POSTER #1541

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Syphilis, Race, Baseline Labs, and Antiretroviral Regimen Predict Virologic Success in Naïve HIV+ Adolescents and Young Adults

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BACKGROUND

Younger HIV+ patients face a qualitatively different set of complex social, psychological, and medical challenges when initiating antiretroviral therapy compared to older patients.[1] The CDC estimates that in 2014, young adults aged 13-24 accounted for 22% of new HIV diagnoses in the US. Young people with HIV are also the least likely to be linked to care.[2] The majority of clinical research to date, however, has focused on persons in the middle years of life or older. This analysis identifies differences in predictors of treatment response between younger and older treatment-naïve HIV patients.

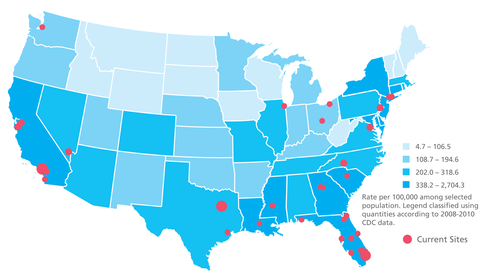
OBJECTIVE:

To understand differences in predictors of virologic suppression in 13-25 year old versus 26-49 year old ART-naïve patients.

METHODS

- The study population was selected from the Observational Pharmaco-Epidemiology Research and Analysis (OPERA) cohort, which includes prospectively-captured, routine clinical data from patients at 79 outpatient clinics in 15 states in the United States.

Figure 1. Geographic Distribution of OPERA Cohort



- Using electronic medical records, treatment-naïve HIV+ individuals starting their first ART regimen between January 1, 2007 and March 31, 2015, and between the ages of 13 and 49 years old at the time of ART initiation were identified.
- Patients were followed from the start date of their first ART regimen until any regimen change, death, loss to follow-up, or study end (March 31, 2016).

Treatment outcomes:

- Virologic suppression was defined as a single HIV-1 RNA viral load (VL) of <50 copies/mL.
- Virologic rebound could occur only in patients who first achieved suppression. Rebound was defined as either of the following:
  - 1 VL >200 copies/mL followed by regimen discontinuation OR
  - 2 VL >200 copies/mL
- Cox proportional hazards regression was used to simultaneously assess the association between several patient characteristics (measured at baseline) and virologic suppression during an initial ART regimen. Separate models were created and compared for 13-25 year olds and 26-49 year olds.

RESULTS

- Out of 9,190 HIV+ ART-naïve patients identified in the OPERA cohort, 1,877 were 13-25 years old and 6,139 were 26-49 years old at the time of ART initiation. Patients aged 50+ were not included in this analysis (see IDWeek poster #2127).

Table 1: Selected Baseline* Clinical Characteristics

	Patients 13-25 years N= 1877	Patients 26-49 years N= 6139	p-value
Male	1718 (91.6%)	5264 (85.8%)	**<0.0001**
African American	945 (50.3%)	2125 (34.6%)	**<0.0001**
Hispanic	469 (25.0%)	1624 (26.5%)	0.21
MSM^	1307 (69.6%)	3545 (57.7%)	**<0.0001**
Treated in Western US	653 (34.8%)	2677 (43.8%)	**<0.0001**
Baseline Viral Load			
Low (<10,000 copies/mL)	355 (18.9%)	1015 (16.5%)	**<0.0001**
Moderate (≥10,000 to <100,000 copies/mL)	1024 (54.6%)	3032 (49.4%)	
High (≥100,000 copies/mL)	498 (26.5%)	2092 (34.1%)	
Baseline CD4			
Early presenter (>500 cells/μL)	531 (28.3%)	1236 (20.1%)	**<0.0001**
Moderate presenter (>350 to ≤500 cells/μL)	535 (28.5%)	1415 (23.0%)	
Late presenter (>200 to ≤350 cells/μL)	530 (28.2%)	1717 (28.0%)	
Later presenter (>50 to ≤200 cells/μL)	209 (11.1%)	1153 (18.8%)	
Latest presenter (≤50 cells/μL)	72 (3.8%)	618 (10.1%)	
AIDS at baseline	47 (2.5%)	474 (7.7%)	**<0.0001**
Year of ART initiation			
2007-2011	544 (29.0%)	2668 (43.5%)	**<0.0001**
2012-2015	1333 (71.0%)	3471 (56.5%)	
Hepatitis C ever at baseline	21 (1.1%)	336 (5.5%)	**<0.0001**
Syphilis ever at baseline	470 (25.0%)	1640 (26.7%)	0.15

* Baseline: Initiation of HIV ART; ^MSM: men who have sex with men

- Younger patients were largely in their 20s [median years (IQR): 23.2 (21.5, 24.7)], rather than their teens. Median age for the older patient group was 36.4 years (30.6, 42.8).
- Compared to patients 26-49 years old, patients 13-25 years old were more likely to be African American and MSM. They also had lower baseline viral loads and higher CD4 counts.
- Patients 13-25 years old were more likely to start ART with a regimen containing an INSTI and less likely to take a regimen containing a PI compared to patients 26-49 years old. Initiating with an STR was more common among 13-25 year olds (73% vs. 59%; p<0.0001).

Figure 2. Pill Burden And Core Agent Drug Class By Age Group

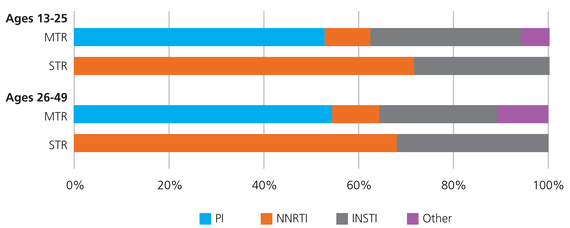
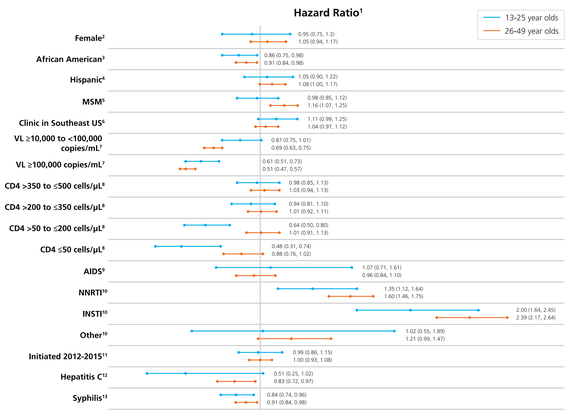


Table 2: Treatment Outcomes Of Initial ART Regimen By Age Groups

	Patients 13-25 years N= 1877	Patients 26-49 years N= 6139	p-value
Virologic Suppression			
Achieved virologic suppression (<50 copies/mL) during initial ART regimen	1246 (66.4%)	3897 (63.5%)	**0.021**
Had at least one VL after baseline	1616 (86.1%)	5288 (86.1%)	0.96
Patients with VLs: Achieved virologic suppression	1246 (77.1%)	3897 (73.7%)	**0.006**
Time to first VL < 50 copies/mL [median (IQR) months]	4.0 (2.1, 6.3)	4.1 (2.3, 6.5)	**0.04**
Virologic Rebound			
2 X (VL >200 copies/mL) after suppression	94 (5.0%)	331 (5.4%)	0.52
1 X (VL >200 copies/mL) after suppression plus discontinuation of initial ART regimen	87 (4.6%)	248 (4.0%)	0.26
Either of confirmed rebound events above	181 (9.6%)	579 (9.4%)	0.78
Time to virologic rebound [median (IQR) months]	16.6 (11.3, 23.7)	17.1 (10.9, 27.1)	0.62
Discontinuation			
Discontinued initial ART regimen during follow-up period	1148 (61.2%)	4107 (66.9%)	**<0.0001**
Time to discontinuation [median (IQR) months]	12.0 (6.1, 22.5)	12.0 (5.1, 24.3)	0.62

- 13-25 year olds and 26-49 year olds were equally likely to have at least one VL measurement taken during their initial ART regimen. Among patients with a VL, younger patients were slightly but statistically significantly more likely to achieve virologic suppression.
- Among patients who achieved suppression, virologic rebound was equally common in both age groups.
- A higher proportion of 26-49 years olds discontinued their initial ART regimen during the observation period, but among patients who discontinued, time to discontinuation was not different by age group.

Figure 3: Association Of Patient Demographic And Clinical Characteristics With Virologic Suppression Among HIV+, Treatment-Naïve Patients Initiating ART



1. Hazard ratio >1.0 indicates increased probability of achieving virologic suppression

Referent category: 2. Male, 3. Not African American, 4. Not Hispanic, 5. Not a man who has sex with men (MSM), 6. Clinic in any other geographic region (Northeast, Mid-Atlantic, Midwest, Southwest, West), 7. VL <10,000 copies/mL, 8. CD4 >500 cells/μL, 9. No diagnosis of AIDS at baseline, 10. Initiated on a protease inhibitor-containing regimen, 11. Initiated ART 2007-2011, 12. No history of HCV at baseline, 13. No history of syphilis at baseline, 14. 0-4 non-ART pills/day, 15. no history of substance abuse at baseline, 16. history of 0 comorbid conditions at baseline

- For 13-25 years olds and 26-49 year olds, baseline VL and drug class of the anchor agent in the initial ART regimen were the strongest predictors of virologic suppression.
  - High viral load (≥100,000 copies/mL) at baseline was associated with greatly reduced likelihood of suppression, regardless of age. Moderate baseline viral load (≥10,000 to <100,000 copies/mL) was a stronger predictor of suppression in 26-49 year olds than in 13-25 year olds.
  - Compared to PIs, patients taking INSTI-based regimens were the most likely to achieve suppression, followed by patients taking NNRTI-based regimens, regardless of age.
- Patients 13-25 years old and Initiating treatment with very low CD4 cell counts were less likely to achieve suppression compared to patients initiating with CD4 counts >500 cells/μL.
- For both age groups, African American race and history of syphilis infection at baseline were associated with reduced virologic suppression during the initial ART regimen.
- Hepatitis C co-infection was also associated with reduced probability of suppressing virus in 26-49 year olds and trended in that direction for 13-25 year olds.

DISCUSSION

- In a large US HIV population, adolescents and young adults in the OPERA cohort made up 21% of patients new to treatment, and were more likely to be African American and MSM compared to older patients.
- While 13-25 year olds and 26-49 year olds differed substantially in baseline characteristics, they shared some important predictors for virologic success, particularly baseline viral load and drug class of initial regimen.
- Low baseline CD4 (an indicator of disease progression at presentation) and history of syphilis (an indicator of a high-risk lifestyle) were important predictors of suppression among younger patients. A substantial proportion of both age groups had a history of syphilis. Patients co-infected with syphilis and/or low initial CD4 counts may warrant more aggressive education, treatment, and support to achieve suppression.

KEY FINDING:

Early initiation and use of INSTI-containing regimens were the most important factors for achieving suppression in adolescents, young adults, and adults. HIV prevention targeting young MSMs of color are needed to decrease new infections in this vulnerable group

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SPONSORSHIP

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