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The Cost of Operating Sexual Health Clinics during the Ending the (HIV) Epidemic Initiative in New York City

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Abstract

Background: As part of New York State's Ending the Epidemic (EtE) initiative, Sexual Health Clinics (SHCs) in New York City (NYC) invested in clinic enhancements and expanded their HIV-related services to increase access to HIV prevention interventions and treatment. The objective of this study was to estimate and describe the change in SHC operating costs related to clinic enhancements and expanded patient services implemented as part of the EtE initiative.

Methods: A comprehensive micro-costing approach was used to collect retrospective cost information from SHCs, broken down by category and programmatic activity. Cost information was collected from eight clinics across NYC during two 6-month time periods before (2015) and during (2018 – 2019) EtE.

Results: Eight SHCs reported comprehensive cost data. Costs increased by $800,000 on average per clinic during the 6-month EtE period. The cost per visit at a SHC increased by $120 on average to $381 (ranging from $302–$464) during the EtE period. Personnel costs accounted for 69.9% of EtE costs and HIV-related medications accounted for 8.9% of costs. Employment of social workers and patient navigators increased costs by approximately $150,000 on average per clinic. Post-exposure prophylaxis was the costliest medication with average expenditures of $103,800 per clinic.

Conclusions: This study demonstrates the key drivers of cost increases when offering enhanced HIV services in SHCs. Documenting the changes in resources necessary to implement these services and their costs can inform other health departments on the viability of offering enhanced HIV services within their own clinics.

Short Summary:

When sexual health clinics in NYC began offering enhanced HIV services, increases in overall and per-visit costs were mostly attributable to additional personnel and dispenses of HIV-related medications.

Disclaimer: The findings and conclusions in this article are those of the authors and do not necessarily represent the official position of the United States Centers for Disease Control and Prevention (CDC)

Keywords

micro-costing; HIV; STD clinics; ending the HIV epidemic

Introduction

In 2014, New York State announced a plan for Ending the HIV Epidemic (EtE) in the state. The three-point plan included: 1) Identifying persons with HIV who remain undiagnosed; 2) Linking and retaining persons diagnosed with HIV to/in health care to maximize virus suppression so they remain healthy and prevent further transmission; 3) Facilitating access to Pre-Exposure Prophylaxis (PrEP) to prevent those at high risk from acquiring HIV. A blueprint issued in 2015 described specific goals of the initiative in New York: to reduce the number of new HIV infections from an estimated 3,000 infections in 2015 to 750 infections by the end of 2020 and achieve the first ever decrease in HIV prevalence in New York State.[1] Implementation of the statewide blueprint within New York City (NYC) was accompanied by substantial state and local investment, as the majority of new HIV cases in New York State occur in NYC (74% of statewide HIV diagnoses in 2019).[2] Local plans to achieve the EtE goals hinged upon improving sexual health equity and included increasing access to HIV prevention services such as HIV testing and early (acute) diagnoses, assuring timely treatment and HIV viral suppression, increasing access to HIV post-exposure prophylaxis (PEP) and, importantly, augmenting awareness and access to HIV PrEP.[3]

A major focus for NYC's EtE efforts was on its eight pre-existing NYC Department of Health and Mental Hygiene (DOHMH) Sexually Transmitted Disease (STD) clinics. These clinics are located throughout the city in areas that have been disproportionately affected by HIV. They operated 6 days per week and provided care without parental notification, regard for immigration status, or patient ability to pay. These clinics have existed for decades, 'advertised' largely by word-of-mouth. The clinics have accounted for 20% of NYC's new HIV diagnoses, and account for substantial proportions of syphilis, gonorrhea, and chlamydia diagnoses – especially those diagnosed among NYC's Black and Hispanic/Latino communities, men who have sex with men (MSM), and low-income or uninsured populations. Integrating HIV services alongside diagnosis and treatment of bacterial and other sexually transmitted infections (STIs) can lead to increases in efficiency and public health impact because these infections share risk factors, STI/HIV co-infection is common, and bacterial STIs can increase risk of acquiring HIV.[4, 5] The DOHMH STD clinics provided a pre-existing infrastructure for amplifying state and local efforts to end the HIV epidemic.

In support of the EtE initiative, DOHMH redesigned the scope of its STD service delivery to explicitly include expanded services for HIV, other STIs, and reproductive health. Eligibility for asymptomatic express/screening visits, which do not require seeing a clinician, was expanded to all patients requesting gonorrhea, chlamydia, syphilis, and/or HIV testing, and extragenital gonorrhea/chlamydia testing was routinely offered to MSM. Non-HIV medical services were added including HPV vaccination, contraception, and herpes, HPV, and rapid

trichomonas testing. HIV services were also expanded in several important ways. HIV-status unknown patients were screened using the most rapid and sensitive methods available (4th generation rapid testing). For HIV-uninfected patients at risk, full 28-day courses of PEP (only 3-day starter packs were offered pre-EtE) and 30-day supplies of PrEP were available in clinic for same-day initiation. PrEP initiates were actively referred and linked to community providers for continuation of therapy. Clinics hired specialized staff, including triage nurses, clinicians with HIV treatment and prevention experience, social workers, and patient navigators, to deliver PrEP services and assess patients for PrEP candidacy. Patients with HIV were immediately offered antiretroviral therapy (ART) if newly diagnosed, and social work and navigation services were available to connect patients to HIV care at other local facilities. The shift in paradigm to a focus on sexual health and wellbeing was captured in the renaming of the clinics, from sexually transmitted disease clinics to the NYC DOHMH sexual health clinics (SHCs).

The objective of this study was to estimate and describe the change in SHC operating costs related to clinic enhancements and expanded patient services implemented as part of the EtE initiative, in a way that can help guide other jurisdictions planning to implement similar changes. Specifically, for each period we estimated overall cost, cost per visit, the major drivers of cost, and the programmatic activities associated with each cost component. This study can inform other health departments on the potential costs of offering enhanced HIV/STI services within their own clinics by documenting the changes in resources necessary to implement these services. This may be particularly important as health departments nationwide adapt their HIV/STI services to support federal efforts to end the U.S. HIV epidemic while addressing disruptions caused by the COVID-19 pandemic.[6]

Methods

We conducted a cost analysis from a programmatic perspective and collected retrospective data on the total costs incurred by SHCs in NYC during specific periods. We collected data on eight clinics (labeled A through H) during two separate 6-month time periods: one pre-EtE and one during EtE. The pre-EtE period was from June through November 2015, prior to EtE enhancements at any clinic. Because the timing of EtE rollout varied across clinics, we used varying time frames for the EtE period (clinics A-F: May-October 2018; clinics G-H: September 2018-February 2019). Six-month periods were chosen due to the burden of data collection and to reduce the variability of time frames across clinics as the EtE initiatives were rolled out on different schedules. Estimates of personnel salaries, buildings, and utilities, which make up the vast majority of costs, do not exhibit significant within-year variation.

Many SHC capacity improvements, including renovations and infrastructure improvements, hiring new personnel, expanded STI screening, and extended clinic hours, were concurrent with the integration of enhanced HIV services. This presented multiple analytical challenges that guided our analytical decisions. First, the number of patient visits at each clinic changed between the two periods studied. Since total costs generally increase with the number of patients served, we also present data on cost per visit to make data across clinics and time periods more comparable. Next, one clinic did not have pre-EtE period data available

because it was closed for renovation, and earlier 6-month periods presented the same issue due to other closings. When comparing average metrics across time periods, we restricted the calculation to the subset of clinics that had the data available in both periods. In addition, some non-HIV services also changed between periods. Because the national EtE initiative focuses on HIV prevention and treatment, we highlighted HIV-specific costs where possible.

A variety of complementary sources were used for data on costs and outcomes (e.g., diagnoses, services utilized), including inspection of program records and registers, interviews with clinic and project staff, and review of project financial accounts. For most cost components, we implemented a micro-costing methodology where unit costs were multiplied by their quantities utilized to generate total costs. For example, hourly salaries for all personnel were multiplied by the total hours they worked during the study period to calculate total personnel costs. Personnel costs accounted for all staff members involved in operation of the SHC clinical services, including full time equivalent staff as well as external contractors. Architectural blueprints for each clinic were used to estimate square footage, which was then used to estimate the utility usage of the space and the average cost of commercial office space rental in the borough where the clinic was located. Utility (e.g., water, electric, and gas) costs were calculated using estimates of average consumption per square foot and the price per unit of water or energy.[7–9] The costs of cellphone use were provided by NYC Department of Citywide Administrative Services based on average utilization by clinic staff.

Capital costs (i.e., equipment) were included as investments and were annualized over their useful life at a 3% discount rate. The opportunity costs of existing infrastructure were estimated as the equivalent rental cost.[10] All costs were converted to 2019 U.S. dollars using the personal health care index.[11] An Excel-based cost collection tool was used to collect the cost information and data were cleaned and analyzed in Stata version 14 (College Station, TX).

We collected information for six cost categories (personnel, laboratory, medication, immunization, buildings and utilities, and supplies) and across eight programmatic activities (training, supervisory, clinical operations, in-person counseling & referrals, follow-ups, field & case investigations, general administration, and other activities). Costs were allocated to programmatic activities and cost categories based on the proportion of the resources utilized for each category. The percent of personnel time allocated to each activity and unit costs for medications and supplies were directly elicited using a cost collection tool. The activity breakdowns for office supplies, travel costs, buildings, and utilities were assumed to match the activities of the staff member using them.

Costs were allocated to visit types based on the number of visits, personnel utilization, and services rendered during each visit type. Clinician visits included an evaluation by a nurse practitioner or medical doctor. If a patient had received clinician services at a SHC in the prior 30 days, their visit was classified as a follow-up clinician visit, else the visit was classified as an initial clinician visit. PEP, PrEP, or ART medication visits were visits in which those medications were dispensed; visits at which a patient received PrEP navigation without medication dispensing were classified as “PrEP navigation-only”.

Costs per visit were calculated by dividing cost components by the number of visits. Averages, proportions, and percent changes omit clinic H because it did not have pre-EtE data. Average cost per visit across clinics A-G was calculated as the total combined costs across clinics A-G divided by the total number of visits across clinics A-G. A scatterplot and linear trendline were generated to show the relationship between cost per visit and number of visits.

Results

Table 1 presents the estimated average costs per clinic over 6-month periods before and during the EtE initiative. Clinic H underwent renovations during the pre-EtE period and therefore lacked pre-EtE data and was excluded from comparisons. The average cost per clinic during the 6-month EtE period was just under $2 million and ranged from $1.5 to $3.4 million across the clinics (Table 1, Appendix Table 1). Total costs were 67.4% higher during the EtE period, an increase of $800,000 on average per clinic compared with the pre-EtE period. The clinic with the highest overall cost during the EtE period, clinic H, also accommodated the largest number of patient visits (Appendix Table 1). Number of visits per clinic during the EtE period ranged from 3,182 (clinic G) to 11,307 (clinic H) (Table 1, Appendix Table 1). On average, the number of clinician follow-up visits increased 62.2% and the number of express visits increased 34.3% from the pre-EtE to the EtE period (Table 2).

Costs on a per visit basis generally decreased with number of visits (Figure 1, Appendix Table 1). The EtE trendline in Figure 1 suggests that the cost per visit decreased by $20 with each increase of 1,000 visits. Across the clinics, cost per visit during the EtE period ranged from $302 (clinic H) to $464 (clinic G). Average per visit costs across clinics increased by $120 per visit between the pre-EtE and EtE periods (Table 1). The clinic with the largest increase in costs on a per visit basis was clinic D, which experienced a decrease in the number of visits to the clinic (Appendix Table 1). On the other hand, clinic G experienced a decrease in costs per visit during the EtE period due to a large increase (85.6%) in number of visits, while costs per visit rose for all other clinics. Average costs per visit for initial clinician visits were almost twice as high as for express visits during both periods. Costs for visits that involved dispensing HIV medications were substantially higher than for the average visit (Table 2).

Personnel was by far the most substantial cost category, accounting for 69.9% of total costs during the EtE period (Table 1). Table 3 shows the average increase in personnel costs per clinic, by position and programmatic activity. Cells in darker shades of grey indicate the categories that had the largest increases. The staff labels included for each personnel position are listed in Appendix Table 3. Clinician costs increased the most with an additional $172,900 on average per clinic, followed by an increase of $133,300 on average per clinic for administrative positions. The majority of the increased spending for these positions was dedicated to a single programmatic activity, clinical operations. Patient navigators (public health advisors), social workers, and public health assistants also accounted for substantial cost increases. Social workers and patient navigators, who primarily focused on activities related to counseling and referrals, accounted for an increase of approximately $150,000 on

average per clinic. On a per visit basis, personnel accounted for the largest absolute increase in cost ($77 per visit, Table 1).

The next largest cost categories during the EtE period were buildings and utilities (11.3%), medications (9.2%), and laboratory (6.7%). Ninety-six percent of the total costs spent on medications were for PEP, PrEP, or immediate ART initiation. On a per visit basis, medications had the largest proportional increase (from $2 to $35 per visit, Table 1). This increase was due to the expanded dispenses of medications for HIV prevention and treatment during the EtE period, including immediate ART initiation for patients testing positive for HIV, PrEP initiation, and 28-day PEP dispenses. Table 1 presents the average total cost for dispensing HIV medications during the 6-month EtE period. For clinics A-G, the average per clinic cost of medications for HIV prevention or treatment was $103,800 for PEP, $52,100 for PrEP, and $20,900 for ART initiation. In terms of medication cost per dispense (on average across clinics A-G), the PEP was the costliest at $1,281, followed by ART initiation at $1,271, and PrEP at $431. Total cost per clinic depended on the number of patients served; because relatively few ART initiations occurred (16 on average for sites A-G), the overall costs of PEP (81 dispenses on average) and PrEP (121 dispenses on average) were much higher.

With the increase in visit volume during the EtE period, especially in express visits, more STIs were diagnosed and treated. On average, in SHCs the number of chlamydia diagnoses increased by 39.3%, the number of gonorrhea diagnoses increased by 66.5%, and the number of syphilis diagnoses increased by 18.4% (Appendix Table 2). Even on a per-visit basis, chlamydia, gonorrhea, and syphilis diagnoses increased. Average HIV diagnoses per clinic decreased from 15 during the pre-EtE period to 13 during the EtE period. HIV diagnoses also decreased on a per-visit basis. However, the total number of HIV diagnoses across the clinics increased when clinic H, where 25 HIV infections were diagnosed during the 6-month EtE period, was included.

Discussion

For this study we collected and analyzed comprehensive cost data from eight SHCs in NYC, before and during the EtE initiative. Overall costs increased substantially between the two periods, largely driven by personnel costs and HIV-related medications. Express visits, and follow-up visits to treat cases diagnosed from initial clinician and express visits, made up a much larger proportion of total visits. Expanded availability of express visits, along with a DOHMH social marketing campaign and a trend towards higher patient volumes even before the EtE initiative, led to substantially more clinic visits during the EtE period. Increasing the overall number of visits to a clinic, and processing more patients through efficient express screening visits, generally decrease costs on a per-visit basis. However, other service changes during this period increased costs, leading to higher per-visit costs in most clinics.

Because the number of visits changed dramatically at some clinics, we highlighted changes in per visit costs. Some costs, including buildings, utilities, and personnel, decrease on a per-visit basis as the number of visits increase. When considering offering new services that require investments in additional staff, clinic operators can take into consideration the

expected number of patients utilizing those services to ensure enough patients will receive the services to justify the investment costs. Even as the number of visits increased, we found that the proportions of visits resulting in a diagnosis of chlamydia, gonorrhea, and syphilis also increased. This may reflect the general trend of rising STI cases in NYC and the rest of the United States.

Personnel and HIV-related medications accounted for the largest increases in costs. As visits increased in all but two clinics, additional administrative and clinical staff were needed to accommodate the volume increases. The new patient navigator and social worker hires substantially increased personnel costs and the clinics' capacity to offer patients behavioral counseling, PrEP education and navigation, and linkage to HIV care. As expected, HIV-related medications saw a very large increase in utilization and cost relative to their pre-EtE levels. We reported costs of HIV medications on a per-dispense basis to give an estimate of the costs of administering the drug during one additional visit. Note that some patients were dispensed ART or PrEP multiple times within a 6-month period, so costs on a per patient basis were slightly higher. We also found higher overall visit costs for patients that receive HIV medications, who may require more services than the average patient. The high cost of PEP per dispense means that even a modest increase in the number of patients requiring the service can increase clinic costs substantially. SHC staff attempt to link patients to PrEP after completion of a PEP regimen.[12] Transitioning patients to PrEP use may reduce those needing PEP or ART in the future, potentially saving costs from the SHC perspective. Although costs of PEP, PrEP, and ART initiation were covered by the clinics during the study period, SHCs have since transitioned to a prescription model that uses patient insurance and/or medication assistance programs to cover medications, which has substantially reduced clinic costs. Offering immediate HIV treatment at the time of diagnosis in SHCs allowed patients with HIV to initiate treatment earlier and achieve viral suppression more rapidly than they would have in the absence of EtE enhancements to the SHCs,[13] leading to improved individual outcomes and potentially preventing additional transmission.

Our cost estimates were specific to SHCs in NYC prior to the COVID-19 pandemic. NYC supported 72.7% of personnel costs (42.3% of which came from EtE-specific grants), and federal (21.2%) and state (6.1%) funding sources covered the rest. Costs to implement similar services in other locales depend on local wages, medication costs, and patient characteristics (e.g., number of patients, risk factors, positivity rates),[14] and therefore may be different than in NYC. The availability of pharmaceutical discount and rebate programs varies by jurisdiction and organization type. For clinics that have systems in place for third-party billing, expansion of HIV/STI services may have a different impact on operating costs than for clinics that do not bill insurers. Some EtE-related services were rolled out just before our EtE study period, so costs may be lowered as the services mature. Further, the COVID-19 pandemic has led to service disruptions and inflationary pressures that may make our estimates deviate from current circumstances.

Beyond the HIV services introduced during the EtE period, there were several other changes introduced from pre-EtE to EtE, making it difficult to compare the two periods directly and assess the costs of HIV-specific services alone. For example, EtE data collection periods

varied slightly across clinics, and these periods may be affected by seasonality in patient needs and operating costs. Also, some clinics changed operating hours, and clinic openings and closures changed visit volume in some clinics substantially. While clinic H, which had the highest number of visits during the EtE period, was closed for renovations during the pre-EtE period, other clinics (including a temporary clinic "I" for which we did not have data) managed patients that would have normally visited clinic H. Assessing average changes across clinics may partially obscure SHC system-level trends, even after adjusting for visit volume. Finally, multiple sources were used to estimate costs, which may include some measurement error.

Our comprehensive cost analysis of enhanced HIV services at public NYC SHCs highlighted the key drivers of cost. We identified the largest sources of expenditures and how they varied across clinics; offering HIV services required substantial investment in personnel and HIV-related medications, while many other cost components only experienced small changes. Data on the number of visits in which expanded HIV/STI services are utilized can help predict the cost of offering these services at additional clinics. When using the information provided in this paper to develop new services and programs, clinic operators can consider how their own patient populations, operating processes, and baseline costs differ from those in NYC SHCs.

The EtE plan for the United States, announced in 2019, mirrors the New York EtE strategic objectives of diagnosing individuals with HIV, treating HIV infections to achieve viral suppression, and using of PrEP to prevent individuals at high-risk from acquiring HIV infection.[6] Achieving the national plan's goal of reducing incident infections by 90% within 10 years will require utilizing or expanding existing SHC infrastructure to prevent, diagnose, and treat HIV.[6] Integrating additional HIV services into SHCs can provide immense public health benefits, and our findings help elucidate the resources needed for implementing these changes at other locales.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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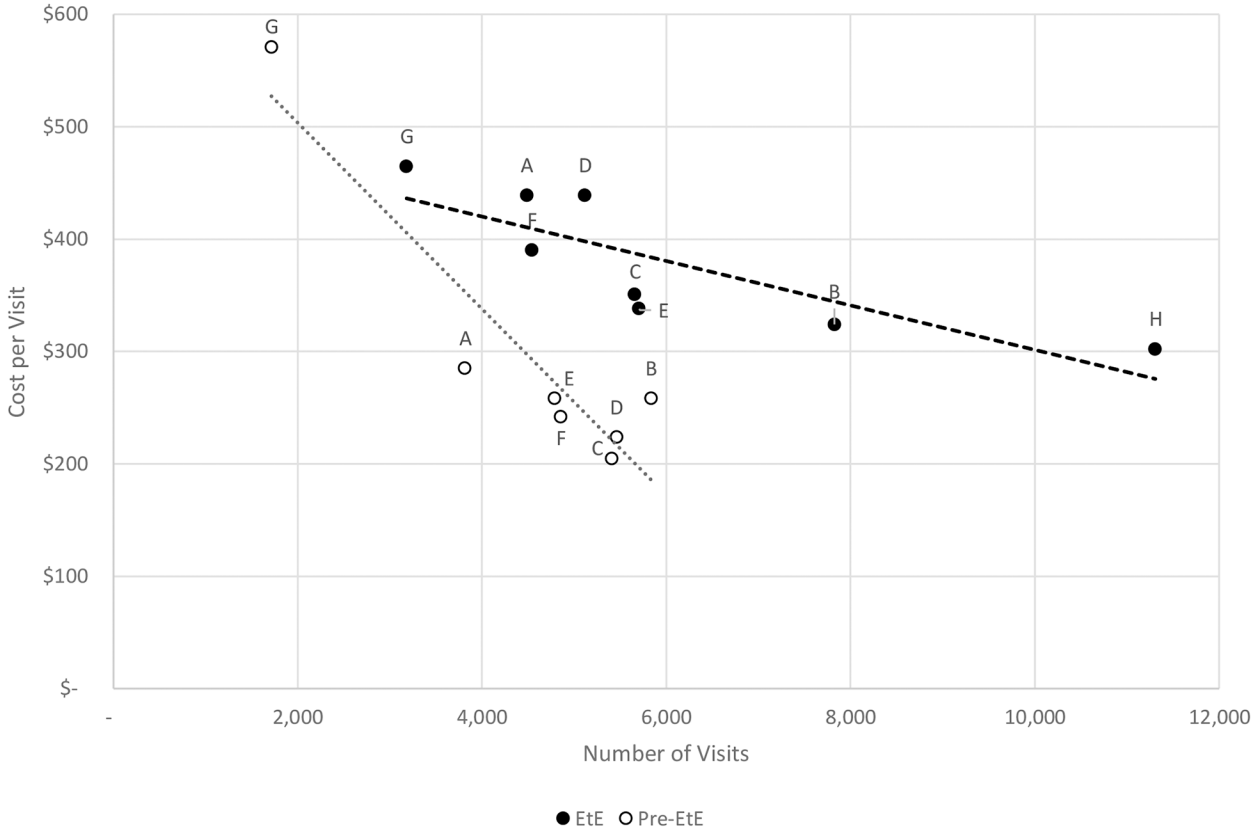

Figure 1:

Estimated 6-month cost per visit by number of visits and clinic (A-H), before and during implementation of the Ending the HIV Epidemic (EtE) Initiative (2019 dollars)

Pre-EtE period data collected from June through November 2015. EtE period data collection varied by site from May 2018 through February 2019. Site H was omitted from the pre-EtE period due to lack of data. The linear trendlines suggest that when the number of visits increases by 1000, the cost per visit on average decreases by about $83 (pre-EtE) and $20 (EtE).

Table 1:

Estimated average clinic 6-month cost and cost per visit, by component, before and during implementation of the Ending the HIV Epidemic (EtE) Initiative (2019 Dollars)

	Pre-EtE[a]		EtE		
	Average[b] (range)	Proportion (range)	Average (range)	Proportion (range)	Difference [% Change] (range)
Number of visits (6 mo.)	4555 (1714 – 5837)		5216 (3182 – 11307)		662 [14.5%] (−345 – 1,987)
Estimated Costs[c] ($)					
Total	$1,187,400 ($978,700 – 1,506,100)	100%	$1,987,400 ($1,477,900 – $3,417,200)	100%	$800,000 [67.4%] ($499,300 – $1,029,300)
Personnel	$863,000 ($758,000 – $1,138,900)	72.7% (65.7% – 78.2%)	$1,389,600 ($1,050,100 – $1,794,800)	69.9% (52.5% – 72.6%)	$526,600 [61.0%] ($285,200 – $714,600)
Lab	$76,000 ($29,700 – $101,800)	6.4% (3.0% – 8.3%)	$132,700 ($74,400 – $338,400)	6.7% (5.0% – 9.9%)	$56,700 [74.6%] ($36,800 – $99,600)
Medications	$8,300 ($1,900 – $11,800)	0.7% (0.2% – 1.0%)	$183,400 ($119,300 – $461,100)	9.2% (6.7% – 13.5%)	$175,100 [2,109.6%] ($108,800 – $241,500)
EtE Medications	$2,400 ($700 – $5,400)	0.2% (0.1% – 0.4%)	$176,700 ($112,400 – $452,500)	8.9% (6.3% – 13.2%)	$174,300 [7,262.5%] (−$5,400 – −$700)
PEP	$2,400 ($700 – $5,400)	0.2% (0.1% – 0.4%)	$103,800 ($59,700 – $273,200)	5.2% (3.4% – 8.0%)	$101,400 [4,225.0%] ($57,700 – $153,300)
PrEP	$0 ($0 – $0)	0.0% (0.0% – 0.0%)	$52,100 ($22,100 – $139,700)	2.6% (1.1% – 4.2%)	$52,100 [–] ($22,100 – $91,800)
JumpstART	$0 ($0 – $0)	0.0% (0.0% – 0.0%)	$20,900 ($17,100 – $39,600)	1.1% (0.9% – 1.3%)	$20,900 [–] ($17,100 – $29,700)
Non-EtE Medications	$6,000 ($1,200 – $8,500)	0.5% (0.1% – 0.7%)	$6,700 ($3,200 – $9,600)	0.3% (0.2% – 0.4%)	$700 [11.7%] (−$1,600 – $3,600)
Immunization	$19,000 ($9,200 – $41,100)	1.6% (0.9% – 3.4%)	$39,300 ($28,000 – $94,800)	2.0% (1.5% – 2.8%)	$20,300 [106.8%] ($8,100 – $43,300)
Supplies	$21,300	1.8%	$18,700	0.9%	−$2,600 [−12.2%]

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	Pre-EtE[a]		EtE		
	Average[b] (range)	**Proportion (range)**	**Average (range)**	**Proportion (range)**	**Difference [% Change] (range)**
	($9,400 – $27,200)	(1.0% – 2.2%)	($12,300 – $37,900)	(0.8% – 1.1%)	(−$6,700 – $2,900)
Building and Utilities	$199,700	16.8%	$223,600	11.3%	$23,900 [12.0%]
	($154,700 – $279,300)	(12.7% – 23.8%)	($174,100 – $690,200)	(7.8% – 20.2%)	($18,500 – $35,000)
Estimated Costs per Visit ($)					
Total	$261	100%	$381	100%	$120 [46.1%]
	($205 – $571)		($302 – $464)		(−$107 – $215)
Personnel	$189	72.7%	$266	69.9%	$77 [40.6%]
	($143 – $446)	(65.7% – 78.2%)	($159 – $330)	(52.5% – 72.6%)	(−$116 – $151)
Lab	$17	6.4%	$25	6.7%	$9 [52.4%]
	($15 – $19)	(3.0% – 8.3%)	($22 – $30)	(5.0% – 9.9%)	($6 – $11)
Medications	$2	0.7%	$35	9.2%	$33 [1,821.5%]
	($1 – $3)	(0.2% – 1.0%)	($24 – $56)	(6.7% – 13.5%)	($22 – $53)
Immunization	$4	1.6%	$8	2.0%	$3 [80.7%]
	($2 – $8)	(0.9% – 3.4%)	($5 – $10)	(1.5% – 2.8%)	($2 – $5)
Supplies	$5	1.8%	$4	0.9%	−$1 [−23.4%]
	($5 – $5)	(1.0% – 2.2%)	($3 – $4)	(0.8% – 1.1%)	(−$2 – −$1)
Building and Utilities	$44	16.8%	$43	11.3%	−$1 [−02.2%]
	($28 – $95)	(12.7% – 23.8%)	($29 – $69)	(7.8% – 20.2%)	(−$38 – −$12)

[a] Pre-EtE refers to the period from June-November 2015 for all clinics. The EtE period refers to the period from May-October 2018 for clinics A-F and September 2018-February 2019 for clinics G-H.

[b] Averages, proportions, and percentage changes omit clinic H because it did not have pre-EtE data. Average cost per visit across clinics A-G was calculated as the total combined costs across clinics A-G divided by the total number of visits across clinics A-G. The ranges in the EtE period columns include clinic H.

[c] Estimated costs were rounded to the nearest $100, costs per visit were rounded to the nearest dollar, and percentages were rounded to the nearest tenth.

Table 2:

Average 6-month clinic number of visits and estimated cost per visit, by visit type, before and during implementation of the Ending the HIV Epidemic (EtE) Initiative (2019 Dollars)

Visit Type[b]	Average[a] Number of Visits			Average Cost per Visit		
	Pre-EtE[c] (range)	EtE (range)	% Change (range)	Pre-EtE (range)	EtE (range)	% Change (range)
Overall	4555 (1714 – 5837)	5216 (3182 – 11307)	14.5% (−6.4% – 85.6%)	$261 ($205 – $571)	$381 ($302 – $464)	46.1% (−18.7% – 96.2%)
Clinician: Initial	2372 (796 – 3111)	2420 (1356 – 3684)	2.0% (−22.2% – 70.4%)	$340 ($280 – $776)	$500 ($440 – $606)	47.1% (−21.9% – 93.1%)
Clinician: Follow-Up	489 (212 – 610)	793 (604 – 1598)	62.2% (25.2% – 184.9%)	$206 ($165 – $443)	$350 ($300 – $448)	69.9% (1.0% – 130.1%)
Express	1352 (585 – 2097)	1815 (1058 – 5496)	34.3% (1.8% – 80.9%)	$184 ($146 – $402)	$258 ($199 – $327)	40.4% (−18.6% – 97.6%)
Other	342 (121 – 709)	187 (72 – 529)	−45.2% (−76.9% – 35.5%)	$96 ($74 – $260)	$177 ($120 – $241)	84.2% (−7.2% – 177.4%)
HIV Related Visits						
PEP Meds	17 (4 – 35)	81 (44 – 123)	388.8% (188.6% – 1000.0%)	$575 ($439 – $1188)	$2,112 ($1967 – $2288)	267.5% (92.6% – 373.6%)
PrEP Meds	–	121 (51 – 324)	–	–	$1,219 ($978 – $1387)	–
PrEP - Navigation Only	–	228 (148 – 434)	–	–	$647 ($460 – $806)	–
ART Meds	–	16 (13 – 31)	–	–	$2,399 ($2116 – $2683)	–

[a] Averages, proportions, and percentage changes omit clinic H because it did not have pre-EtE data. Average cost per visit across clinics A-G was calculated as the total combined costs across clinics A-G divided by the total number of visits across clinics A-G. The ranges in the EtE period columns include clinic H. Costs were rounded to the nearest dollar and percentages were rounded to the nearest tenth.

[b] Clinician initial, clinician follow-up, express, and "other" visit types are mutually exclusive and exhaustive. The HIV-related visit types are subsets of the clinician visit types. PEP, PrEP, and ART Meds visits are defined as visits in which those medications were dispensed. During PrEP-Navigation Only visits, patients received navigation but were not dispensed PrEP. All costs from the visit were included, not just the cost of the medications.

[c] Pre-EtE refers to the period from June-November 2015 for all clinics. The EtE period refers to the period from May-October 2018 for clinics A-F and September 2018-February 2019 for clinics G-H.

Table 3:

Average 6-month increase in personnel costs per clinic, by position and activity

Personnel Cost by Activity	Administrative	Clinician	Phlebotomy	Lab Micros	Public Health Assistants	Social Work	Navigation	Total
Training	$10,700	$4,500	$100	$1,800	$1,200	$1,600	$6,200	$26,100
Supervisory	$14,700	$7,800	$1,900	$4,800	$7,000	$2,500	$9,500	$48,300
Clinical Operations	$97,200	$142,800	$5,200	$5,700	$21,200	$0	$5,600	$277,700
Counseling & Referrals	$1,700	$7,200	$0	$600	$5,200	$27,300	$46,500	$88,400
Follow-Ups	$200	$6,300	$0	$0	$4,800	$8,600	$22,500	$42,500
Field & Case Investigations	$0	$0	$0	$0	$4,400	$3,500	$4,700	$12,600
General Administration	$6,800	$4,400	$100	$200	$5,300	$1,000	$5,600	$23,400
Other	$1,900	$0	$0	$600	$500	$3,200	$1,300	$7,600
Total	$133,300	$172,900	$7,400	$13,700	$49,600	$47,900	$101,800	$526,600

Average increase omits clinic H because it did not have pre-EtE data. Average costs were rounded to the nearest $100. Darker shading reflects larger cost increases.