

An HIV Primary Care Rotation Improved HIV and STI Knowledge, Enhanced Sexual History-Taking Skills, and Increased Interest in a Career in Infectious Diseases Among Medical Students and Residents

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Rotations in HIV primary care clinics have the potential to teach trainees core competencies and influence their career pathway. We found that fund of knowledge, confidence in obtaining a sexual history, and interest in an Infectious Diseases career all increased following an HIV clinic rotation.

Keywords. HIV; medical education; STI.

Clinical rotations in HIV primary care provide a unique opportunity to teach trainees about the management of HIV and other sexually transmitted infections (STIs) and enhance trainees' skills in obtaining a culturally competent sexual history. Positive educational experiences in this setting may also influence trainees' decisions to pursue a career in Infectious Diseases (ID). This is of critical importance given that the number of ID fellowship positions filled hit a nadir in 2015; although match rates have increased since then, 26 spots still went unfilled in the 2020 ID Fellowship match [1, 2]. Bonura et al. have shown that positive educational experiences in Microbiology and Infectious Diseases rotations during the early, formative years of medical training and strong mentorship by ID faculty are key elements that influence trainees to pursue a career in ID [3].

Little is known about the impact of an HIV primary care rotation on trainees' fund of knowledge regarding HIV and STI management, confidence in obtaining a sexual history, or interest in ID as a career choice. Some studies have indicated that utilizing standardized patients for developing sexual

history-taking skills boosts confidence, but few if any studies exist examining comprehensive clinical rotations in HIV Medicine during medical school or residency [4].

In our study, we aimed to evaluate the impact of a rotation through UC San Diego's (UCSD's) HIV Primary Care Clinic across dimensions of HIV and STI knowledge, confidence in obtaining a culturally competent sexual history, and interest in ID as a career choice.

METHODS

Third-year medical students and second-year Internal Medicine residents participated in an elective rotation for 2–4 weeks in UCSD's HIV primary care clinic. The clinic provides HIV primary and subspecialty care to 3014 patients. Over 90% of patients are virologically suppressed, 50% are from underrepresented minority groups, and at least 50% have Ryan White or Medicaid as their primary payer.

Medical students attended clinic once per week for 4 weeks, while residents attended daily for 2 weeks. During clinic sessions, trainees evaluated patients on their own initially before staffing the patient with their supervising attending. Medical students saw 1–3 patients, and residents saw 3–6 patients per half-day of clinic on average. Trainees worked with different attendings each clinic session.

All trainees were given a 20-page self-directed curriculum that borrowed from the University of Washington's National HIV Curriculum (<https://www.hiv.uw.edu>) and included content in the following areas: antiretroviral (ARV) therapy, prophylaxis for opportunistic infections, management of chronic medical conditions in people with HIV (PWH), management of substance use disorders and mental health disorders, health care maintenance for PWH, HIV transmission, and management of STIs (Supplementary Data). Trainees were also provided with a video demonstrating best practices in obtaining a culturally competent sexual history (<https://www.youtube.com/watch?v=fKkOEblxvr8>) as part of the curriculum.

Trainees who rotated in the clinic between September 2019 and February 2020 were given a pre- and postrotation survey (Supplementary Data). Knowledge-based questions were internally developed and focused on content related to the rotation's learning objectives. Trainees were also asked about their self-perceived ability to medically manage PWH (with appropriate Attending supervision), obtain a culturally competent sexual history, and their interest in ID as a career. These were analyzed by a 5-point Likert scale and reported dichotomously as either agreeing (agree or strongly agree) or not agreeing (neutral, disagree, strongly disagree) with the given statement. Survey responses were collected via SurveyMonkey. Learners completed

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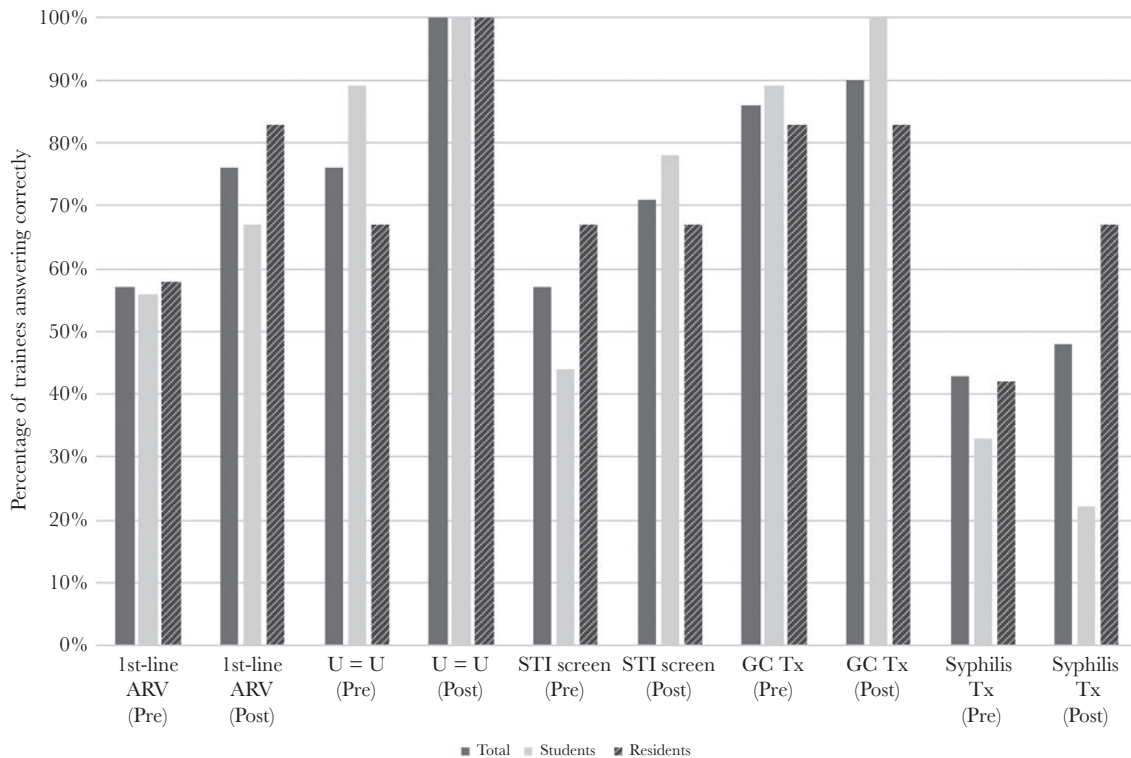


Figure 1. Fund of knowledge as measured by answering multiple choice questions correctly among trainees regarding first-line antiretroviral therapy (1st-line ARV), treatment as prevention (U=U), appropriate screening tests for STIs (STI Screen), treatment of gonorrhea (GC Tx), and treatment of late latent syphilis (Syphilis Tx) improved following the HIV clinical rotation. Light gray bars = medical students, hatched bars = residents, dark gray bars = all trainees. Abbreviations: ARV, antiretroviral; STI, sexually transmitted infection.

the prerotation survey the day before their first HIV clinic session and the postrotation survey within 1 week of finishing the rotation. All surveys were anonymous and not associated with trainees' evaluation by faculty.

Patient Consent

This study was reviewed by the UCSD Institutional Review Board's Human Research Protections Program (Project #210505) and was granted exempt status.

RESULTS

Thirty-one trainees participated in the rotation during the 6-month time period; 31 completed the prerotation survey, and 21 completed the postrotation survey. Only responses from trainees who completed both surveys (21/31) were included in the analysis. Residents and medical students comprised 57% (12) and 43% (9) of the cohort, respectively. Fund of knowledge regarding ARV management, treatment as prevention, and STI management all improved following the rotation (Figure 1). The greatest improvements were seen regarding recommended first-line ARV regimens (57%–76%), treatment as prevention (76%–100%), and STI screening (57%–71%). Knowledge regarding the treatment of gonorrhea and syphilis also improved (85%–90% and 43%–48%, respectively), although to a lesser

degree. Residents had higher baseline knowledge about first-line ARV regimens, STI screening, and syphilis treatment, whereas students had higher baseline knowledge about transmission as prevention and gonorrhea treatment. Students' scores showed greater degrees of improvement for STI screening and gonorrhea treatment, while residents' scores showed greater degrees of improvement for first-line ARV regimens, treatment as prevention, and syphilis treatment.

Trainees reported improvement in their clinical skills to medically manage PWH (24%–90%) and obtain a culturally competent sexual history (57%–100%) (Figure 2). They also reported an increased interest in an ID career (24%–71%) after the rotation; this change was predominantly driven by medical students.

DISCUSSION

Clinical rotations in HIV primary care provide valuable learning experiences for trainees by improving their fund of knowledge about HIV and STIs and their self-efficacy in HIV care management and obtaining a sexual history. While most trainees will not necessarily pursue a career in ID, core competencies such as obtaining a sexual history, diagnosing and treating STIs, and understanding the risk of HIV transmission are critical aspects of medical training for future

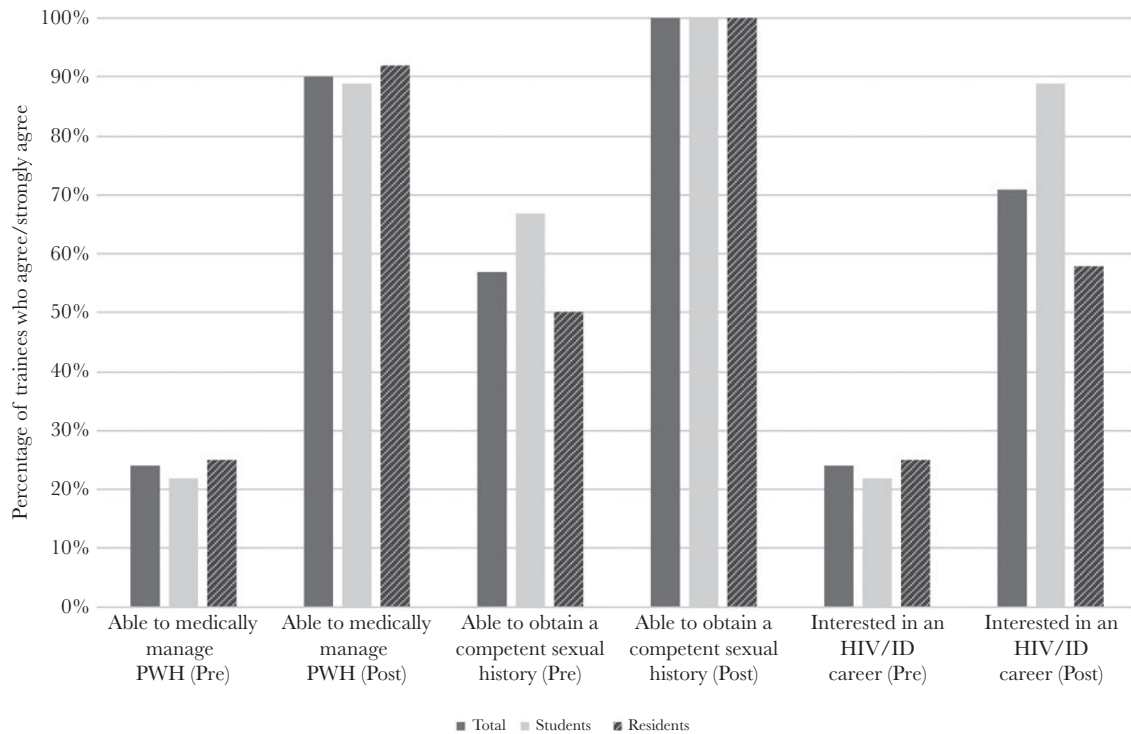


Figure 2. Trainees’ self-reported ability to medically manage patients with HIV (with appropriate attending supervision), ability to obtain a culturally competent sexual history, and interest in an HIV/ID career all increased following the rotation. Light gray bars = medical students, hatched bars = residents, dark gray bars = all trainees. Abbreviations: ID, Infectious Diseases; PWH, people with HIV.

independent physicians. Given trainees’ improvement in knowledge, skills, and self-efficacy following their HIV clinical rotation, we propose that medical educators and training program leadership consider expanding and even requiring opportunities for trainees to rotate in HIV primary care clinics. We also advocate for teaching faculty in HIV clinics to be given protected time (eg, fewer patients per clinic session) with a decrease in work productivity requirements in order to enhance and facilitate their ability to effectively teach and inspire trainees.

There was not a consistent trend regarding whether medical students or residents demonstrated a greater degree of improvement in their scores after the rotation, although the sample size may have been too small to identify these differences. We suspect that learners approach the rotation with various degrees of knowledge based on prior individual experiences that do not necessarily correlate with their level of training. Despite these differences, it is encouraging that scores overall improved following the rotation, and we plan to evaluate whether these improvements persist 6–12 months after the rotation. Syphilis treatment was the only content area in which scores were lower after the rotation (for medical students only, 33% to 22%). It is unclear what accounted for this, although resident scores regarding the management of syphilis were low as well. We are revamping the syphilis section of our curriculum due to this observation.

One of the most notable findings in our study was trainees’ increased consideration of ID as a career path. While this finding was predominantly seen among medical students, residents also indicated an increased interest in ID following this rotation. This is consistent with prior studies and provides additional evidence that early experiences and interventions are needed to encourage trainees to pursue a career in ID. Sustaining the HIV clinical workforce through this and other mechanisms will be essential to ending the HIV epidemic [5]. There are several limitations to this study. The sample size was small, limiting our statistical analysis and ability to generalize. Additionally, only 70% of trainees completed both the pre- and postrotation surveys; those who did not complete the postrotation survey could have represented trainees who did not learn as much or who were less interested in an ID career; however, these trainees had similar baseline levels of knowledge, self-efficacy, and interest in ID compared with those who completed both surveys (data not shown). Trainees may have answered the subjective questions in the postrotation survey in a more positive or favorable way if they thought their responses might impact their end-of-rotation grade. We attempted to mitigate this bias by assuring trainees that their responses were anonymous and not associated with their faculty evaluations. Finally, we acknowledge that trainees’ self-report of skill level may not reflect their actual skill level and that trainees could have interpreted the meanings of the self-reported survey items differently from their peers.

However, we suspect that an individual trainee's interpretation of these items was consistent between the 2 surveys, and it is encouraging that self-reported efficacy improved following the rotation.

CONCLUSIONS

We found that a clinical rotation in an HIV primary care clinic, coupled with a contextually based and clinically oriented curriculum, improved fund of knowledge regarding the management of HIV and STIs, enhanced self-efficacy in obtaining a sexual history, and increased interest in pursuing a career in ID among third-year medical students and second-year Internal Medicine residents. Efforts to expand and further develop similar clinical experiences will help ensure that trainees develop key patient care competencies and sustain the future HIV workforce.

Supplementary Data

Supplementary materials are available at *Open Forum Infectious Diseases* online. Consisting of data provided by the authors to benefit the reader,

the posted materials are not copyedited and are the sole responsibility of the authors, so questions or comments should be addressed to the corresponding author.

Acknowledgments

Potential conflicts of interest. The authors report no conflict of interest. Both authors: no reported conflicts of interest. Both authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Conflicts that the editors consider relevant to the content of the manuscript have been disclosed.

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