

Issues in Perinatally HIV Infected Adolescents

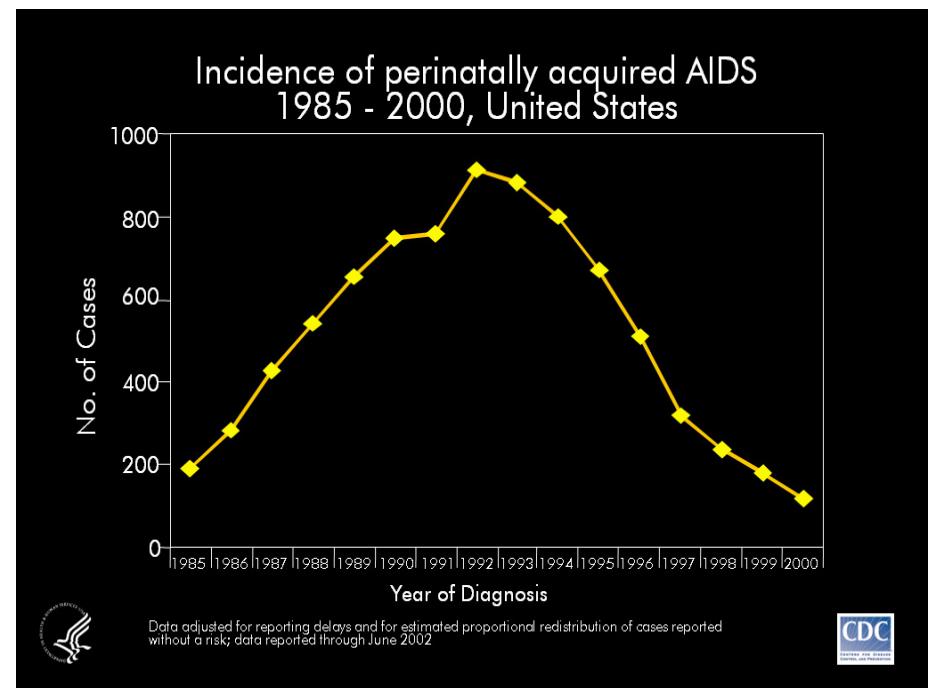
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Perinatally HIV Infected Adolescents

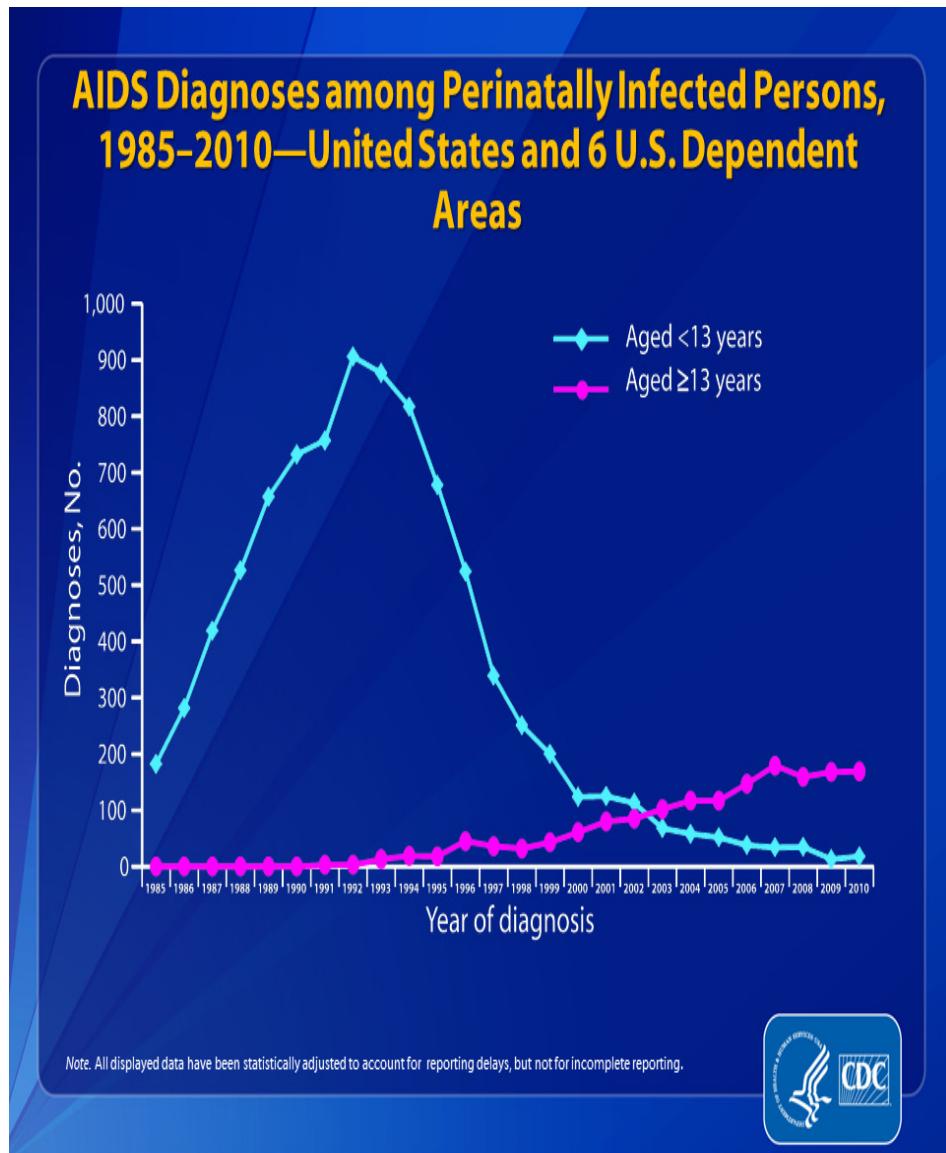
- Who are they?
- How many?
- Issues of special impact
 - MTCT
 - Race / Ethnicity
 - Challenges
 - Medical
 - Puberty / Adolescence
 - Delivery of medical care

Markedly Decreased Perinatal HIV Transmission

- Test all pregnant women for HIV
- Treat HIV infected women with cART during pregnancy/delivery
- ART for newborn
- C-Section
- No breast-feeding



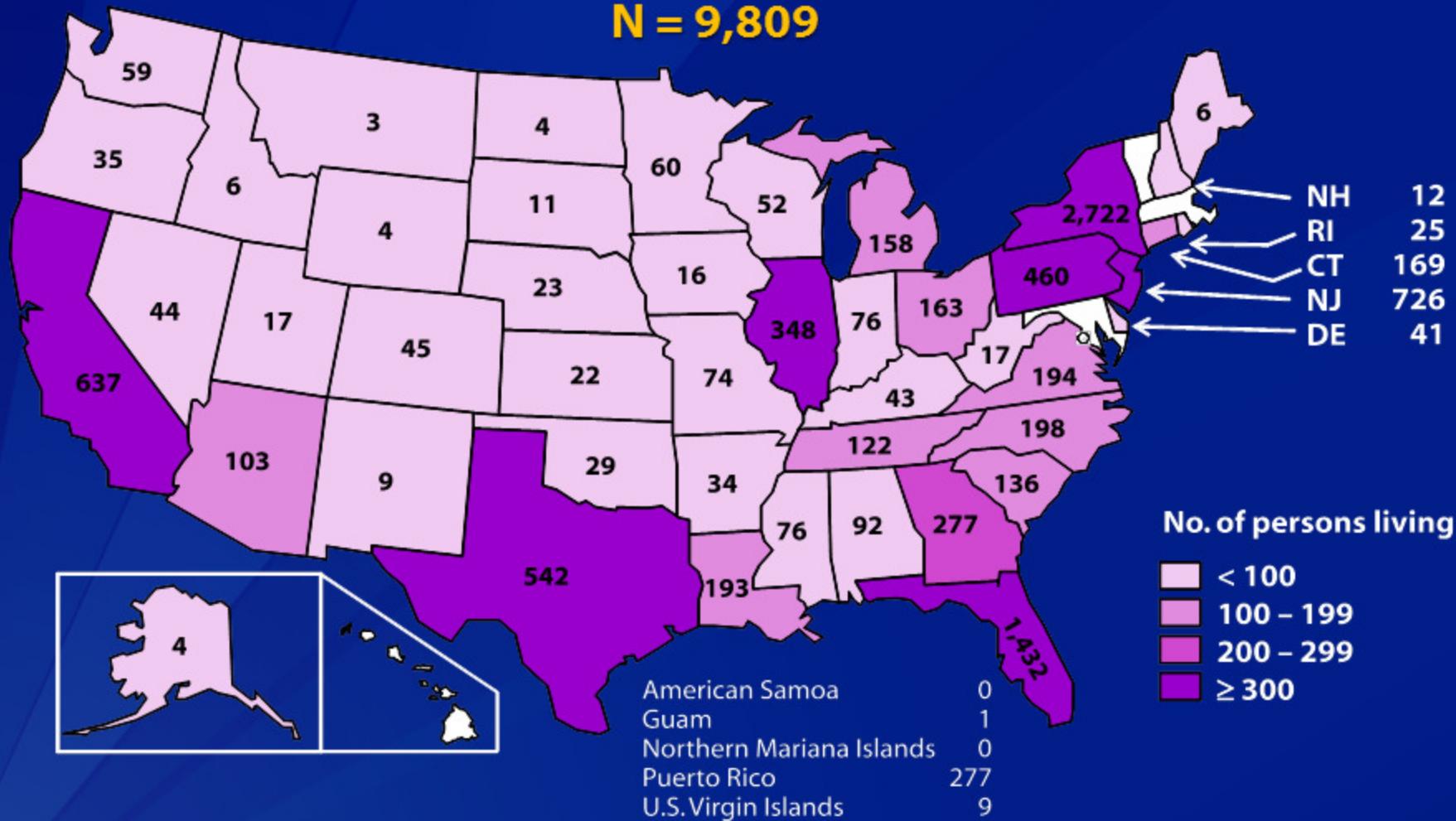
Pediatric HIV In the US



- New perinatal Infections are markedly reduced thus this population's median age is increasing
- However, 50% of new HIV infections occur in 13-24 year olds.
- Most of these individuals are unaware of their HIV status
- Currently , ~1/3rd of HIV infected adolescents acquired infection perinatally. This fraction is declining as the total pediatric practice HIV caseload is increasing
- Race/Ethnicity disparities. Adolescent black women have 3 or 15 times the rate of HIV infection as Hispanic or white women.

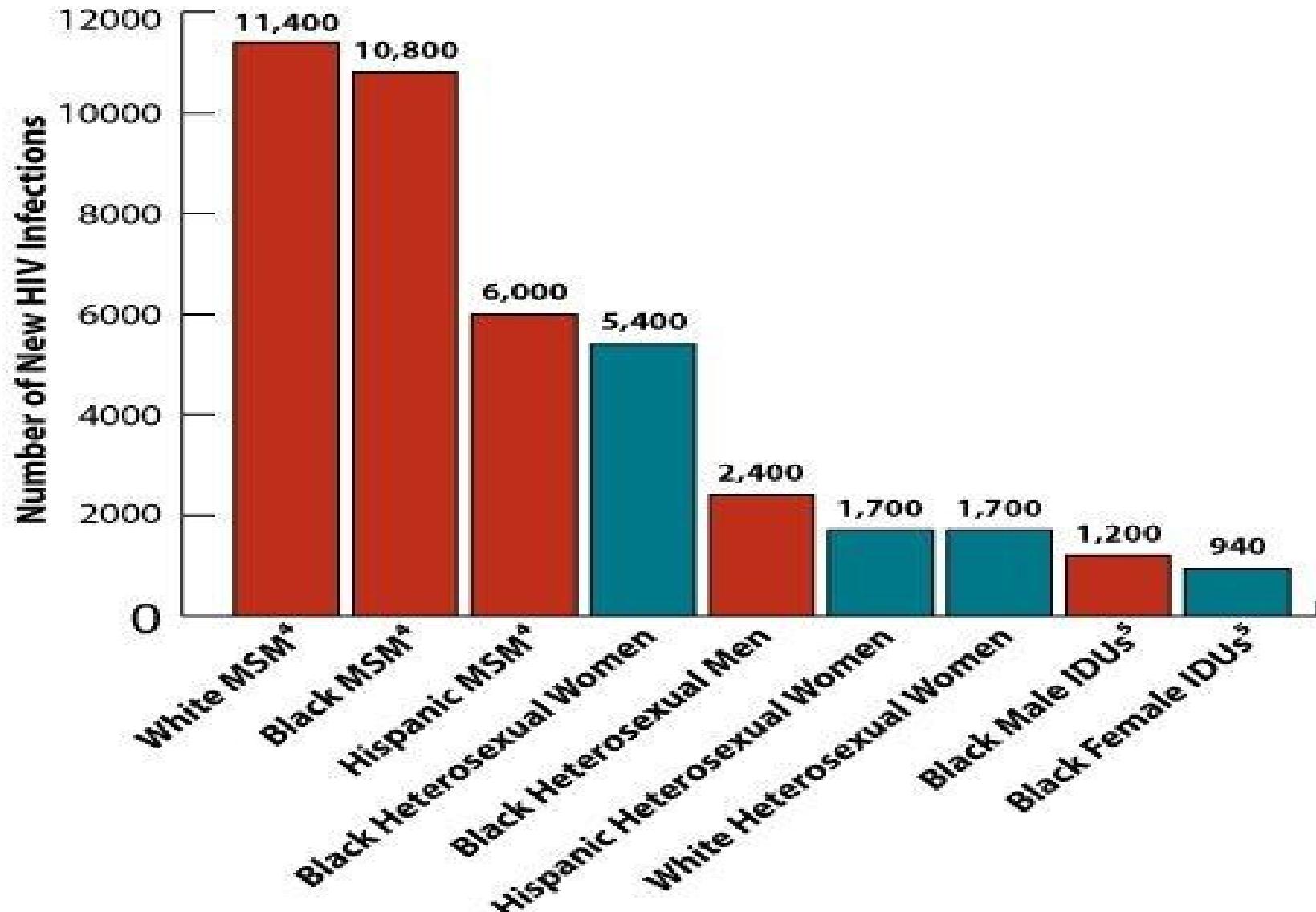
Persons Living with Perinatally Acquired HIV Infection, Year-end 2009—46 States and 5 U.S. Dependent Areas

N = 9,809



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.



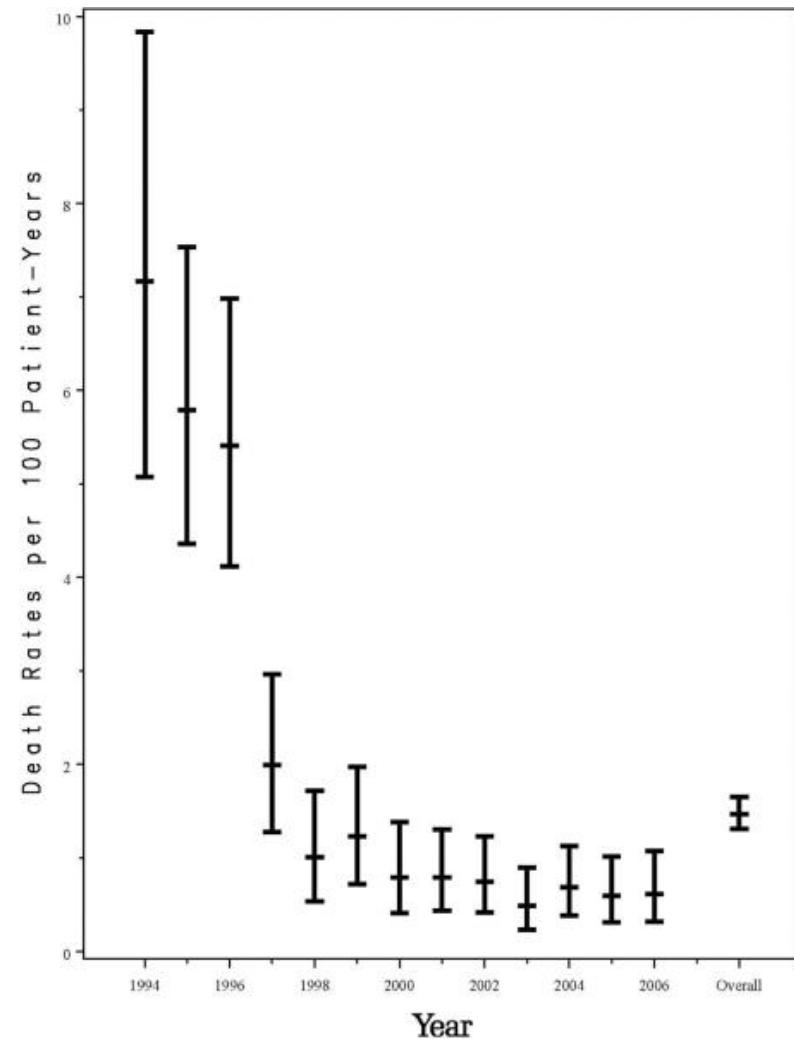


Subpopulations representing 2 percent or less of the overall US epidemic
are not reflected in this chart.

How are Perinatal HIV infected Adolescents doing?

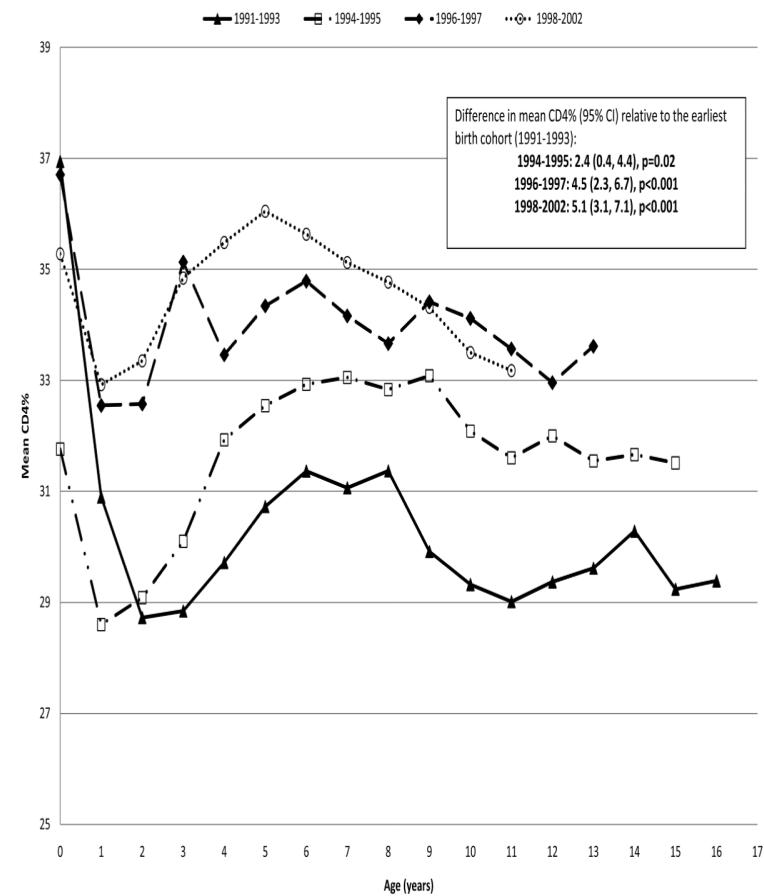
Decline in Mortality Rate and Changes in Causes of Death

- 3553 HIV+ studied
- 298 deaths (8%)
- Most common causes:
 - End stage AIDS (16%)
 - Pneumonia (14%)
- From 1994-2000
 - Mortality \downarrow 7.2 to 0.8 / 100 py
- From 2000
 - Mortality stabilized at 30 times general pediatric population rate
 - Increased Deaths
 - End stage AIDS
 - Sepsis
 - Renal failure



US Cohort Study

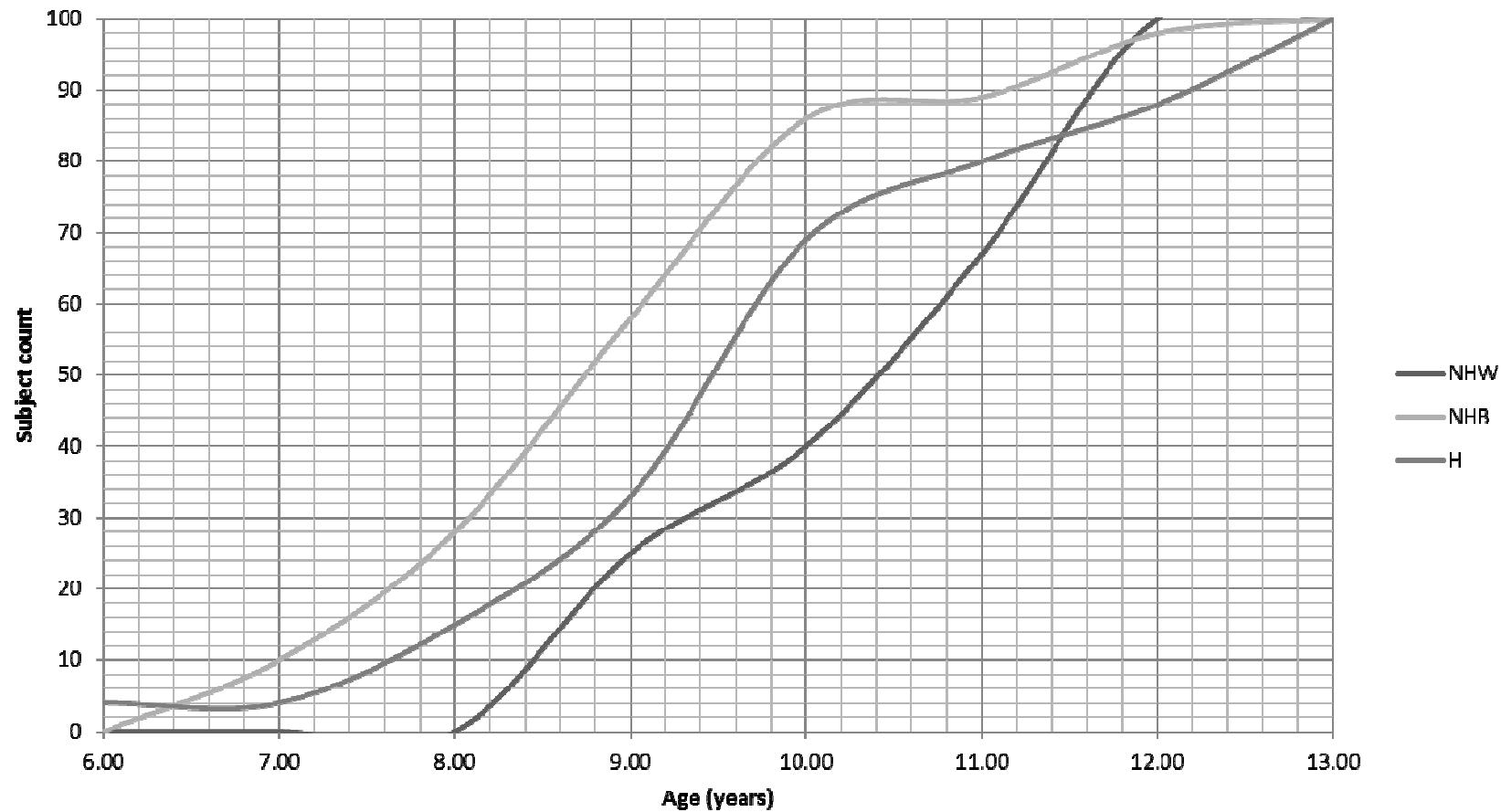
- Prospective Cohort
- 15 sites
- Enrolment 2007-2009
- 451 perinatally infected
 - Median Age 12.2 years
 - 53% F, 70% AA, 24% H
 - CD4>25% in 78 %
 - Viral Load < 400 in 68%
- Significant predictors of higher CD4% were:
 - Suppressed VL
 - Starting antiretroviral at younger age



French Cohort

- Prospective Cohort
- Patients born before Dec 1993 included at birth
- Of 348 patients 210 alive in 2010 = 60%
- Median age 15 years
 - 77% on HAART
 - 16% stopped treatment
 - 2% never treated
- Median VL 200 copies/ml. 43% undetectable
- Median CD4 557
- Median Height/ Weight/BMI normal

Puberty



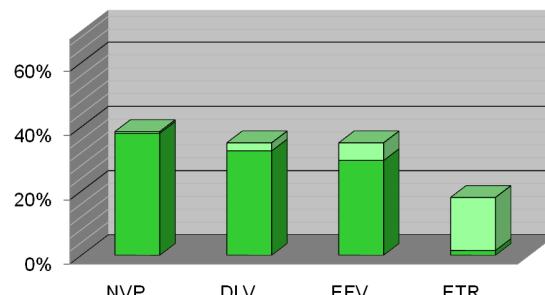
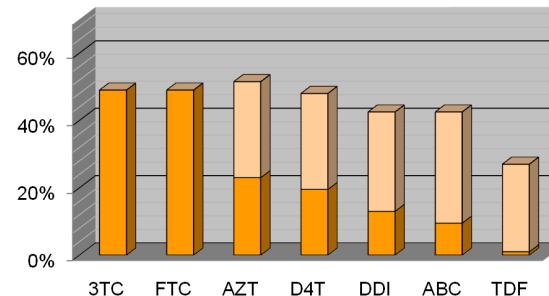
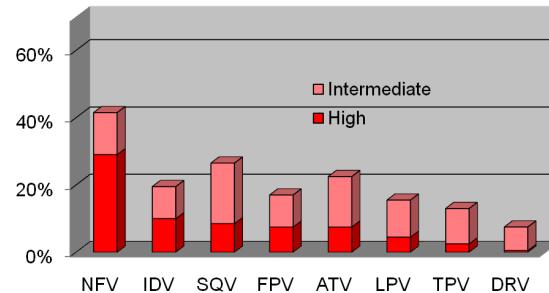
Del Bianco, et. al

Challenges: Resistant Virus

- MDR virus
 - Hx of single, dual Rx prior to HAART
 - High viral loads in infancy (Shearer, 1999)
 - Infection with ART resistant virus (Palumbo, 2007)
 - Lack of adherence

Prevalence of resistance mutations in a cohort of HIV - perinatally infected children and adolescents in the United States

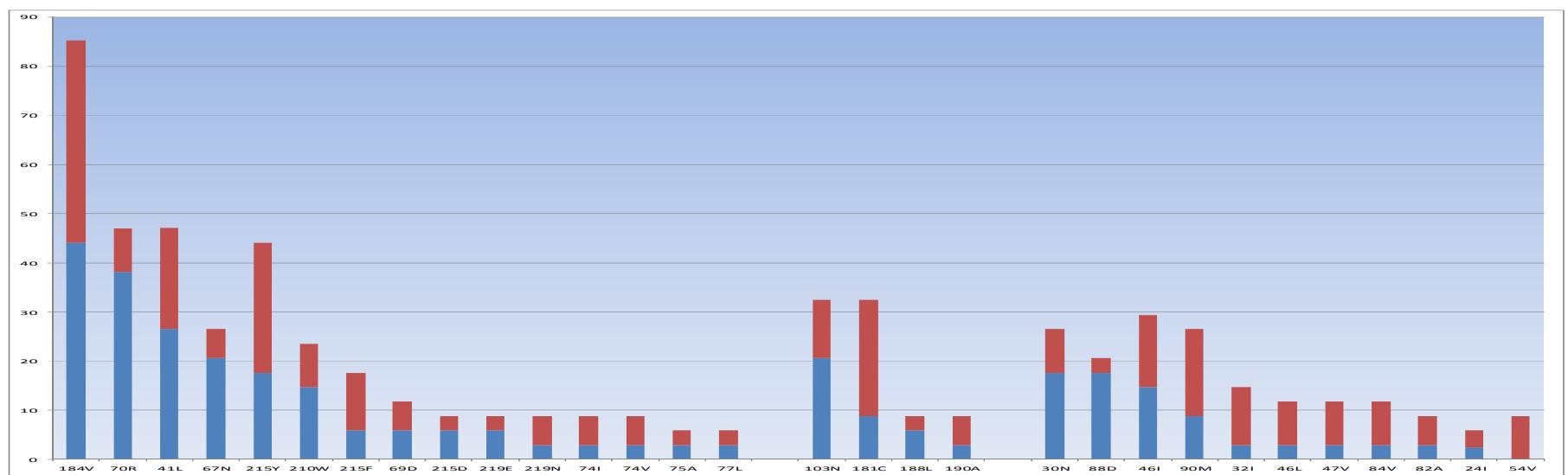
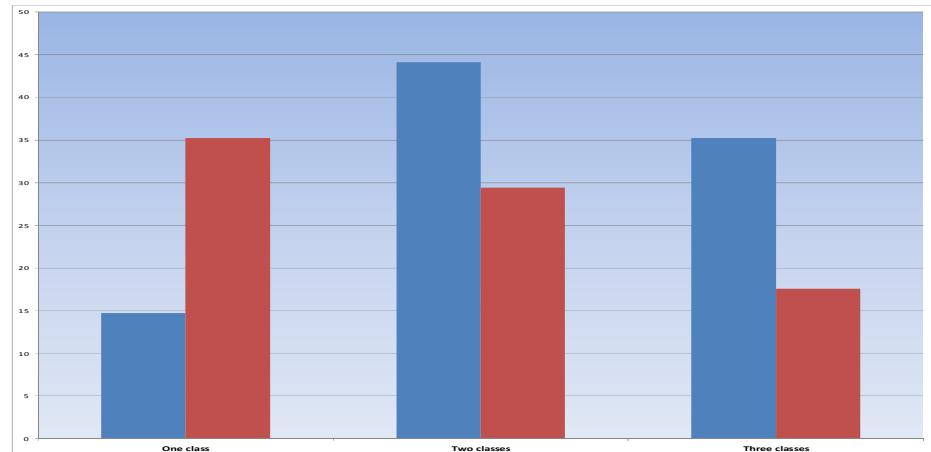
- ARV RM data were compiled from the LEGACY study
 - 189 ARV-experienced
 - 3 (1%) patients had no RMs.
 - 85% or 29% of patients had RM to 2 or 3 ART classes



Del Bianco, et. al, CROI, 2009

ART Resistance UTHouston

- The prevalence of mRM was determined by a longitudinal (LT) analysis that recorded all mRM detected in children who had ≥ 3 RM tests and compared with a cross sectional (CS) analysis that included the mRM found in the most recent test.



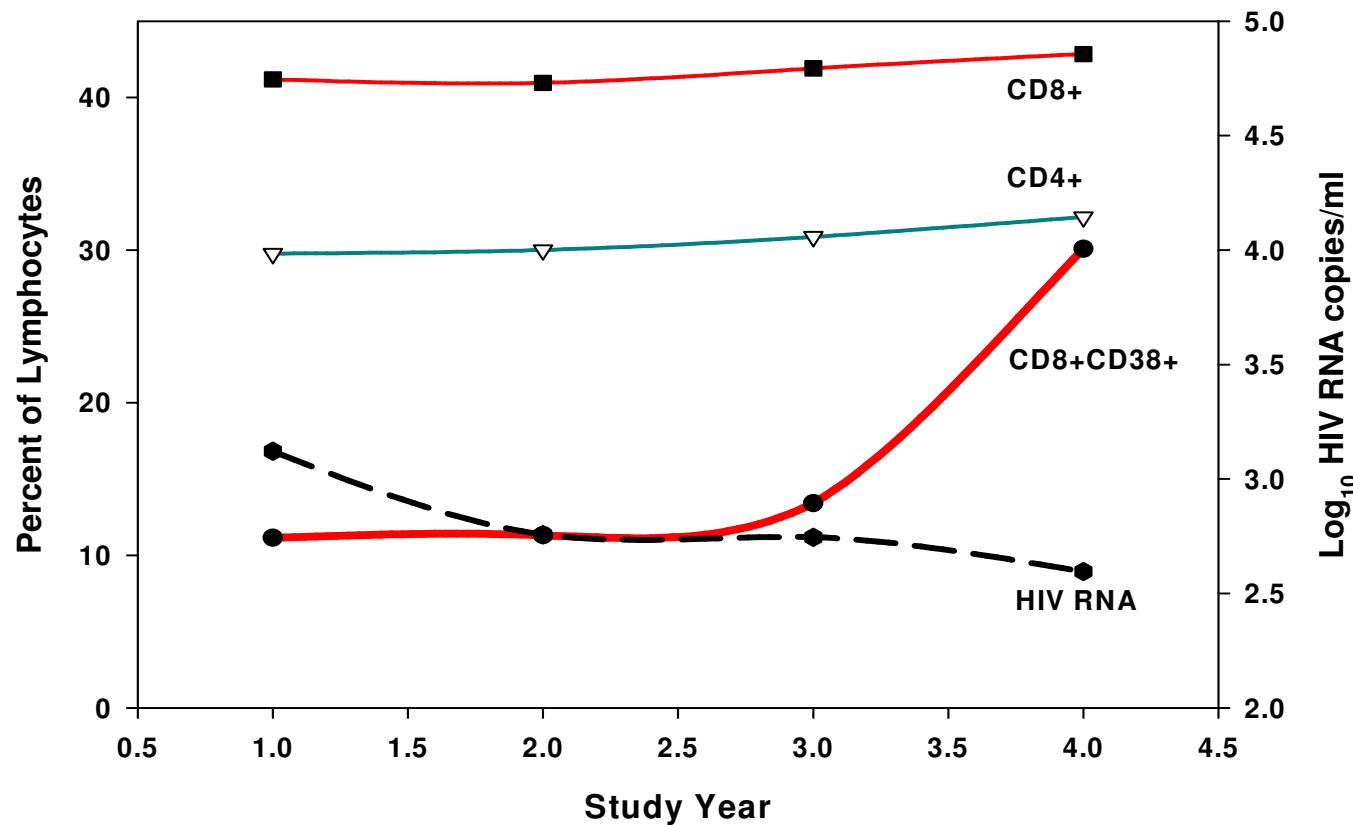
Heresi et. al, ICAAC, 2010

Challenges: Long Term Morbidity

- CNS
- Metabolic
- Cardiovascular disease
- Chronic inflammation
- Renal disease
- Bone disease

How to Monitor Disease Progression ?

Median Age At Enrollment 10.3 years



Ellsworth, IDSA, 2010

Renal Function

- 38 patients
- Median age 14 years

Table 2. Characteristics of patients with compromised renal function

Patient	Age	Sex	Race	M/C Mean (Min,Max)	ARV Compliance	Viral load (Mean, Log ₁₀)	CD4 (Mean, %)	CD8 (Mean, %)	CD8+CD38+ (Mean, %)
1	19.3	F	AA	3,293 (51, 9740)	Noncompliant	3.35	12	61	10
2	17.2	F	AA	46 (3, 117)	Noncompliant	4.44	17	60	31
3	12.3	F	AA	60 (31, 113)	Intermittent	1.85	30	55	16
4	12.7	F	AA	3902 (2185, 4652)	Noncompliant	4.27	38	37	9

Values in red are beyond laboratory's normal range

Challenges: Other Considerations

- Adolescence
- Chronicity
- Stigma
- Family
- Psychological, psychiatric, behavioral
- Non-adherence
- Transition of caregivers

Adolescence

- Adolescent: AAP defines adolescence as 13 to 21 years of age
 - This definition does not hold for HIV care
- Rapid physical, sexual and psychological changes
 - Poor decision making
 - Evolving sexual identity
 - Experimentation and risk taking

Perinatal HIV Infected Adolescents

- Often born to women with substance use histories and prevalent psychiatric disorders
- Experience multiple environmental and social stressors
- Experienced an extended period of less than optimal HIV medical care (pre-HAART)
- Social the need to “fit in”

HIV Chronic Disease: Issues

- Deaths of parent(s), siblings, friends
- Poverty, substance abuse, violence, trauma, abuse, neglect
- Lack of support: family, community, teachers, schools, society - support systems exhaustion
- Anger/fear/depression
- Change in body form

Chronic Disease and Stigma

- Stigma definition: “negative or judgmental definition of a person or social situation connected to discredit, blame, and ascription of responsibility”.
- Associated with :
 - lack of knowledge, homosexuality “gay plague” and iv drug abuse “immoral behaviors”. Fatal, physical changes with advanced disease

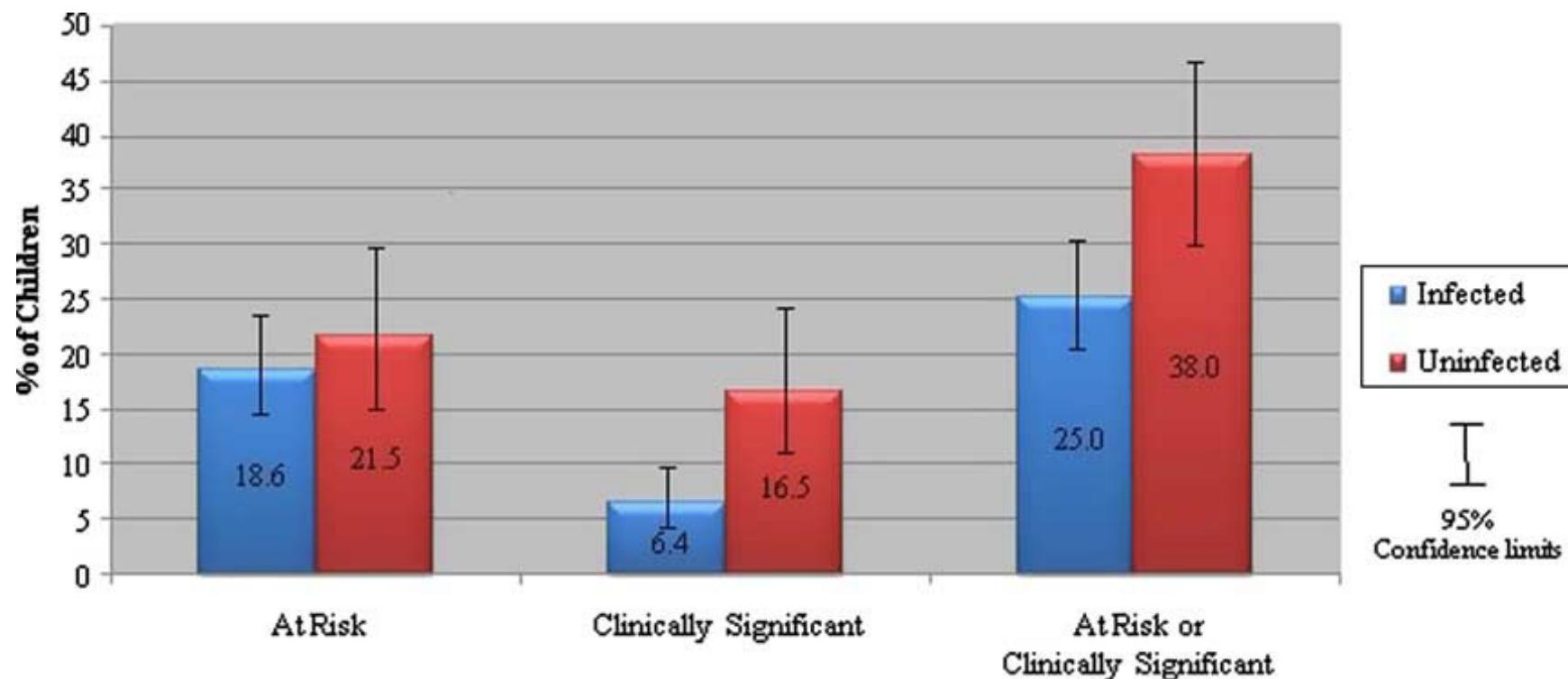
HIV is a family Disease

- When a member of the family is HIV positive, the whole family is emotionally affected. And, often more than one member is infected.
- 17 year old AAF with perinatal HIV, mom died 6 months ago of HIV disease. Father HIV infected. 5 siblings and extended family, no one in the family knows her HIV status. Mom “very private”. Never took medicines. Presently, daughter with AIDS and wasting.

HIV is a family Disease (cont.)

- Health team trying to intervene.
- Patient repeating secrecy and privacy attitudes she learned from mom
- Health care givers are at the receiving end of a range of strong emotional reactions.
- It is a challenge to understand how different children and parents react to HIV and to adjust healthcare delivery to these needs.

Mental Health Functioning Among Children and Adolescents with Perinatal HIV Infection



Rates and types of psychiatric disorders in perinatally HIV-infected youth and seroreverters.

- 340 youths and care givers
- 54% African American; 31% Hispanic
- 9-16 years old
- Psychiatric Disorders
 - 61% HIV+ vs. 49% HIV-
 - Anxiety disorders(46%)
 - Behavioral disorders (25%)
 - HIV+ youths had significantly higher rates of ADHD

Non-Adherence

28-78 % in different
studies

Factors related to Non-Adherence

- **Demographic:** not being at school, housing instability.
- **Psychosocial:** HIV stigma and discrimination, depression, history of sexual abuse.
- **Disease related:**
 - Later stages of HIV disease, length of treatment with cART.
 - Medication issues. Too many pills, salvage Rx
- **Care giver/family:** Chaotic families

Adherence Associated

- Reduced viral load
- CD4 level \geq 500 cells.
- Fewer drugs
- Fewer medication adverse events
- Primary caregiver
- not being the biological parent
- higher education level
- lower levels of psychological distress
- belief that medications would improve quality of life.

Strategies to Improve Adherence

- Depend on clinical status
- If possible defer treatment until individual issues are addressed
 - Psychological
 - Housing
 - Swallow pills
- No regimen with low resistance barrier
- DOT in special situations

Strategies to Improve Adherence

- Pill boxes
- Reminders
 - Text messaging
 - Alarm phone
 - Counseling
 - Peer support
 - Education, Education, Education
 - Multisystemic approach

HIV viremia by clinic attendance

Clinic Attendance	Detectable HIV Viremia	
	No (A+)	Yes (A-)
Yes (C+)	27 (47%)	31
No (C-)	6 (32%)	13

Adherence by Self Report

- We compared patient self-report with concomitant VL using a 6 category unguided questionnaire associated with Ryan White data collection where categories ranking from excellent to very poor compliance with cART. For categories < excellent there was good (92%) association of VL positive. For reports of excellent, 25% of reporting had detectable VL.

UTHouston HIV Practice

Over its history, the practice has provided service to 1,341 HIV infected patients, has a current active patient census of 100 and acquires on average 12 newly infected/diagnosed patients per year (2 mother to child transmissions (MTCT) and 10 behaviorally acquired). On average per year 0.3 patients are lost to death and 4 to migration (transfer, loss to follow-up).

UTHouston HIV Practice

On average, for patients who attend 2 or more clinics per year, we schedule 2.5 appointments to achieve 1 clinic visit (range 1.1 to 9 appointments scheduled per attended clinic appointment).

HIV Treatment for adolescents

The best approach to care:

Comprehensive, multidisciplinary model

Medical services:

Comprehensive with sexual health services: routine screening for STD's, risk reduction & contraception counseling, routine Pap screening, HPV vaccine

Psychosocial services:

Case management

Mental health & substance abuse services

Disclosure counseling & support