - **FRAX® score ≤10%**
  - **FRAX® score >10%** (ie, 10-year probability any osteoporotic fracture >10%)
  - **FRAX® score ≥20%**

- **Measure BMD by DXA**
  - **No h/o fracture**
  - **Lowest T-score ≥−2.5**
  - **FRAX® score <20%**

- **FRAX® if DXA not readily available**
  - Intervention threshold determined by country-specific guidelines in general population.
  - Example: US guidelines
    - T-score ≤−2.5 at the FN, TH, or LS
    - T-score between −1.0 and −2.5 AND FRAX® score ≥20%
    - T-score ≥3% at the hip
    - Hip or vertebral fracture

- **Explain secondary causes of osteoporosis or low BMD**

Assessment

No screening necessary

Calculate fracture risk by FRAX®
- Use country-specific FRAX® algorithms
- Check ‘secondary cause’ box when using the FRAX® calculator tool

FRAX® score ≤10%

FRAX® score >10% (ie, 10-year probability any osteoporotic fracture >10%)

FRAX® score ≥20%

Measure BMD by DXA

No hip fracture
- Lowest T-score ≥−2.5
- FRAX® score <20%

FRAX® score ≥20%

Intervention threshold determined by country-specific guidelines in general population
Example: US guidelines
- T-score ≤−2.5 at the FN, TH, or LS
OR
- T-score between −1.0 and −2.5 AND FRAX® score ≥20%
- or ≥20% at the hip

Exclusion of secondary causes of osteoporosis or low BMD

Exclude secondary causes of osteoporosis or low BMD

Management

Ensure adequate calcium intake

Ensure adequate vitamin D levels

Lifestyle advice

Ensure adequate calcium intake

Ensure adequate vitamin D levels

Lifestyle advice

Consider bisphosphonate therapy

Ensure adequate calcium intake

Ensure adequate vitamin D levels

Lifestyle advice

Monitoring

Monitor FRAX® in 2–3 years

Repeat DXA in
- 1–2 years if advanced osteopenia (T-score −2.00 to −2.49)
- 5 years if mild-moderate osteopenia (T-score −1.01 to −1.99)

If started on bisphosphonate, repeat DXA in 2 years, reassess indication for continuation in 3–5 years

Calcium and Vitamin D Recommendations for Daily Intake

- **Recommended dietary allowances for the general population**
  - **Calcium**\(^1\)
    | Age (years) | Men    | Women   |
    |-------------|--------|---------|
    | 19 – 50     | 1000 mg| 1000 mg |
    | 51 – 70     | 1000 mg| 1200 mg |
    | >70         | 1200 mg| 1200 mg |
  - **Vitamin D**\(^{1,2}\)
    | Age (years) | Amount |
    |-------------|--------|
    | 18 – 70     | 600 IU |
    | >70         | 800 IU |

- Many studies showed HIV infected patients have low vitamin D
- **Recommended dietary allowances for patients with HIV**\(^3\)
  - Calcium: 1000-1500 mg
  - Vitamin D: 800-1000 IU

- **Recommended daily allowances should not be exceeded**\(^2\)
  - High levels of calcium have been associated with kidney stones
  - High levels of vitamin D have been associated with kidney and tissue damage

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\(^1\)Institute of Medicine of the National Academies. Dietary Reference Intakes for Calcium and Vitamin D. November 2010.


Treatment Considerations in the General Population

- The National Osteoporosis Foundation (NOF) recommends the consideration of pharmacologic therapy for osteoporosis in postmenopausal women and men aged ≥50 years with any of the following:
  - A hip or vertebral (clinical or morphometric) fracture
  - T-score ≤ -2.5 at the femoral neck or spine after appropriate evaluation to exclude secondary causes
  - Low bone mass* and at least one of the following (based on the US-adapted FRAX tool):
    - 10-year probability of a hip fracture ≥3%
    - 10-year probability of a major osteoporosis-related fracture ≥20%

*T-score between -1.0 and -2.5 at the femoral neck or spine

## Treatment Considerations in the HIV-Infected Population

<table>
<thead>
<tr>
<th></th>
<th>When to Treat</th>
<th>How to Treat</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDSA 2009(^1)</td>
<td>Treatment is recommended in patients with:</td>
<td>Bisphosphonate or other medical therapy</td>
</tr>
<tr>
<td></td>
<td>– Osteopenia</td>
<td>– “Bisphosphonates appear to be effective in improving bone density in small studies of HIV-infected patients, but data are limited”</td>
</tr>
<tr>
<td></td>
<td>– History of fragility or fracture</td>
<td></td>
</tr>
<tr>
<td>McComsey, et al. 2010(^2)</td>
<td>Similar to NOF</td>
<td>Bisphosphonates are considered first-line therapy</td>
</tr>
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<td>– A hip or vertebral (clinical or morphometric) fracture</td>
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<td>– T-score ≤ -2.5 at the femoral neck, spine, or total hip after appropriate evaluation to exclude secondary causes</td>
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</tbody>
</table>

EACS = European AIDS Clinical Society; IDSA = Infectious Diseases Society of America; NOF = National Osteoporosis Foundation.


Breast Cancer in HIV

• There is no apparent increase in the incidence of breast cancer among HIV infected women; however, breast cancer in the setting of HIV infection may occur at a relatively early age, may be more likely to be bilateral and to have unusual histology, and may be more aggressive, with early metastatic spread and poor outcome. Most cases occur in women with CD4+ cell counts above 200 cells/mm3.
• Mammogram screening would be the same as the HIV non-infected women.
SUMMARY

• The fourth largest number of all new HIV infections in the US is among African American women with heterosexual contact (20% of all new infections)

• With the advent of HAART, HIV infected women are living longer

• Emphasis should be placed on:
  – Cervical cancer screening
  – HPV vaccination
  – contraception
  – Prevention of HIV /STI transmission
SUMMARY

• More Emphasis:
  – PreP prophylaxis in serodiscordant couples
  – Screening for bone disease and vitamin D deficiency
Thank you!

For more information…