



# Operational Model and Treatment Costs of a Student-Run Free Clinic Serving People Who Inject Drugs

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## Abstract

**Background:** The student-run Infectious Disease Elimination Act (IDEA) Clinic serves people who inject drugs (PWID) by providing human immunodeficiency virus testing, hepatitis C virus testing, wound care, cutaneous abscess treatment, safe injection education, and basic health screening services. A primary goal of the IDEA Clinic is to prevent the progression of wounds and infections into more severe and costly illnesses. Here, we present the operational model and treatment costs associated with providing these services at the IDEA clinic.

**Methods:** Charts of PWID who received medical care at the IDEA Clinic over a 28-month study period were reviewed and the services provided are reported. Total costs were stratified into the cost of medical equipment, procedures, and medications.

**Results:** From October 2017 to January 2020, the total cost of supplies of the IDEA Clinic totaled \$3,491.65. Over this study period, there were 291 distinct patient visits, which gives the clinic an average cost of \$12.00 per visit.

**Conclusions:** The IDEA Clinic requires low per-patient operational costs to provide important medical services to a vulnerable population. The results of this study may be used to support the creation of more student-run clinics in other areas with a large population of PWID.

## Background

The increasing prevalence of opioid use disorder over the last two decades has led to an epidemic of injection drug use (IDU) and drug overdose death. In 2020, over 93,000 Americans died from a drug overdose.<sup>1</sup> People who inject drugs (PWID) are also at an increased risk for human immunodeficiency virus (HIV), hepatitis C virus (HCV), and skin and soft tissue infections (SSTIs). Complications of SSTIs include bacteremia, sepsis, infective endocarditis, and osteomyelitis.

Syringe Services Programs (SSPs) offer harm reduction measures that mitigate the spread of IDU-associated infections by providing clients with sterile injection equipment and education on safe injection practices. After a grassroots movement by University of Miami students and

faculty, the Infectious Disease Elimination Act (IDEA) SSP opened its doors on December 2016 as a five-year pilot program and the first legal SSP in the state of Florida.<sup>3</sup> Today, the annual operating budget of the IDEA SSP is \$700,000 for the both the fixed and mobile site. In addition to safe injection tools, the IDEA SSP offers HIV/HCV screening, prevention, and treatment, linkage to substance use treatment centers and transitional housing, naloxone distribution for overdose prevention, and referrals to medical services.<sup>2</sup> After the inception of the IDEA SSP, Miami saw a 49% decrease in publicly discarded syringes that could have been reused or led to needlesticks, and in 2018, the SSP's test and treat program helped to identify and contain a cluster of HIV infections amongst its participants.<sup>4,5</sup>

Within the first year of the IDEA SSP's opera-

tions, a group of medical students founded the student-run IDEA Clinic with a dual mission of reducing barriers to care and educating future health care providers on harm reduction principles.<sup>7</sup> The IDEA Clinic provides focused clinical care to PWID beyond the scope of SSP services by providing wound care and incision and drainage of abscesses. Patients seen in the IDEA Clinic include participants of the SSP requiring medical services as well as any person who walks in for medical care. There is no requirement that IDEA clinic patients must be users of the SSP.<sup>2</sup> Early interventions on SSTIs aim to prevent life threatening complications and may decrease emergency department visits, inpatient admissions, and costs incurred by hospitals.<sup>7</sup> Additionally, the clinic facilitates home induction of medications for opioid use disorder, offers infectious disease evaluations and general health visits, and conducts intimate partner violence screenings.

Here, we provide an operational framework and treatment cost estimate of our student-run clinic associated with an SSP in order to support the creation of other clinics in areas that serve a large population of PWID.

### **Operational Model**

The IDEA Clinic is operated by a team of six second-year medical students assisted by full-time paid staff members from the IDEA SSP and a group of volunteer physicians. Student volunteer clinic positions include project manager, student liaison, professional liaison, patient relations coordinator, logistics coordinator, and quality improvement coordinator. All positions report to the project manager. The patient relations coordinator oversees the patient navigation process that can include ancillary patient navigators. Volunteer student positions include two first- or second-year medical students and two third- or fourth-year medical students. Volunteer physician positions include at minimum one physician who can perform incision and drainage of cutaneous abscesses. IDEA SSP full-time staff members include social workers, peer counselors, and public health workers. Roles and responsibilities of student staff positions are described in Figure 1.

The IDEA Clinic operates under and receives funding entirely from UMMSM DOCS. The clinic

receives a \$3,000 budget that is used for purchasing clinic supplies for each fiscal year (July 1 to June 30). During the Fall semester, first-year medical students interview for student staff positions and assume assistant-staff positions. The first-year students learn from the second-year students and gradually transition to running the clinic by the end of their first year. During the transition period, assistant-staff members alternate shifts at the clinic to avoid overcrowding.

All IDEA Clinic student staff members meet weekly before clinic nights to review shared tasks and provide individual updates. This meeting verifies that logistical matters are settled to ensure a smooth clinic night. These matters include ordering necessary supplies as well as confirming student and physician volunteers scheduled for the next clinic night. A monthly patient navigation meeting led by the patient relations coordinator may be held to round on high-risk patients.

### **Clinic Patient Flow Model**

#### *Clinic Logistics*

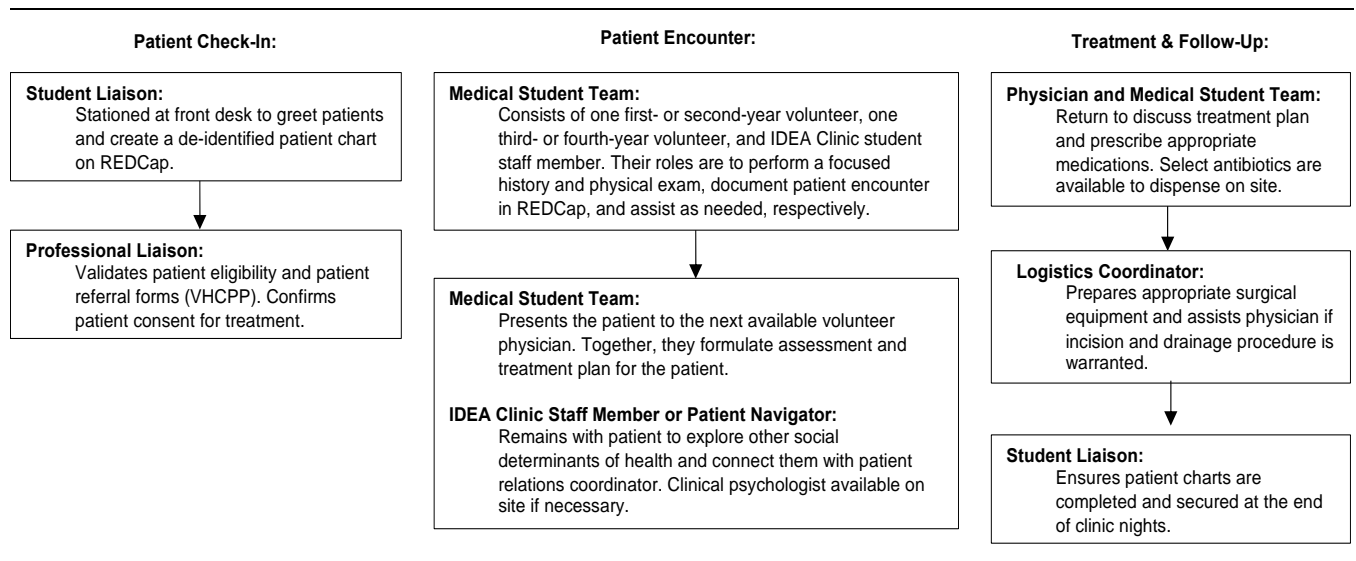
The IDEA Clinic is open each Thursday night from 4:00 - 8:00 pm for walk-in appointments for IDEA SSP participants and other community members. Upon patient arrival, a de-identified patient chart is generated by the student liaison. Patient visits are documented using Research Electronic Data Capture tools hosted at UMMSM.<sup>8,9</sup> The patient is enrolled in the Volunteer Health Care Provider Program (VHCPP) under the Florida Department of Health by the professional liaison to provide sovereign immunity to our medical providers. Patient eligibility is determined by a monthly income at or below 200% of the federal poverty level (FPL), which varies by family size and is determined annually (e.g., family size: 2, FPL = \$2,873/month). Patients who do not qualify for VHCPP program cannot receive free care under the volunteer physician and must be turned away. The state does not reimburse the clinic based on patients seen through this program. Medical supplies for this clinic come from the UMMSM DOCS.

Once the patient is checked-in, the student medical team conducts an initial history and physical. Each patient is offered HIV/HCV tests and referred to the IDEA SSP for coordination of

**Figure 1.** IDEA Clinic operational model: weekly student-run clinic model with medical student staff descriptions

IDEA Clinic: Weekly 4:00-8:00 pm	IDEA Clinic Student Staff Roles and Responsibilities
<p><i>Clinic is collocated at the Infectious Disease Elimination Act (IDEA) Syringe Service Program (SSP)</i></p> <p>Medical student-run walk-in clinic for IDEA participants and community members with assistance from IDEA SSP public health daytime staff.</p> <p>3:45 pm: IDEA Clinic student staff and medical student volunteers arrive to sterilize and prepare examination rooms.</p> <p>5:00 pm: Physicians arrive. At least one capable of performing incision and drainage (I&amp;D) of abscesses secondary to intravenous drug use and at least one with DEA waiver to prescribe Medication for Opioid Use Disorder (MOUD).</p>	<p><b>Project Manager:</b> Administrative role as liaison to University of Miami Miller School of Medicine (UMMSM) Department of Community Service (DOCS), the IDEA SSP, and other community partners. Oversees flow on clinic nights and provides brief orientation to medical student volunteers.</p> <p><b>Student Liaison:</b> Recruits medical student volunteers for clinic nights. Stationed at front desk to greet patients and create de-identified patient chart. Ensures charts are completed and secured at the end of the night.</p> <p><b>Professional Liaison:</b> Recruits volunteer resident and attending physicians. Manage physician insurance and liability via Volunteer Health Care Provider Program (VHCPP) through Florida Department of Health. Enrolls patient in VHCPP and validates patient eligibility.</p> <p><b>Patient Relations Coordinator:</b> Takes thorough social history during clinic nights and manages patient navigation for non-medical resources using GIS database of local partners (e.g. housing, legal services, treatment programs, mental health services, etc.).</p> <p><b>Logistics Coordinator:</b> Responsible for ordering medical supplies through McKesson Supply Manager. Creates budget and reports spending to DOCS manager. Assists physicians with appropriate surgical equipment for I&amp;Ds and dispensing antibiotics.</p> <p><b>Quality Improvement Coordinator:</b> Maintains REDCap for patient charting and other data collection. Designs and implements quality assurance measures and research initiatives.</p>

**Figure 2.** IDEA Clinic patient flow model



Patient flow dynamic from clinic check-in to check-out with key medical student staff roles. IDEA: Infectious Disease Elimination Act; REDCap: Research Electronic Data Capture.

**Table 1.** IDEA Clinic patient demographics: October 2017 – January 2020.

Variable	Number (%)
Age, years (n = 205)	
≤ 29	20 (10)
30-49	128 (62)
≥ 50	57 (28)
Biological sex (n = 206)	
Male	144 (70)
Female	62 (30)
Race/ethnicity (n = 206)	
Non-Hispanic White	91 (44)
Non-Hispanic African American	57 (28)
Hispanic	42 (20)
Other	16 (8)

*Characteristics of patients accessing services at IDEA Clinic. IDEA: Infectious Disease Elimination Act.*

appropriate care if positive. Afterwards, the student team prepares to present the patient to the next available volunteer physician. Together, they prepare an assessment and treatment plan for the patient. In the meantime, one IDEA clinic staff member or patient navigator remains with the patient to explore social determinants of health and begin the patient navigation process if appropriate. Once the medical team returns, the IDEA clinic staff member or patient navigator steps out to ready the necessary community resources referral information. The medical team provides counseling and treatment to the patient. The logistics coordinator assists with incision and drainage procedures if indicated. If psychological intervention is required, we often have a clinical psychologist on site capable of providing counseling and other services. Further details regarding patient flow in the clinic are detailed in Figure 2.

### Clinical Encounters and Treatment Costs

#### Patient Demographics

We retrospectively compiled anonymized data for all IDEA Clinic patient encounters over the first two years of clinic operations between October 2017 and January 2020. Duplicate records or empty entries were not included. Of 216 patient charts, 212 were reviewed and 291 unique clinic

visits were included in the analysis. The mean age of patients seen at the clinic from the study period was 44 years, ranging from 18 to 80 years. Thirty percent of patients were female, 28% African American, and 20% Hispanic. Specific patient demographic data are listed in Table 1.

#### Total Treatment Costs and Per Visit Cost

The IDEA Clinic operates with an annual budget of roughly \$3,000. The clinic operates in preexisting exam rooms at the SSP; access to these rooms is donated for clinic use. All care is provided by volunteer physicians and students. From October 2017 to January 2020, the cost of treatment provided at the clinic totaled \$3,491.65. This includes wound care supplies, incision and drainage equipment, HIV and HCV rapid tests, and antibiotics distributed on site. Cost of HIV and HCV tests are provided by Gilead or the Department of Health, depending on the context for which patients are seeking screening. Most clinic supplies and onsite prescription antibiotics are purchased wholesale by the logistics coordinator from McKesson Medical Supplies through a Supply Manager account organized by UMMSM DOCS. During the first 28 months of operation, the clinic had a mean cost per visit of \$12.00. Complete treatment costs are shown in Table 2.

### Discussion

In summary, we hope to provide not only an operational model for student-run clinics associated with an SSP but also suggest the cost-saving potential of these medical services on public health burden. We provide further exploration of measures which ultimately lower these costs to society, reduce barriers to access, and create clinical and educational environments that foster cultural sensitivity.

#### Importance of Screening and Treatment of SSTIs

PWID are at increased risk of SSTIs, most commonly cutaneous abscesses and cellulitis. SSTIs and their complications carry serious health risks and result in significant morbidity and mortality.<sup>10</sup> SSTIs are common among PWID; a survey of active PWID in San Francisco demonstrated that 70% had experienced an SSTI related to drug use.<sup>11</sup> Among PWID who have been hospitalized

**Table 2.** IDEA Clinic treatment costs: October 2017 – January 2020.

Cost Category	Frequency	Cost (\$)	Total Cost (\$)
HIV Rapid Test	87	18.25	1587.75
HCV Rapid Test	68	8.00	544.00
Wound Care*	79	6.56	518.24
Incision and Drainage†	34	10.64	361.76
On-site Antibiotics (pills)			
Trimethoprim/Sulfamethoxazole (800mg/160mg)	825	0.33	272.25
Doxycycline (100mg)	146	0.86	125.56
Amoxicillin/Clavulanate potassium (875mg/125mg)	34	1.72	58.48
Azithromycin (500mg)	5	2.67	13.35
Cephalexin (500mg)	14	0.74	10.26
Total Cost			3,491.65

Frequency of procedures, rapid tests, and on-site antibiotics given and estimated total costs from supplier.

\*Wound Care cost per procedure: \$2.16/Cohesive Bandage + \$3.75/Saline flushes + \$0.48/gauze + \$0.02/EtOH Pads + \$0.15/Antibiotic Ointment = \$6.56.

†Incision and Drainage cost per procedure: \$8.42/I&D kit + \$1.78/Chloroprep + \$0.11/Lidocaine & Epi Dose + \$0.08/27G needle + \$0.25/10mL syringe = \$10.64.

IDEA: Infectious Disease Elimination Act; HIV: human immunodeficiency virus; HCV: hepatitis C virus.

with SSTI, over half report leaving the hospital against medical advice. Furthermore outside of the hospital, a majority of PWID report having a drainage procedure performed by a non-medical professional due to concerns of withdrawal symptoms and poor pain management if hospitalized.<sup>12</sup>

Importantly, SSTIs lead to expensive hospitalizations. A cost-analysis estimated a cost of \$11.4 million over one year for drug use-related infections in a large tertiary care hospital in Miami, Florida.<sup>13</sup> A recent study estimates that PWID-related admissions cost Florida health care systems up to \$379.8 million over a single year.<sup>14</sup> The prevalence and subsequent poor outcomes, both medically and financially, highlight the importance of public health screening and treatment efforts of SSTIs among PWID and suggest the use of SSPs as a successful venue to deliver these medical services and reduce health care costs for the state.

### Patient Recruitment

Initial patient recruitment can prove difficult. Many of our patients do not have phone or internet access. For this reason, we opted for a model of walk-in appointments only. Fortunately, word-of-mouth remains a powerful tool for advertising. Community outreach and SSTI screening at the IDEA SSP have been essential to maintain adequate patient engagement. It is critical to offer thorough, culturally sensitive care to this community with limited knowledge about access to wellness and preventative services, especially when many of their experiences to date have resulted in stigmatization and been hindered by other institutional barriers.<sup>15</sup> Garnering the trust of these communities remains critical to right the ongoing injustices delivered by the United States healthcare system. Building trust from established SSPs and ensuring continuity of care through community resources serve to cultivate stronger relationships between PWID and health care providers.<sup>7</sup>

### Cultural Sensitivity

PWID experience exceptional challenges to care and encounter many negative social determinants of health. On an individual basis, many PWID experience adverse childhood experiences, lower educational attainment, disrupted social support, homelessness, high risk sexual behavior, high risk of chronic infectious disease, and are often low-income and racial/ethnic minorities.<sup>16,17</sup> On a systemic level, PWID encounter stigma from drug use, high rates of incarceration, institutional barriers to housing and occupation, and environmental health hazards.<sup>16</sup> Therefore, training on cultural sensitivity and appropriate use of person-first language are essential when working with this community and are an important focus of the clinic. All clinic volunteers receive a 30-minute cultural sensitivity briefing designed and delivered by the project manager before each clinic night.

### Limitations

The model of the IDEA may be difficult to replicate for several reasons. First, we report primarily on the cost of supplies to operate our student-run clinic. We were fortunate to have an already-existing on-campus SSP to allow us to use the physical

space and assistance of full-time SSP staff, free of charge. This clinic model may be difficult to implement in other schools without these pre-existing resources. Second, the clinic is dependent on dedicated volunteer physicians to provide medical care to the patients. Finding culturally sensitive physicians dedicated to harm reduction may be difficult in some locales. Finally, an SSP-based student-run clinic would not be feasible in a state where SSPs remain illegal.

### Future Directions

Permitted by the advocacy of students and passage of the 2019 IDEA bill, other counties in Florida will be able to establish legal SSPs. Medical schools may seek to create student-run clinics in partnership with those SSPs to serve PWID. Student-run free clinics based alongside well-established SSPs possess unique positions to provide quality health care to a patient population that remains often neglected. Here, we illustrate the operational model and associated treatment costs of a student-run clinic for PWID. SSPs and culturally sensitive medical care for PWID hold the potential to alleviate economic and public health costs from infectious diseases, incarcerations, and emergency department utilization.

### Disclosures

The authors have no conflicts of interest to disclose.

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