assessed with a 10-question quiz on PrEP facts. No incentives to complete the survey were offered. Data were summarized by frequency (%) for categorical variables and with means (SD) for continuous variables. Chi-squared tests were used to examine differences between knowledge of PREP and other categorical variables.

Results. The study population (N = 1588) included women (53%), non-Caucasians (27%), and non-heterosexuals (15%). Median age was 25 (range 21–53). Forty-eight home states, including D.C., and 21 home countries were represented. 18% of fourth-year students were never taught about PrEP in medical school, compared with 40% of first-year students ($P < 0.001$). Overall, 28% of students were unaware of PrEP. Those unaware believed patients without HIV will not adhere to PrEP ($P < 0.001$). Awareness was associated with knowing someone with HIV besides a patient and experience caring for HIV-infected, intravenous drug-using, and LGBTQ people ($P < 0.001$). Higher knowledge scores were associated with confidence in determining a patient's candidacy for PrEP and, for third- and fourth-year students, having recommended PrEP in the clinical setting ($P < 0.001$). Overall, 57% believed that behavioral intervention should be tried before prescribing PrEP, 45% believed that patients would not adhere to PrEP, and 22% worried that PrEP is not effective.

Conclusion. We show in an 18-site study that medical students have limited awareness, knowledge, positive beliefs, and experiences of PrEP. Given these findings and the underutilization of PrEP by current practitioners, we recommend increasing the inclusion of PrEP in medical student education.

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880. Characterization of New HIV Infections among Adults ≥45 Years—New York City, North Carolina, San Francisco, 2011–2013

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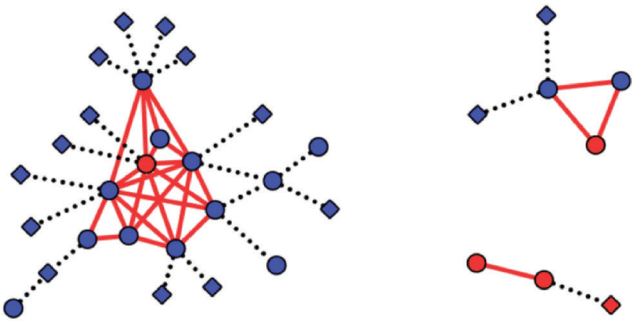
Background. While HIV prevention activities are often focused on younger people, older people can also be at risk for HIV infection. We aimed to characterize HIV transmission in older adults.

Methods. The STOP study was a multi-site prospective study of persons with acute HIV infection (AHI) from 2011 to 2013. Older adults were defined as ≥45 years and younger persons were 13–44 years. AHI was defined by a negative rapid test but a reactive antigen/antibody or HIV RNA test. We performed bivariate analysis using Pearson's chi-square and odds ratios to examine associations between older age and transmission characteristics. Among persons with HIV-1 polymerase (*pol*) sequences, transmission linkages were inferred when the genetic distance between sequences was <1.5% and did not indicate directionality of transmission.

Results. Among 86,836 participants (median age, 29 years; 75.0% male; 51.8% MSM), HIV infection was diagnosed in 176 (1.46%) of 12,036 older adults compared with 1,150 (1.53%) of 74,800 younger people ($P = 0.56$). Among HIV-infected persons, AHI was diagnosed in similar proportions of older and younger people (13.1% vs. 12.6%; $P = 0.86$). Among HIV-infected persons who participated in partner notification (n = 1,326), older adults were less likely to report meeting a sex partner online (11.3% vs. 26.9%; OR 0.52, 95% CI = 0.35–0.78) and were less likely to name ≥2 sex partners (31.5% vs. 46.8%; OR = 0.28, 95% CI = 0.15–0.53) compared with younger people. Among HIV-infected persons with HIV-1 *pol* sequences (n = 537), similar proportions of older and younger people had viruses that genetically linked with another study participant (15.9% vs. 23.5%; OR 0.62, 95% CI 0.31–1.22) (Figure).

Conclusion. In this study, older adults had a similar frequency of newly diagnosed HIV infection, acute infection, and genetic linkage compared with younger people, suggesting that increased HIV prevention efforts may be needed in this population.



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881. HIV Transmission Rates and Factors Associated with Recent HIV Infection: Results from the Ndhiwa HIV Impact Assessment, South Nyanza, Kenya, 2012

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Background. Identifying populations with high HIV transmission rates is important for prevention and treatment strategies. Persons with recently acquired HIV infection are drivers of HIV transmission due to high levels of HIV viral load (VL). We assessed annual HIV transmission rates and factors associated with recent infection to inform targeted interventions in a hyperendemic region in Kenya.

Methods. The Ndhiwa HIV impact assessment was a population-based survey among persons aged 15–59 years living in South Nyanza, Kenya in 2012. Respondents were tested for HIV using rapid tests per national guidelines and provided blood for centralized testing. Specimens from HIV+ persons were tested for VL and recent infection. Recent infection was defined as normalized optical density value <1.5 on the Limiting Antigen Enzyme Immunoassay, VL >1,000 copies/mL, and no report of HIV treatment. The annual HIV transmission rate per 100 persons living with HIV (PLHIV) was calculated as HIV incidence divided by HIV prevalence, multiplied by 100. Annualized HIV incidence was estimated, assuming a mean duration of recent infection of 141 days (confidence interval [CI] 123–160). Multivariate analysis identified independent factors associated with recent infection. Estimates were adjusted for survey design.

Results. Of 6,076 persons tested, 1,457 were HIV+, and 28 were recently infected. HIV incidence and prevalence were 1.7% (CI 1.5–2.0) and 24.1% (CI 22.6–25.5), respectively. Per 100 PLHIV, the annual HIV transmission rate was 7.0 and varied by sex (4.6 male vs. 8.3 female), age (5.2 aged 30+ vs. 10.4 aged <30), and residence (1.4 Kobama vs. 12.0 Riana vs. 12.1 Pala divisions). After controlling for age, sex, and residence, recently infected persons were significantly more likely to reside in Pala division (AOR 8.3, CI 1.1–62.9) than HIV-uninfected persons.

Conclusion. Approximately 7 in 100 PLHIV transmitted to HIV-uninfected persons in South Nyanza in 2012, similar to national rates observed in the 2012 Kenya AIDS Indicator Survey. HIV transmission rates were higher in females than males, younger than older, and Riana and Pala than other divisions. Residence in Pala was a risk factor for recent infection. These findings could guide prioritization of interventions to interrupt HIV transmission in this hyperendemic setting.

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882. Recent HIV Risk Behavior and Partnership Type Predict PrEP Adherence in Men Who Have Sex with Men

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Background. Individuals engaging in higher risk behavior are often more adherent to PrEP but it is unclear if partnership type itself affects PrEP adherence. We examined the effect of recent HIV risk behaviors and partnership type on PrEP adherence in men who have sex with men (MSM) taking PrEP.

Methods. CCTG 595 is a 48-week PrEP demonstration study of 398 HIV− at-risk MSM. At baseline and week 48, HIV risk score was estimated as the probability of seroconversion over the next year based on number of condomless anal sex acts with HIV+/unknown partners in the last month and any STI diagnosed at study visit. HIV risk score was categorized as low (<0.12), moderate (0.12–0.59) and high (>0.59) risk based on population seroconversion probabilities. Partnership type was assigned as no/single HIV− partner, single HIV+ partner, or multiple partners of any serostatus in the past 3 months. PrEP adherence was estimated by intracellular tenofovir-diphosphate (TFV-DP) levels as a continuous variable at week 48. Statistical methods included McNemar's test, Wilcoxon rank-sum test, and linear regression model where appropriate.

Results. Of 313 MSM who completed week 48, there was no significant change in HIV risk category from baseline to week 48 (low: 44 to 42%; moderate: 27 to 24%; high: 28 to 34%; $P = 0.25$). There was a significant change in partnership type, with the proportion of those with no or single HIV− partnerships increasing (1 to 9%, $P < 0.001$). In univariate analysis, moderate and high-risk groups had higher TFV-DP levels than the low-risk group at week 48 ($P = 0.018$). Participants with no/single HIV− partner had significantly lower TFV-DP levels than those with one HIV+ partner or multiple partners ($P = 0.007$). In a multivariable linear regression model, only low-risk partnerships remained significant where no/single HIV− partnerships were associated with lower TFV-DP levels (mean difference = −344 fmol/punch [−617, −71], $P = 0.014$).

Conclusion. Although there was a shift in partnership type towards lower risk partnerships, objective HIV risk behavior remained stable over time. Individuals with higher HIV risk behaviors and risk partnerships had higher TFV-DP levels suggesting maintained strong motivation for PrEP adherence. Thus, recent sexual risk behavior and partnership type may be important predictors of PrEP adherence in MSM.

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883. HIV Antiretroviral Resistance and Transmission in Mother–Infant Pairs Enrolled in a Large Perinatal Study

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Background. Detection of antiretroviral (ARV) resistance in HIV-infected individuals is not uncommon and may be particularly problematic in HIV-infected pregnant women as it can lead to infant infection with resistant strains. To better evaluate the effect of drug resistance mutations (DRMs) on HIV mother-to-child transmission (MTCT), we determined the prevalence of DRMs in a subset of mother–infant pairs enrolled in a multi-center trial of infant prophylaxis among women not receiving ARVs during the current pregnancy.

Methods. A case–control design of 1:4 (1 transmitter to 4 nontransmitters) was utilized to evaluate ARV resistance as a predictor of HIV MTCT in specimens obtained from mother–infant pairs. Secondary objectives included identification of potential risk factors associated with the presence of DRMs. Viroseq HIV-1 Genotyping System was performed on mother–infant specimens to assess for mutations that might result in a substantial reduction in drug susceptibility and clinical outcome, as determined by the Stanford HIV Drug Resistance Database.

Results. One hundred and forty infants were infected. Of these, 123 HIV infected mother–infant pairs and 483 of 560 women who did not transmit HIV had amplifiable HIV nucleic acid enabling ARV resistance testing. A wide variety of DRMs were detected (Figure 1). Sixty (10%) of 606 women had clinically relevant DRMs; 12 (2%) had DRMs against more than 1 ARV class. Among 123 HIV– infected infants, 13 (11%) had clinically relevant DRMs with 3 (2%) harboring DRMs against more than 1 ARV class. Of 13 infants with DRMs, 10 (77%) were infected *in utero*. In univariate and multivariate analyses, DRMs in mothers were not associated with increased risk of HIV MTCT (AOR 0.79, 95% CI 0.38–1.5). Log HIV viral load was the only predictor of MTCT (OR 1.4, 95% CI 1.2–1.6). The presence of DRMs in mothers who transmitted was strongly associated with the presence of DRMs in infants ($P < 0.001$).

Conclusion. In infected pregnant women without ARV exposure during their current gestation, the presence of pre-existing DRMs with a wide diversity was noted. DRMs do not increase the risk of HIV MTCT. However, if women with DRMs are not virologically suppressed they are likely to transmit resistant mutations even without selective ARV pressure, thus complicating treatment options.

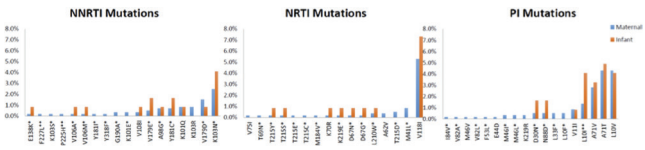

Figure 1: Percent mutations found in all mothers tested (Blue, n=606), and infants (Red, n=123)

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884. Missed Opportunities to Initiate Pre-exposure Prophylaxis in South Carolina—2013–2016

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Background. PrEP, regular use of antiretroviral medications by HIV-negative individuals to prevent new HIV infections, has not been widely adopted by some young, high-risk populations. This study investigated the characteristics and estimated percentage of newly diagnosed HIV-infected individuals in South Carolina (SC) who had visited a health care facility (HCF) while HIV-negative and missed opportunities for initiating PrEP.

Methods. We used a unique person-level identifier to link case reports from the SC enhanced HIV/AIDS Reporting System and records from a statewide all payer HCF database. The HCF data include inpatient (IP), outpatient (OP), and emergency department (ED) visits to SC facilities. Because the Food and Drug Administration approved PrEP in 2012, we analyzed data for individuals diagnosed with HIV during January 2013–September 2016 with initial CD4 count ≥500 cells (recent infection) and HC visits during 2011 through the date of diagnosis. We used the two-tailed chi-square statistics with a significant threshold of $P < 0.05$ in SAS to investigate the association between the absence of a PrEP prescription and patient factors including demographics, behavioral risk, visit setting (IP, OP or ED), frequency of previous visits, and residence at diagnosis.

Results. A total of 785 patients were diagnosed with recent HIV infections (initial CD4 ≥500 cell) during January 2013–September 2016. Of these, 504 (64.2%) visited an SC HCF at least once before being diagnosed, 72.4% were males, 52.4% aged <30 years, 54% were men who have sex with men (MSM) or injection drug users (IDU) and 70.2% resided in urban areas. Mean number of HCF visits before HIV diagnosis was 6.6; 84.3% had ED visits; 5.9% had IP visits; and 7.0% had OP visits. Persons of female sex, Black race, younger age and urban residence were more likely to access HCF visit before HIV diagnosis ($P < 0.05$).

Conclusion. We now know the characteristics and percentage (64.2%) of persons with recent HIV infections captured in two large state-wide databases in SC who missed opportunities to be screened and initiated PrEP during visits to HCFs before HIV diagnosis during 2013–2016.

Disclosures. **All authors:** No reported disclosures.

885. Comparison of Respiratory Pathogen Detections from Routine Hospital Testing and Expanded Systematic Testing from the Minnesota Severe Acute Respiratory Illness Surveillance Program, 2015–2016

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Background. Hospital testing for respiratory pathogens is nonsystematic, leading to potential missed detection of clinically relevant pathogens. The Minnesota Severe Acute Respiratory Illness (SARI) surveillance program monitors hospitalizations due to acute respiratory illness and conducts systematic testing for several respiratory pathogens. We assessed viruses detected by the hospital and additional detections identified by expanded testing.

Methods. Residual upper respiratory specimens collected from patients hospitalized for suspected respiratory illness for routine diagnostic testing at three hospitals, including one children's hospital, were submitted to the Minnesota Department of Health (MDH). Specimens were tested for 18 respiratory viruses by RT-PCR. Clinical and hospital test data were collected through medical record review.

Results. From September 2015 to August 2016, 2,351 hospitalized SARI patients were reported, with the following age distribution: 57% <5 years, 13% 5–17 years, 30% ≥18 years. Among all SARI patients, 97% (2,273) had hospital-based, clinician-directed testing for viral pathogens. Viruses were detected among 47% (1,077) of tested patients, among which testing methods included PCR (85%), rapid antigen (13%), and culture (2%); 74% were tested on the day of admission. Most common viruses detected by clinical testing included respiratory syncytial virus (41%), rhinovirus/enterovirus (31%), and influenza (15%) (Figure 1). Systematic RT–PCR testing at MDH identified 1,600 (68%) patients positive for ≥1 respiratory virus, identifying previously unknown detections among 35% (820) of SARI patients (Figure 2). Of 1,272 patients with no virus identified at the hospital, 46% (586) had a viral detection at MDH. Patients aged <18 years were significantly more likely to have an additional pathogen detected by MDH testing than those aged ≥18 years ($P < 0.01$), including rhinovirus/enterovirus, adenovirus, human metapneumovirus, and coronaviruses.

Conclusion. Systematic, expanded testing at MDH identified a higher proportion of respiratory pathogens among SARI patients compared with clinical laboratory testing. Additional testing for clinically relevant respiratory pathogens may inform medical decision-making.

Figure 1.