Women and HIV

Deborah Cohan MD, MPH
Associate Professor
Overview

- Epidemiology
- HIV testing
- Contraception
- HIV prevention
- Antiretroviral (ARV) toxicity
- Fertility desires
- Pregnancy
ARS question: What is the #1 cause of death among women of reproductive age (15-44) worldwide?

0% 1. Maternal mortality related to birth
0% 2. Cervical cancer
0% 3. HIV/AIDS
0% 4. Accidents
0% 5. Breast cancer
Percent of adults (15+) living with HIV who are female, 1990–2007

- Sub-Saharan Africa
- GLOBAL
- Caribbean
- Asia
- E Europe & C Asia
- Latin America

www.unaids.org
AIDS Diagnoses among Adult and Adolescent Females, 1985–2008—United States and Dependent Areas

Proportion of all AIDS cases in women: 7% in 1985 to 26% today
Diagnoses of HIV Infection and Population among Adult and Adolescent Females, by Race/Ethnicity, 2009—40 States

Diagnoses of HIV Infection
N=9,973

- 1% American Indian/Alaska Native
- 1% Asian
- <1% Black/African American
- 14% Hispanic/Latino
- 17% White
- 66% Multiple races

Female Population, 40 States
N=102,041,789

- 3% American Indian/Alaska Native
- 1% Asian
- 1% Black/African American
- 11% Hispanic/Latino
- 14% White
- 71% Multiple races

Note. Data include persons with a diagnosis of HIV infection regardless of stage of disease at diagnosis. All displayed data have been statistically adjusted to account for reporting delays, but not for incomplete reporting.

* Hispanics/Latinos can be of any race.
Diagnoses of HIV Infection among Adult and Adolescent Females, by Race/Ethnicity and Transmission Category, 2009—40 States and 5 U.S. Dependent Areas

Black/African American
N=6,632
- 13%
- 87%
- Injection drug use
- Heterosexual contact
- Other

Hispanic/Latino
N=1,625
- 17%
- 83%
- Injection drug use
- Heterosexual contact
- Other

White
N=1,700
- 23%
- 77%
- Injection drug use
- Heterosexual contact
- Other

Note: Data include persons with a diagnosis of HIV infection regardless of stage of disease at diagnosis. All data have been statistically adjusted to account for reporting delays and missing risk-factor information, but not for incomplete reporting.

a Hispanics/Latinos can be of any race.
b Heterosexual contact with a person known to have, or to be at high risk for, HIV infection.
c Includes blood transfusion, perinatal exposure, and risk factor not reported or not identified.
<table>
<thead>
<tr>
<th>Description</th>
<th>Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number HIV infected</td>
<td>1,039,000 – 1,185,000</td>
</tr>
<tr>
<td>Number unaware of their HIV infection</td>
<td>252,000 - 312,000 (24%-27%)</td>
</tr>
<tr>
<td>Estimated new infections annually</td>
<td>40,000</td>
</tr>
</tbody>
</table>

*Glynn M, Rhodes P. 2005 HIV Prevention Conference*
Revised Recommendations
Adults and Adolescents - 1

- Routine, voluntary HIV screening for all persons 13-64 in health care settings, not based on risk
- Repeat HIV screening of persons with known risk at least annually
- Opt-out HIV screening with the opportunity to ask questions and the option to decline
- Include HIV consent with general consent for care; separate signed informed consent not recommended
- Prevention counseling in conjunctions with HIV screening in health care settings is not required

CDC September 2006
Revised Recommendations
Adults and Adolescents - II

- Intended for all health care settings, including inpatient services, EDs, urgent care clinics, STD clinics, TB clinics, public health clinics, community clinics, substance abuse treatment centers, correctional health facilities, primary care settings

- Communicate test results in same manner as other diagnostic/screening tests

- Provide clinical HIV care or establish reliable referral to qualified providers
Revised Recommendations
Adults and Adolescents - III

- Low prevalence settings:
  - Initiate screening
  - If yield from screening is less than 1 per 1000, continued screening is not warranted

- Steps should be considered to resolve conflicts between the recommendations and state or local regulations
Revised Recommendations
Pregnant Women - I

- Universal opt-out HIV screening
  - Include HIV in routine panel of prenatal screening tests
  - Consent for prenatal care includes HIV testing
  - Notification and option to decline

- Second test in 3rd trimester for pregnant women:
  - Known to be at risk for HIV
  - In jurisdictions with elevated HIV incidence
  - In high HIV prevalence health care facilities
Revised Recommendations
Pregnant Women - II

- Opt-out rapid testing with option to decline for women with undocumented HIV status in L&D
  - Initiate ARV prophylaxis on basis of rapid test result

- Rapid testing of newborn recommended if mother’s status unknown at delivery
  - Initiate ARV prophylaxis within 12 hours of birth on basis of rapid test result
32 yo G4P1T3 coming for her routine gynecology appointment.
On TDF/FTC/DRV/r

Irregular menses but no other complaints
She is sexually active with HIV-negative male partner of 4 months.
Uses condoms “always” and doesn’t want to get pregnant
Contraception Failure (1st Year)

- Withdrawal/Rhythm: 19%
- Diaphragm: 20%
- Condom: 14%
- Pill: 9%
- Copper IUD: 6%
- Tubal Ligation: 3%
- Injectable Progestin: 0.8%
- Implants: 0.5%
- Vasectomy: 0.1%

What method of contraception would you recommend?

<table>
<thead>
<tr>
<th></th>
<th>1. Combined oral contraceptive pill</th>
<th>2. Vaginal ring</th>
<th>3. Depo-provera (DMPA)</th>
<th>4. Intrauterine device (IUD)</th>
<th>5. IUD or DMPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10%
ARVs and Oral Contraceptive Pills

**NO CHANGE**
- TDF (FEM-PrEP?)
- RAL

**↑ HORMONE LEVELS**
- EFV (400mg): EE AUC ↑
- ETR
- ATV
- IDV

**↓ HORMONE LEVELS**
- EFV (600mg): NG AUC ↓
- NVP
- APV
- DRV/r
- LPV/r
- NFV
- RTV
- TPV/r

Depo-medroxyprogesterone acetate (DMPA) and ARVs

- No Δ DMPA levels among women on:
  - NFV
  - NVP
  - EFV
  - Other PIs?
- No Δ CD4 or viral load with DMPA

### Hormonal contraception and HIV progression

<table>
<thead>
<tr>
<th>Cohort</th>
<th>Location, n</th>
<th>Comparison</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kenya, 248</td>
<td>DMPA vs none @ HIV acquisition</td>
<td>↑ viral set-point (0.33log), lower CD4</td>
<td></td>
</tr>
<tr>
<td>Kenya, 283</td>
<td>DMPA vs OCP vs none postpartum</td>
<td>No difference in viral load, CD4 to 24 mos postpartum</td>
<td></td>
</tr>
<tr>
<td>Multicenter, 4109</td>
<td>Impant/inject vs. OCP vs none</td>
<td>No difference in progression (ART-eligible/death)</td>
<td></td>
</tr>
<tr>
<td>Zambia, 595</td>
<td>IUD vs. DMPA vs. OCPs, ARV-naïve</td>
<td>↑ Progression (CD4&lt;200/death) DMA (AHR 1.6; 1.2-2.3), OCP (AHR 1.7; 1.1-2.5) vs. IUD</td>
<td></td>
</tr>
<tr>
<td>Uganda, Zimbabwe, 303</td>
<td>DMPA vs OCP vs none after seroconversion</td>
<td>No difference in progression to AIDS (CD4&lt;200 or WHO 3/4)</td>
<td></td>
</tr>
</tbody>
</table>

Any impact probably mitigated by HAART

IUDs are safe for HIV+ women

- No evidence of ↑ infectious complications
  - 156 HIV+, 493 HIV- (Kenya; Copper IUD)
  - Overall complications @ 24 mos: HR 1.0 (0.6-1.6)
  - PID: 2% for HIV+ vs. 0.4% for HIV- (p=0.09)
IUDs are safe for HIV+ women

- No evidence of ↑ infectious complications
  - 156 HIV+, 493 HIV- (Kenya; Copper IUD)
  - Overall complications @ 24 mos: HR 1.0 (0.6-1.6)
  - PID: 2% for HIV+ vs. 0.4% for HIV- (p=0.09)

- No evidence of ↑ genital tract shedding of HIV
  - Copper IUD n=98 (Kenya): 4 mos s/p insertion: OR 0.6 (0.3-1.1)
  - LNG-IUS (Mirena) n=12: no difference pre vs. post-insertion
    - 10/12 on HAART
    - On-going studies

Morrison BJOG 2001; Sinei Lancet 1998; Richardson AIDS 1999; Heikinheimo Human Repro 2006
IUDs are safe for HIV+ women

- No evidence of ↑ infectious complications
  - 156 HIV+, 493 HIV- (Kenya; Copper IUD)
  - Overall complications @ 24 mos: HR 1.0 (0.6-1.6)
  - PID: 2% for HIV+ vs. 0.4% for HIV- (p=0.09)

- No evidence of ↑ genital tract shedding of HIV
  - Copper IUD n=98 (Kenya): 4 mos s/p insertion: OR 0.6 (0.3-1.1)
  - LNG-IUS (Mirena) n=12: no difference pre vs. post-insertion
    - 10/12 on HAART
    - On-going studies

- WHO Medical Eligibility Criteria category 2
  - Benefits generally outweigh theoretical or proven risk
  - AIDS, but NOT “clinically well on ARV” category 3 for insertion
    - Not recommended unless other methods not available/not acceptable

Morrison BJOG 2001; Sinei Lancet 1998; Richardson AIDS 1999; Heikinheimo Human Repro 2006
Case: 33 yo HIV- woman coming for her pap smear. She mentions that her sex partner of 4 months is HIV+ and “doesn’t like condoms.”
What is the chance of a woman getting HIV per episode of vaginal sex with an HIV+ man?

0% 1. ~1/10
0% 2. ~1/100
0% 3. ~1/1000
0% 4. ~1/10,000
Women at higher risk of HIV acquisition

Biologic vulnerability

- Woman → man 0.04% (0.01-0.14) per act
- Man → woman 0.08% (0.06-0.11) per act
- Larger amounts of seminal fluid with higher HIV viremia
- Increasing evidence that pregnancy increases risk

Social vulnerability

- Inability to negotiate sexual relationships, both US and resource-poor setting
- Limited “female controlled” methods of prevention

Of the following interventions, which has the best evidence (level I RCT data) in preventing HIV transmission to women?

0%  1. Microbicides
0%  2. Male circumcision
0%  3. HIV vaccine
0%  4. Male condoms
0%  5. ARVs for HIV+ male partner
CAPRISA 004 trial- Double blinded RCT of tenofovir 1% gel (n=444) vs placebo (n=445) in women (18-40) in S Africa

- Gel before/after sex (2 doses/24hr); monthly f/u x 30 mos
- Overall ↓ in HIV acquisition 39% (5.6/100 woman-years for TDF gel vs 9.1/100 for placebo, p 0.017)
- High adherence (>80%) with 54% reduction

Circumcision: What’s good for the gander may not be good for the goose

- 3 RCTs in African men ~60% ↓transmission. TO THE MEN\(^1-3\)
- Parallel study of serodiscordant female partners\(^4\)

- NO ↓HIV transmission to women over 24 mo
- ↑HIV transmission early- intercourse before wound healed
- Meta-analysis same findings\(^5\)

## Antiretrovirals and HIV Transmission

<table>
<thead>
<tr>
<th>Study/Design</th>
<th>Type</th>
<th># sero-discordant couples</th>
<th>Sexual Transmission</th>
<th>↓</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barriero, 2006</td>
<td>Cohort</td>
<td>62 SDC</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Attia, 2009</td>
<td>Meta-analysis</td>
<td>11 cohorts 5021 SDC</td>
<td>0 (HAART and VL &lt;400)</td>
<td></td>
</tr>
<tr>
<td>Donnell Partners in Prevention, 2010</td>
<td>RCT</td>
<td>3381 SDC 349 initiated ARVs</td>
<td>1 case/273 P-Y w/in 18 days of ARV initiation (vs. 102/4558 P-Y)</td>
<td>92%</td>
</tr>
<tr>
<td>HPTN 052, 2011</td>
<td>RCT</td>
<td>1763 SDC</td>
<td>Delayed: 3.1% Immediate: 0.1%</td>
<td>96%</td>
</tr>
</tbody>
</table>

Barriero JAIDS 2006; Attia AIDS 2009, Donnell Lancet 2010
Case

37 yr old AA female with HIV, never on HAART, Current CD4 230; viral load 70,000. She is a single mother of two children; reluctant to start meds due to fear of side effects...
Case (continued)

- The patient agrees to start an “easy” regimen
- You start Depo-Provera and the EFV/TDF/FTC combination tablet and book the patient for a return appointment in three weeks
- Pt returns a week later with horrible nightmares and insomnia (as well as a shocking fantasy of switching providers)
### Higher rates of side effects on HIV therapy in women

<table>
<thead>
<tr>
<th>Study (reference)</th>
<th>Adverse event</th>
<th>Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Richter et al. (38)</td>
<td>Dyslipidemia</td>
<td>AHR 1.39 (1.05–1.45)</td>
</tr>
<tr>
<td>Richter et al. (38)</td>
<td>Glucose abnormalities</td>
<td>AHR 0.65 (0.45–0.93)</td>
</tr>
<tr>
<td>Galli et al. (39)</td>
<td>Lipoatrophy</td>
<td>AHR 1.84 (0.47–7.14)</td>
</tr>
<tr>
<td>Galli et al. (39)</td>
<td>Lipohypertrophy</td>
<td>AHR 3.23 (1.17–8.91)</td>
</tr>
<tr>
<td>Bonfanti et al. (40)</td>
<td>Lipodystrophy</td>
<td>ARR 1.5 (1.20–2.10)</td>
</tr>
<tr>
<td>Heath et al. (41)</td>
<td>Lipoatrophy</td>
<td>AOR 2.06 (1.03–4.12)</td>
</tr>
<tr>
<td>Heath et al. (41)</td>
<td>Lipohypertrophy</td>
<td>AOR 2.36 (1.17–4.74)</td>
</tr>
<tr>
<td>Santos et al. (42)</td>
<td>Lipohypertrophy</td>
<td>AOR 1.84 (1.17–2.91)</td>
</tr>
<tr>
<td>Floridia et al. (45)</td>
<td>Rash</td>
<td>AOR 1.65 (1.00–2.72)</td>
</tr>
<tr>
<td>Bouallal et al. (44)</td>
<td>Hypersensitivity reactions</td>
<td>AHR 4.4 (2.10–9.30)</td>
</tr>
<tr>
<td>van Leth et al. (46)</td>
<td>Rash</td>
<td>UOR 2.0 (1.20–3.40)</td>
</tr>
</tbody>
</table>

**Adverse event higher in men** | **Adverse event higher in women**

Ratios (+/- 95% CI) of different adverse events by sex with HAART (2002-07)\(^1\)

Nicastri. Sex issues in HIV-1 infected persons during HAART: a systematic review. JACC 2007
NNRTI-induced rashes/ liver toxicity more common in women

**Rash**
- **Nevirapine (Viramune®)**
  - More common (15.8% vs 8.4%; RR 4-6)
  - More severe (RR 7.3); 2% rate
  - Same or ↓ rash in pregnancy (5-8%)
- **Etravirine (Intelence®)**
  - 34% women vs 18% men; p 0.02

**Hepatotoxicity**
- **Nevirapine**
  - *Women*: 12x ↑ hepatotoxicity with CD4 >250 vs. ≤ 250
  - *Men*: 5x ↑ risk CD4 >400 vs. ≤400

Bone loss common in HIV

- Osteopenia (OR 6.4) and osteoporosis (OR 3.7) vs. HIV-
- Women: OR 3.0
- ARV vs. none OR 2.4
  - esp PIs and TDF
- Screen all post-menopausal HIV+ ♂
- Treat in HIV 6-10

---

Treatment discontinuation in women- has consequences

- ICONA: Women 2x more likely to stop ART 2º toxicity
- Swiss Cohort 2010: Women 1.68 (1.14-2.48) more likely to change 1º line 2º toxicity
- Early discontinuation of ARVs associated with ↓ survival

¹Murri. JAIDS 2003; ²Elzi. Arch Intern Med 2010; ³Toulami (CASCADE) JAIDS 2006; ⁴Smith JAIDS 2007; ⁵Losina. CID 2010
GRACE (Gender, Race and Clinical Experience) Study

- Landmark study—67% women (84% black or Hispanic), compared treatment outcomes on DRV/r-therapy
- 32.8% of women (vs 23.2% men, p 0.04) d/c’d therapy
- Trend toward worse virologic responses in women (ITT), driven by higher d/c rates
- Trend towards more d/c 2° adverse events in women
- Conclusion: Real world and clinical studies in HIV lose HIV+ women
  - adverse effects?
  - more chaotic lives?
  - *is there a problem with our study designs?*

Case (continued)

- The patient’s symptoms resolve after about a week and she stays on the combination regimen.
- By her 2 month visit, her viral load is undetectable and her CD4 320.
- She then comes in 3 months later saying that her new partner wants to have a baby with her and she has stopped her Depo-Provera, although she is scared to expose her baby to HIV.
2008 amfAR email survey, n=4831 US adults

Few Americans believe that HIV+ women should have children.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Total</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV+</td>
<td>14%</td>
<td>12%</td>
<td>16%</td>
</tr>
<tr>
<td>Cancer</td>
<td>59%</td>
<td>58%</td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>47%</td>
<td>46%</td>
<td>61%</td>
</tr>
<tr>
<td>Multiple sclerosis</td>
<td>37%</td>
<td>34%</td>
<td>41%</td>
</tr>
<tr>
<td>Hepatitis C</td>
<td>20%</td>
<td>19%</td>
<td>21%</td>
</tr>
<tr>
<td>Down's syndrome</td>
<td>19%</td>
<td>17%</td>
<td>22%</td>
</tr>
<tr>
<td>Schizophrenia</td>
<td>17%</td>
<td>15%</td>
<td>18%</td>
</tr>
</tbody>
</table>
HIV+ women internalize stigma around conception

- Women Living Positive Survey
- n=700 HIV+ women on ARVs for 3+ yrs
- 59-61% believed could have children if appropriate care
- 59% believed society strongly urges not to have children
  - Caucasian (67%) vs. Hispanic (53%), (p < 0.05)
  - South (66%) vs. Northeast (52%) or Midwest (55%), (p < 0.05)
  - ID (62%) vs. FP/GP (62%) vs. NP or PA care (48%) (p < 0.05)

Squires et al. AIDS PATIENT CARE and STDs 2011
# Fertility desires among HIV+

<table>
<thead>
<tr>
<th>Study Type</th>
<th>Location</th>
<th>Percentage</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>US reproductive-aged women</td>
<td>Rochester</td>
<td>35%</td>
<td></td>
</tr>
<tr>
<td>Cross-sectional, n=118</td>
<td></td>
<td></td>
<td>20% yes, 15% unsure, 12% of previously sterilized (4% tubal regret in US)</td>
</tr>
<tr>
<td>Cross-sectional, n=182</td>
<td>British Columbia</td>
<td>25.8%</td>
<td></td>
</tr>
<tr>
<td>Cross-sectional, n=181</td>
<td>Baltimore</td>
<td>59%</td>
<td></td>
</tr>
<tr>
<td>Probability sample, n=1421 (34,833 women, 53,177 men)</td>
<td>US, HCSUS</td>
<td>29% women, 28% men</td>
<td></td>
</tr>
</tbody>
</table>

Chen et al. Family Planning Perspectives, 2001

“Being infected with HIV dampens but does not come close to eliminating individuals’ desires and intentions to have children.”
Establish reproductive desires

WHO?
- Every reproductive-aged women
- Even if amenorrhea, no current male sexual partner

WHEN?
- Early and Often
  - Puts the issue “on the map”
  - New life circumstances/partners, new medications (drug-drug interactions), new developments in HIV
Your patient asks what is her risk of passing HIV to her baby if she continues on ARVs and has an undetectable VL throughout pregnancy.

0%  1.  25%
0%  2.  8.3%
0%  3.  5%
0%  4.  2%
0%  5.  < 0.1%
# Risk of Perinatal HIV Transmission

<table>
<thead>
<tr>
<th>HAART initiation</th>
<th>Pre-conception</th>
<th>1st tri &lt;14wk</th>
<th>14-27wk</th>
<th>&gt;28wk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Overall</td>
<td>0.5</td>
<td>1684</td>
<td>0.6</td>
<td>333</td>
</tr>
<tr>
<td>VL &lt;400 near delivery</td>
<td>0.1</td>
<td>1441</td>
<td>0.4</td>
<td>281</td>
</tr>
<tr>
<td>VL &lt;50 near delivery</td>
<td>0.0</td>
<td>1090</td>
<td>0.0</td>
<td>206</td>
</tr>
</tbody>
</table>

Tubiana et al CROI 2011, abstract #735
Your patient who wants to get pregnant is on EFV.

Is that a problem?
EFV: the good, the bad...

- EFV in one pill, once a day regimen
- Effavirenz – possible teratogen
  - Primate data: 15% risk of significant CNS defects
  - 6 human cases of NTDs
    - meningomyelocele, Dandy-Walker
- FDA Pregnancy Category: D
- Frequency of NTD in US population ~ 3-4 cases/10,000 births in fortification era

Is efavirenz a teratogen?

14 studies; 1345 women

<table>
<thead>
<tr>
<th>Study</th>
<th>Year</th>
<th>Reference</th>
<th>RR (95% CI)</th>
<th>Events, Treatment</th>
<th>Events, Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antiretroviral pregnancy registry</td>
<td>2009</td>
<td>4</td>
<td>0.98 (0.57, 1.69)</td>
<td>14/501</td>
<td>120/4201</td>
</tr>
<tr>
<td>Bera et al</td>
<td>2009</td>
<td>11</td>
<td>0.90 (0.11, 7.43)</td>
<td>5/184</td>
<td>1/33</td>
</tr>
<tr>
<td>Townsend et al</td>
<td>2009</td>
<td>5</td>
<td>0.75 (0.30, 1.87)</td>
<td>5/204</td>
<td>48/1478</td>
</tr>
<tr>
<td>Machado et al</td>
<td>2009</td>
<td>26</td>
<td>6.22 (0.41, 95.10)</td>
<td>1/18</td>
<td>1/112</td>
</tr>
<tr>
<td>Gonzalez-Tome et al</td>
<td>2008</td>
<td>27</td>
<td>0.65 (0.33, 1.26)</td>
<td>7/31</td>
<td>93/266</td>
</tr>
<tr>
<td>Bussmann et al</td>
<td>2007</td>
<td>23</td>
<td>0.75 (0.07, 7.78)</td>
<td>1/22</td>
<td>2/33</td>
</tr>
<tr>
<td>Floridia et al</td>
<td>2006</td>
<td>28</td>
<td>1.22 (0.28, 5.31)</td>
<td>2/32</td>
<td>10/195</td>
</tr>
<tr>
<td>Patel et al</td>
<td>2005</td>
<td>25</td>
<td>1.33 (0.08, 21.51)</td>
<td>0/19</td>
<td>14/770</td>
</tr>
<tr>
<td>Coffie et al</td>
<td>2010</td>
<td>24</td>
<td>(Excluded)</td>
<td>0/121</td>
<td>0/75</td>
</tr>
<tr>
<td><strong>Overall</strong></td>
<td></td>
<td></td>
<td>0.87 (0.61, 1.24)</td>
<td>35/1132</td>
<td>289/7163</td>
</tr>
</tbody>
</table>

Risk of birth defects (1.0)

Case (continued)

- You switch the patient’s meds to TDF/FTC/ATV/r, she gets pregnant within two months and delivers a healthy boy 9 months later.
- You are now her favorite provider.
Thank you!

“Do we have to fill our patients’ lives with years or those years with life?”

Augusto Enrico Semprini
National Perinatal HIV Hotline (24/7)
- (888) 448-8765

UCSF RID Pager (24/7)
- (415) 443-8726

ReproIDHIV listserv
- Sponsored by NCCC, IDSOG, UCSF RID Fellowship
- Want to join? contact Shannon Weber at: sweber@nccc.ucsf.edu