Background. Advances in HIV treatment changed the landscape of the epidemic from a fatal to a chronic disease. The number of patients living with HIV is expected to increase as they are living longer. Compared with the general population, older HIV-infected patients suffer additional comorbidities and often take several medications, leading to polypharmacy and drug interactions. Besides that the HIV population is aging, more patients know their status or want to access pre-exposure prophylaxis for prevention. Furthermore, the HIV workforce is aging and retiring without a new generation of providers to replace them. There is a fundamental concern about the readiness of future physicians to care for the HIV population. In response to this anticipated workforce shortage, an HIV Training Track was established at Yale Primary Care Residency Program in 2012.

Methods. Two to three residents were recruited into the HIV training track each year. Residents have their continuity practice in the institution's HIV Clinic and rotate on the inpatient HIV Firm each year. Otherwise, residents participate in all of the core rotation and curricular activities of the Primary Care Residency. The authors will (i) display the process of building the infrastructure of the HIV training program, (ii) describe the curriculum, and (iii) share the 5 years experiences and outcomes.

Results. The program enrolled a cohort of 11 residents between 2012 and 2017. Residents managed a panel of 30–40 HIV-patients with diverse demographics. A medical record review revealed high performance measures in HIV and non-HIV conditions. 100% of eligible patients were on ART, 92% of patients were retained in care and 92% of those on ART had HIV viral suppression. In addition, all residents completed an HIV knowledge assessment test and showed 26% increase in their score at 1 year. There was 100% retention of residents and faculty. Residents and patients demonstrated high satisfaction with the program.

Conclusion. A novel HIV training track is feasible and can be successfully implemented. Expanding HIV-specific curricula within primary care residency program can build workforce of providers to meaningfully care for the aging HIV population.

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600. To Study the Status of HIV Disclosure in Children and Adolescents

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Background. Disclosure to HIV-infected children regarding their diagnosis is important as expanding numbers of HIV-infected children attain adolescence and may become sexually active. HIV disclosure is an important step toward long-term disease management and necessary for the transition from pediatric care into adolescent and adult care settings.

Methods. This was a cross-sectional study carried out in 144 caregivers of Children and adolescents aged between 6 and 16 years of age attending the pediatric ART clinic. The subjects were enrolled consecutively and were interviewed using a structured questionnaire after taking written informed consent. The questionnaire included information on the demographic details, the disclosure status of HIV infection in children and perceptions about disclosure of status to the child.

Results. The mean age of children was 11.40 ± 2.86 years. Although 93.8% of caregivers believed children should know their HIV status, the prevalence of disclosure to the child was only 33.3%. Disclosure had been done primarily by caregivers (72.9%). Caregivers reported that (22.9%) children self-disclosed. Majority of caregivers felt 10–12 years as the appropriate age for disclosing the HIV infection status. Most of children 89.6% acquired HIV through vertical transmission. Majority of care givers 83.3% believed that care givers are most suitable person for disclosure. Furthermore, in our study 66.7% children were unaware of this HIV status and most common reason (92.7%) for their nondisclosure was child does not understand about illness and others to be 82.3% did not disclose as child may tell secret to others and 66.7% child is too young to understand the disease. There was increase in drug compliance 47.9% and improvement in behavior 12.5% noticed in children.

Conclusion. In our study prevalence of HIV disclosure was 33.3% there was increase in drug compliance, improvement in behavior, school performance and attendance. Most common reason for their nondisclosure was child does not understand illness and child may tell secret to others.

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601. Prescription Drug Misuse in an HIV-Infected US Military Cohort

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Backgrounds. Prescription drug misuse (PDM) has markedly increased over the last decade and is a significant contributor to the national opioid epidemic. HIV+ individuals are particularly vulnerable to PDM as they experience high levels of chronic pain, anxiety and depression. We examined the prevalence of PDM and associated risk factors among HIV-infected subjects in our cohort.

Methods. The US Military HIV Natural History Study (NHS) is comprised of HIV+ active duty, retired military personnel and dependents. Since 2014, participants have completed a computerized behavioral survey regarding patterns of drug use and sexual behavior. We specifically queried topics including use of narcotics, benzodiazepines or stimulants without a prescription or use of medications not as prescribed. Logistic regression was used to compare those reporting and not reporting a lifetime history of PDM. Analyses used anonymous data.

Results. Among 1,558 respondents, 292 (18.7%) reported a history of PDM. The median age of individuals reporting history of PDM was 45 years (interquartile range [IQR] 31–53) compared with individuals without PDM (41 years; IQR 29–35; $P = 0.049$); the groups did not differ by race, CD4 count or viral load. The prevalence of lifetime PDM was highest among dependent individuals (31.8%), compared with retired (20.6%) or active-duty personnel (15.9%; $P = 0.003$ for comparison). After adjusting for age and duty status, military officers were significantly less likely to report PDM than enlisted personnel (OR 0.51; IQR 0.31–0.85). Those with a history of PDM were more likely to consume ≥3 alcoholic drinks/day (OR 1.9; IQR 1.4–2.5). In a sub-analysis of active-duty personnel only (median age 30 years), individuals reporting a history of PDM had fewer years since HIV diagnosis (median 2.9 years vs. 3.9 years, $P = 0.019$).

Conclusion. We found prevalent PDM among HIV-infected military personnel and beneficiaries, and PDM was associated with at-risk drinking. This is the first estimate of PDM among HIV+ active-duty personnel, and longitudinal studies in similar cohorts will be useful in further characterizing the epidemiology of PDM. The higher prevalence among recently diagnosed active-duty personnel may suggest an increasing scope of PDM in this group, and interventions to decrease PDM are urgently needed.

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602. Factors Associated With Erectile Dysfunction Diagnosis in HIV-Infected Individuals: A Case–Control Study

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Background. HIV-infected men have increased incidence of erectile dysfunction (ED) compared with men without HIV infection. Risk factors for ED among HIV-positive individuals have not been widely described.

Methods. A retrospective cohort study was completed evaluating participants in the US Military HIV Natural History Study, a cohort of HIV-infected active duty members and beneficiaries. Men with a diagnosis of ED after HIV diagnosis were included ($n = 488$). Cohort controls ($n = 976$) without ED diagnosis were matched 2:1 by age at HIV diagnosis. Multivariate logistic regression model was used to identify risk factors for ED.

Results. At HIV diagnosis, the median CD4 count was similar for cases (523 cells/μL, IQR 396–675) and controls (508 cells/μL, IQR 366–673; $P = 0.310$) and the overall median age was 32 years. At ED diagnosis, cases had a median age of 43 years (IQR 37.0–49.0) and 445 (92.3%) were on antiretroviral therapy (ART). The median time from HIV diagnosis to ART start was longer for cases (5.0 years, IQR 2.0–9.0) compared with controls (3.0 years, IQR 1.0–6.0; $P < 0.001$). Cases had a higher proportion of the following diagnoses compared with controls ($P < 0.001$ for all): depression (33.4% vs. 21.7%), hypertension (37.9% vs. 20.4%), hyperlipidemia (54.3% vs. 32.4%), tobacco use (31.1% vs. 23.1%), sleep apnea (14.8% vs. 4.2%) and diabetes/cardiovascular disease (CVD)(10.5% vs. 4.7%). Multivariate logistic regression model is reported below (table).

Logistic Regression Model to Predict ED

Characteristic	Odds Ratio	95% CI	P-value
Sleep apnea	2.62	1.69–4.05	<0.001
Time from HIV diagnosis to ART start > mean	2.07	1.58–2.71	<0.001
African-American race	1.76	0.90–3.42	0.096
Diabetes/cardiovascular disease	1.61	1.01–2.58	0.048
Tobacco use	1.42	0.99–2.04	0.057
Hypertension	1.36	1.02–1.82	0.034
Hyperlipidemia	1.26	0.96–1.64	0.092
Depression	1.24	0.94–1.63	0.130
CD4 count <200 cells/μL at HIV diagnosis	0.63	0.32–1.25	0.184
Prior protease inhibitor use	0.43	0.31–0.60	<0.001

Conclusion. Delay in ART initiation as well as risk factors for and presence of CVD were associated with ED in HIV-infected persons. Mitigating risk factors and optimizing comorbidities is important to improve sexual health and reduce ED in HIV-infected persons.

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603. Multi-morbidity and Impaired CD4/CD8 Ratios in Older Adults with Well-Controlled HIV

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Background. Older age has been associated with impaired CD4 recovery and a low CD4:CD8 ratio is an independent predictor of non-AIDS morbidity/mortality. In this study we describe the overall comorbidity burden and assess factors associated with CD4:CD8 <1 among HIV+ older adults 60 years+ seen at CORE Center, Cook County Health and Hospital System; a safety-net health system.

Methods. We evaluated demographic, clinical, and lab variables in all HIV+> 60 years who had at least 1 primary care visit from January 1, 2016 to May 31, 2017 at the RMR CORE center. Since HIV viremia is associated with CD4 recovery, analysis on CD4:CD8 ratios was restricted to the patients with viral suppression.

Results. There were 809 patients with a median age of 63 (range: 60–89) years. Seventy-five percent were male, 74% black, 17% Hispanic and 8% white. Mean CD4 was 538 (+307) cells/mm; 107 (13%) had CD4 < 200 and 675 (84%) had undetectable HIVRNA (<40 copies/mL). 38% were HCV Ab+. Common comorbidities were hypertension 62%, COPD 23%, diabetes 22%, depression 17%, osteoarthritis 15%, neuropathy, chronic kidney disease (CKD) and coronary artery disease (CAD) 13% each. 50% had 1–2 comorbidities and 31% had >3 co-morbidities. Of the 675 patients with suppressed viremia, 470 patient (70%) had CD4:CD8 <1 and 245 (36%) had CD4:CD8 <0.5. Compared with patients with CD4:CD8 >1, patient with CD4:CD8 <1 had lower CD4 counts (451 vs. 739 cells/mm^3; $P < 0.001$), were less likely to have CD4 > 500 (35% vs. 75%; P <0.001), more likely to have CD4 <200 (13% vs. 1%; P <0.001), be male (82% vs. 60%; $P < 0.001$), HCVab+ (39% vs. 32%; P 0.05). They also trended to have more CAD 7% vs. 4% ($P = 0.1$) and more CKD 15% vs. 11% ($P = 0.2$).

Conclusion. There was a high rate of multi-morbidity among older, predominantly ethnic minorities HIV-infected adults with 56% having >2 comorbidities. In the setting of viral suppression, 70% still had a CD4:CD8 ratio <1 which likely reflects the effects of older age, and lower CD4 nadir. This impaired immune restoration and co-morbidity burden portend a higher risk of non-AIDS morbidity and mortality in these patients and highlights the need for comprehensive care in HIV clinic settings.

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604. Impact of Substance and Alcohol Abuse on Smoking-Related Behaviors When Using a Smoking Cessation Decisional Algorithm Among People Living with HIV (PLWH)

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Background. Compared with the general population, PLWH have higher rates of tobacco use. We performed a prospective single-arm pilot study of the real-world feasibility of integrating an ambulatory smoking cessation decisional algorithm in our HIV clinic. We hypothesized that patients with drug and alcohol abuse would have a smaller change in smoking related behaviors.

Methods. Participants were PLWH attending our clinic and smoking at least 5 cigarettes/day regardless of their motivation to quit ($N = 60$). Each participant had an initial visit and two phone visits (+1 and +3 months). Participants completed surveys via computer during the first visit and by phone in the follow-ups. Additional clinical data were collected via chart review.

Results. Participants had a mean age of 48, were mostly African-American (72%) and male (67%) with well-controlled HIV (mean CD4 622, undetectable viral load in 70%). The mean AUDIT score to assess for alcohol abuse did not change over the. three time points (7.1;7.2;7.6, median 4;5;5). A score of 8 or higher indicates harmful alcohol consumption and 23% of patients met the criteria. Lifetime self-reported treatment for substance abuse was high (35%). DAST score for assessing substance abuse was used and mean scores decreased slightly over time (2.3;1.2;0.93, median 2;0;0). A score of 6 or higher indicates a substance use disorder and 15% met that criterion at baseline, 3% at 3 months. Chart review had similar results with 18% having a diagnosis of substance abuse and 20% with alcohol abuse. Overall participants ($n = 60$) showed a decrease in tobacco use, with an average of 14 cigarettes/day at baseline and 7 cigarettes/day at 3 months ($P = 0.001$). Patients with a diagnosis of substance abuse had a baseline average of 12 cigarettes/day and 6 cigarettes/day at 3 months (reduction 6). For those with an alcohol abuse diagnosis, baseline was 16 cigarettes/day and at 3 months, 10 cigarettes/day (reduction 6). The change over time was not significantly different between the groups.

Conclusion. People living with HIV who smoke are a complex group of patients who commonly have concurrent or historical substance and alcohol abuse. A substance and alcohol abuse diagnosis did not impact the decrease in tobacco use seen with implementation of a decisional algorithm.

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605. Loneliness Among Older Adults Living with HIV: A Study and Online Community

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Background. The population of people living with HIV (PLHIV) is aging. A new registry and online community, called Aging with Dignity, Health, Optimism and Community (ADHOC), has been launched to investigate how HIV impacts the lives of older PLHIV.

Methods. A cross-sectional analysis of ADHOC was performed on 208 PLHIV 50+ years of age. One hypothesis was that increasing age would be associated with greater loneliness. Loneliness was assessed using the UCLA Loneliness Scale (ULS-3). A score ≥6 was classified as lonely. The impact of aging on loneliness was analyzed by ANOVA and multiple linear regression.

Results. ULS-3 scores ranged from 3 to 9 and 48.6% of subjects were classified as lonely. Significant differences were found between the 50–59, 60–65 and 65+ age groups, with older age associated with decreased loneliness ($P = 0.018$) (Table 1). In the multiple linear regression model, these observations persisted even after controlling for gender, sexual orientation, race/ethnicity, relationship status, education, income, and number of comorbidities (Table 2). Decreases in loneliness were associated with female gender, being in a relationship, higher income, and fewer comorbidities ($P < 0.05$).

Conclusion. Among PLHIV over 50, loneliness is less severe in older age groups. Additional investigation is needed to better understand potential causes and to find ways to remediate loneliness among older PLHIV.

Table 1: Comparison of ULS-3 Scores by Age

	50–59 ($n = 133$)	60–65 ($n = 40$)	65+ ($n = 35$)	P-value[1]
ULS-3 Mean ± SD	5.8 ± 2.1	5.1 ± 2.0	4.8 ± 1.8	0.018

[1]P-value from ANOVA.

Table 2: Multiple Linear Regression of ULS-3 Scores

	n	%	Coef.	P-value
Age				
50–59	113	54.3	Ref.	
60–65	40	19.2	−0.80	0.026
65+	35	16.8	−1.41	<0.001
Gender				
Male	196	94.2	Ref.	
Female	12	5.8	−2.06	0.024
Sexual orientation				
Gay/lesbian/other	185	93.4	Ref.	
Heterosexual	19	9.3	1.32	0.108
Race/ethnicity				
White	167	81.1	Ref.	
Black	13	6.3	−0.34	0.600
Hispanic/Latino	16	7.8	−0.96	0.070
Other	10	4.9	−0.99	0.138
Relationship status				
Single	95	54.3	Ref.	
In a relationship	113	45.7	−1.43	<0.001
Education				
Less than college graduate	86	41.4	Ref.	
College graduate (4 years)	82	39.4	0.23	0.474
Graduate school graduate	40	19.2	−0.02	0.963
Income				
<$50,000	84	44.9	Ref.	
≥$50,000	103	55.1	−0.60	0.049
Comorbidities				
0–5	77	37.0	Ref.	
5+	131	63.0	0.65	0.026

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606. Risk Factors for Congenital Infection in the United States: Analysis of the Kids' Inpatient Database (KID)

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