Methods. GC cases identified from VA data sources from 1/1/2010-12/15/2019 by either molecular laboratory testing or GC culture with sensitivity testing. Patients were reviewed for positive results, whether culture testing was performed after 2 positive molecular GC results in < 90 days, and sensitivity patterns.

Results. 10,642 of 644,968 (2%) GC molecular results were positive with annual number of positive cases (1,365 to 3,225), number of tests performed (97,636 to 164,085) and percent positive for GC (1.4% to 2%) increasing over the time period studied. 2,358/10,642 (22%) of positive molecular test results had repeat testing < 3mo with 351 (15%) positive on repeat testing which is concerning for possible resistance. 2,624 GC cultures were performed with 2,179 (83%) positive. 1,480/2,179 (68%) positive GC culture tests had some sensitivity testing performed. Culture testing remained stable with 287 in 2010 to 289 in 2019 with percent positive ranging from 78-89%. Of the 351 patients with repeat positive GC molecular testing done < 3mo from their positive molecular test, only 18 (5%) had GC culture testing performed proximal to the second positive test. Among all cultured isolates, resistance to Ceftriaxone was noted in 1 sample in 2017 in Missouri (also intermediate resistance to Tetracycline) and 1 in 2019 in New Jersey (also resistant to Penicillin, Tetracycline, and Ciprofloxacin).

Conclusion. In VA, GC infections have increased from 2010 to 2019 and GC culture testing has remained stable despite increasing molecular testing. Only 2 samples were identified with Ceftriaxone resistance. However, the low percentage of GC culture testing after persistent positive molecular testing in VA could mask treatment failures and possible resistance. Culture testing with sensitivity testing should be increased in VA in cases where patients may have resistance to initial treatments (i.e., – repeat positive testing less than 3 months after a positive test).

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1535. Impact of Defunding Family Planning Health Centers on Gonorrhea and Chlamydia Cases in Iowa: A Spatiotemporal Analysis

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Session: P-69. Sexually Transmitted Infections

Background. Fifteen states have defunded family planning health centers (FPHCs), causing thousands to be left without health services. This has accelerated in the COVID-19 era. FPHCs provide low-income individuals in rural areas with essential primary care services, including sexually transmitted infection prevention, testing, and treatment. The purpose of this analysis is to use spatiotemporal methods to examine the impact of FPHC closures in Iowa on the reported number of gonorrhea and chlamydia cases at the county level.

Methods. This analysis investigates the association between FPHC closures and changes in the number of gonorrhea and chlamydia cases between 2016 and 2018. Iowa implemented defunding policies for family planning clinics, resulting in four FPHC closures in June 2017. 2016 pre-closure STI incidence rates were compared to 2018 post-closure rates. Gonorrhea and chlamydia rates in the four Iowa counties with clinic closures were compared to the 95 Iowa counties without closures. T tests were used to compare changes in reported gonorrhea and chlamydia rates in the two settings. Linear regression modeling was used to determine the relationship between clinic closures and changes in gonorrhea and chlamydia cases.

Results. The gonorrhea burden in Iowa increased from 83 cases per 100,000 people in 2016 to 153.8 cases per 100,000 people in 2018. The four counties with clinic closures experienced a significantly larger increase (absolute 217 cases per 100,000 population) in their gonorrhea rate compared to counties without FPHC closures (absolute 121 cases per 100,000 population). There was also a significant relationship between clinic closures and increasing gonorrhea rates (p = 0.0015). Over the three-year period, there was no change in chlamydia rates (p = 0.1182). However, there was a trend towards counties with more FPHC closures having a higher number of chlamydia cases (p = 0.057).

Conclusion. Despite the fact that many STI diagnoses are made and reported by FPHCs, our data suggest that clinic closures may have contributed to an increase in gonorrhea and chlamydia cases. This is consistent with delayed diagnoses and missed opportunities for providing essential STI services to vulnerable and under-served rural residents. Legislative action is urgently needed to curtail this trend.

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1536. Impact of Type of Provider on Appropriateness of Treatment for Gonorrhea and Chlamydia in Outpatient Clinics

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Session: P-69. Sexually Transmitted Infections

Background. Patients with sexually transmitted infections (STIs) receive care in a variety of outpatient settings with medical providers of different levels of training and expertise, especially regarding STIs. We aimed to determine the impact of type of provider on the appropriateness of treatment for chlamydia and gonorrhea in a large integrated health system.

Methods. We conducted a retrospective cohort study of adult patients diagnosed with chlamydia and/or gonorrhea at any outpatient clinic within an integrated health system in Des Moines, Iowa. Nucleic-acid amplification tests were used for diagnosis, and all samples were processed at the same laboratory. Adequate treatment was defined

as prescription for appropriate antibiotic, dose and duration within 7 days of the positive test. Logistic regression models with robust standard errors and adjusting for clustering by clinic were built.

Results. We identified 481 unique patients and a total of 515 unique encounters. Considering unique patients only, the median patient age was 23 years (IQR 20-26), 466/481 (96.9%) were female (96.9%), 15/481 (3.1%) were male, and 79/481 (16.4%) were pregnant. *Table 1* shows the patient demographic and provider characteristics by appropriateness of treatment for individual visits.

A total of 53 patients had inappropriate treatment, some with multiple errors which are described in *Table 2*.

Provider type, age, type of infection, and pregnancy status were significantly associated with appropriateness of treatment. After adjusting for type of infection, pregnancy status and clustering by clinic, compared to physicians, certified nurse midwives (CNMs) had 33% lower odds of prescribing appropriate treatment (95% CI 0.49-0.91; *p*-value = 0.010), with no difference in appropriateness of prescribing by mid-level providers (OR 1.61, 95% CI 0.82-3.17; *p*-value = 0.167). Pregnancy was independently associated with lower odds of appropriate treatment (OR 0.35, 95% CI 0.24-0.52; *p*-value < 0.001), as was infection with gonorrhea (OR 0.29, 95% CI 0.12-0.68; *p*-value = 0.004).

Table 1. Demographic characteristics of adult patients diagnosed with chlamydia and/or gonorrhea in outpatient clinics by appropriateness of treatment. Des Moines, Iowa, January 1, 2019 to December 31, 2019

Variable	All visits n = 515	Appropriate treatment n = 462 (%)	Inappropriate treatment n = 53 (%)	*p*-value
Age, median (IQR)	22 (20-26)	22 (20-26)	24 (20-30)	0.025
Female Sex	500 (97.1)	449 (89.8)	10 (10.2)	0.694
Pregnant status	88 (17.1)	70 (79.6)	18 (20.4)	0.001
Type of infection				0.001
Chlamydia	416 (80.8)	382 (91.8)	34 (8.2)	
Gonorrhea	99 (19.2)	80 (80.8)	19 (19.2)	
Co-infection	37 (7.2)	33 (89.2)	4 (10.8)	0.914
Type of clinic				0.316
Urgent Care Clinic	165 (32.0)	152 (92.1)	13 (7.9)	
Family Medicine	135 (26.2)	122 (90.4)	13 (9.6)	
OB-GYN	215 (41.8)	188 (87.4)	27 (12.6)	
Type of provider				0.011
Physician	181 (35.2)	157 (86.7)	24 (13.3)	
Mid-level provider	308 (59.8)	285 (92.5)	23 (7.5)	
CNM	26 (5)	20 (76.9)	6 (11.3)	

Table 2. Type of therapeutic errors encountered among patients diagnosed with chlamydia or gonorrhea

Total number of patients with errors	53
Antibiotic prescribed more than 7 days from diagnosis	23/53 (43.4%)
Treatment never prescribed	21/53 (39.6%)
Inappropriate antibiotic prescribed	13/ 53 (24.5%)
Inappropriate antibiotic dose – over-dosing	2/53 (3.8%)
Inappropriate antibiotic dose – under-dosing	1/53 (1.9%)

Note: Adds to more than 100% since some patients had more than 1 error

Conclusion. CNMs had lower odds of prescribing appropriate treatment for STIs. Efforts aimed at improving prescribing by healthcare providers should actively engage with this group.

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1537. Incidence, Reinfection, and Discrepancy Between Site Positivity and Reported Sexual Practice of Sexually Transmitted Infections in HIV-Positive Adolescents and Young Adults in Atlanta, GA

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Session: P-69. Sexually Transmitted Infections

Background. HIV-positive adolescents and young adults (AYAs) are disproportionately affected by sexually transmitted infections (STIs). Despite national recommendations, STI screening remains low. Incomplete screening in addition to inconsistent reported sexual practices may lead to missed infections. This study aimed to determine the incidence and reinfection rates of co-STIs in HIV-positive AYAs and the discrepancy between site positivity and self-reported sexual history in this group.

Methods. Retrospective chart review was conducted for all patients aged 13-24 at Grady Ponce and Family Youth Clinic in Atlanta, GA from 2009-2018. Data were collected on demographics and STI events. STIs included gonorrhea (GC), chlamydia (CT), human papillomavirus (HPV), syphilis, trichomonas, herpes simplex virus (HSV), lymphogranuloma venereum (LGV), hepatitis C (HCV), bacterial vaginosis (BV), and chancroid. First STI incidence and incidence of reinfections were calculated by dividing new cases over corresponding person follow-up time.

Results. 621 sexually active HIV-positive AYAs were included. The mean age at first observation was 18.7 (±3.29) years. 72.1% of patients were male, 92.3% were Black, and 79.7% were horizontally infected. 83.7% of patients had at least one STI during the study period. The overall first STI incidence rate was 35.8 per 100 person-years with HPV, GC, CT, and syphilis as the most common STIs reported (Table 1). The overall

recurrent incidence rate was 72.1 per 100 person-years with GC, CT, and syphilis as the most common recurrent infections (Table 1). Of all GC and CT infections, the majority were rectal (48.7% and 49.9%, respectively) (Table 2). Only 65.8% of patients with rectal GC and 68.5% with rectal CT infections reported recent receptive anal sex (Table 3).

Table 1: First and recurrent incidence rates of any STI and individual STIs per 100 person-years

Type	N at Risk	Confirmed First STI[1] (% at risk)	First STI Incidence (95% CI) per 100 Person-Years	Recurrent STI Incidence (95% CI) per 100 Person-Years
Any STI	621	520 (83.7%)	35.75 (32.74, 38.96)	72.10 (68.34, 76.01)
Individual STIs				
Gonorrhea	621	298 (48.0%)	10.77 (9.59, 12.07)	34.75 (31.24, 38.55)
Chlamydia	621	282 (45.4%)	10.23 (9.07, 11.49)	23.05 (20.22, 26.17)
Trichomonas	621	44 (7.1%)	1.22 (0.88, 1.63)	15.49 (10.45, 22.11)
HPV	621	341 (54.9%)	13.98 (12.54, 15.55)	
BV	621	65 (10.5%)	1.89 (1.46, 2.41)	14.72 (11.09, 19.16)
Syphilis	621	223 (35.9%)	7.77 (6.79, 8.86)	19.43 (16.48, 22.75)
LGV	621	77 (12.4%)	2.18 (1.72, 2.72)	10.10 (6.71, 14.60)
Chancroid	621	1 (0.2%)	0.03 (0.00, 0.15)	
Herpes	621	73 (11.8%)	2.05 (1.61, 2.58)	0 (NA)
Hepatitis C	621	11 (1.8%)	0.29 (0.15, 0.52)	

[1]Including patients with historical STI events

Abbreviations: STI, sexually transmitted infection; HPV, human papilloma virus; BV, bacterial vaginosis; LGV, lymphogranuloma venereum

Table 2: STIs by site, all infections

Characteristic	Pharyngeal	Rectal	Urogenital
Gonorrhea, N=655			
	191 (29.2%)	319 (48.7%)	257 (39.2%)
Chlamydia, N=521			
	32 (6.1%)	260 (49.9%)	246 (47.2%)

Characteristic	Gonorrhea N=655	Chlamydia N=521
Pharyngeal Only	109 (16.6%)	18 (3.5%)
Rectal Only	219 (33.4%)	234 (44.9%)
Urogenital Only	204 (31.2%)	230 (44.2%)
Pharyngeal + Rectal	58 (8.9%)	12 (2.3%)
Pharyngeal + Urogenital	11 (1.7%)	2 (0.4%)
Rectal + Urogenital	29 (4.4%)	14 (2.7%)
Pharyngeal + Rectal + Urogenital	13 (2%)	0 (0%)
No Indication	12 (1.8%)	11 (2.1%)

Table 3: Reported exposure history vs. STI site positivity

Site Exposure	Gonorrhea	Chlamydia
Pharyngeal		
Reported Oral Sex		
Yes	107 (56%)	16 (50%)
No	37 (19.4%)	5 (15.6%)
Unknown	47 (24.6%)	11 (34.4%)
Rectal		
Reported Anal Receptive Sex		
Yes	210 (65.8%)	178 (68.5%)
No	43 (13.5%)	36 (13.9%)
Unknown	66 (20.7%)	46 (17.7%)
Urogenital		
Reported Anal Insertive[1] Sex		
Yes	116 (54.5%)	60 (44.1%)
No	45 (21.1%)	38 (27.9%)
Unknown	52 (24.4%)	38 (27.9%)
Reported Vaginal[2] Sex		
Yes	24 (54.5%)	60 (54.5%)
No	13 (29.6%)	21 (19.1%)
Unknown	7 15.9%)	29 (26.4%)

[1]Males and transgender women only; [2]Women and transgender men only

Conclusion: Our study demonstrates disproportionately high incidence and re-infection rates of co-STIs in HIV-positive AYAs. Furthermore, many patients did not report exposure at their site of infection. If screening is done based off reported exposure history alone, many infections may be missed. Our data support the urgent need for increased STI screening in this population, including routine extragenital testing for GC and CT even without reported exposure at these sites.

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1538. Pilot Study of Self-collected Pharyngeal Testing for Chlamydia and Gonorrhea in the Setting of COVID19 Restrictions

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Session: P-69. Sexually Transmitted Infections

Background. Given that many youth and young adults utilize multiple orifices during sexual activity, testing for STIs from multiple anatomical sites can increase rates of diagnosis. However, during the COVID pandemic, obtaining oral swabs by clinical staff was deemed an unacceptable COVID transmission risk and was discontinued in our clinic. To circumvent this obstacle to diagnosis, clinic staff developed a work-around of obtaining patient collected pharyngeal swabs for STI testing. This abstract reviews the results of this pilot intervention.

Methods. Patients presenting to an urban youth family planning/STI clinic who desired STI testing and ever engaged in oral sex were offered pharyngeal testing for chlamydia (CT) and gonorrhea (GC). Patients were instructed on how to obtain an oral sample, and subsequently sent outside of the clinic to obtain their individual sample. Chart review was conducted by clinic staff of a two month period during which this protocol was in place, and the following variables were collected: gender, sexual orientation, race/ethnicity, and STD testing results by anatomic site. Simple descriptive statistical analysis were used.

Results. 146 patients received a GC/CT test from > 1 anatomical site, with 34 patients having > 1 positive result. All pharyngeal samples were self-collected. Four patients were positive for GC/CT from throat samples only (12% of positive tests). All were biologically female, including one transgender FTM. Sexual orientation was split evenly between bisexual and heterosexual. Reported race/ethnicity included two African-American, one white, and one "Filipino". For comparison, of the overall sub-sample of patients with positive GC/CT results, patients identified as 53% female, 44% male, and 3% FTM; 74% "straight", 15% bisexual, 9% "gay", and 3% did not disclose; 29% white, 50% African-American, 21% unknown as other; and 11% Hispanic. Twelve patients were positive for GC/CT from the throat and either rectum and/or urine/vagina/endocervix (35% of positive tests).

Conclusion. Our experience demonstrates that obstacles created by the COVID crisis can be circumvented with creative strategies. We were able to pick up 12% and 35% of total infections by self-collected pharyngeal swabs in throat only and throat plus other sites, respectively.

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1539. Pilot Study of Sexual Networks and Sexually Transmitted Infection Risk in a Military Population

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Session: P-69. Sexually Transmitted Infections

Background. In the U.S., military members experience a higher incidence of sexually transmitted infections (STIs) than the age and gender-adjusted general population, placing a costly and preventable burden on the military health system (MHS). These increased rates are likely due to differences in both individual and network level risk factors. To assess the feasibility of a survey examining the impact of sexual network risk factors on risk, a survey assessing STI individual and network level risk factors to include a 90-day sexual partnership inventory was piloted at a single military medical center.

Methods. A sample of 50 military beneficiaries completed a computer-assisted self-interview (CASI) cross-sectional egocentric survey administered on a tablet. Demographical and clinical data were captured from the electronic medical record. Non-parametric statistics were used to analyze the data.

Results. 45 of 50 subjects (90%) completed the survey. 40 (88%) subjects completed at least one partnership survey and reported 1 to 20 partners per subject. Respondents were mostly active duty (91.8%) and had been active duty for less than five years (68.2%). Common risk behaviors were explored and included meeting partners online (68.75%) and having partners who use drugs (48.94%) or are heavy drinkers (44.68%). Partnership inventories suggest sexual concurrency and disassortative mixing on age, racial and ethnic groups, and military service.

Conclusion. While previous studies demonstrate that service members will complete sexual risk behavior surveys, this pilot egocentric partnership study demonstrates their willingness to provide detailed information on risk behaviors as well as detailed information on sexual partnerships. While we report on statistically significant associations, these may be subject to bias due to the underlying characteristics of the source population. As a result, these data will not likely be reflected in the full study population. 80% of pilot subjects completed the questionnaire and submitted at least one partnership survey, indicating the possibility of gathering more diverse individual sexual risk questionnaires from active duty service members. Based on these data, a multisite study of sexual networks was implemented in the MHS and is currently under analysis.

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1540. Prevalence and Risk Factors associated with HIV and Syphilis Co-infection in the African Cohort Study

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