Assessing HIV Preexposure Prophylaxis Education in a Family Medicine Residency

John A. Aurora Jr., PharmD, BCACP; Stephanie L. Ballard, PharmD, BCPS; Cynthia L. Salter, PhD, MPH; Ben Skinker, MD

BACKGROUND AND OBJECTIVES: HIV preexposure prophylaxis (PrEP) has been purposefully incorporated into our family medicine resident training within existing didactic lectures, readings, and routine office visit precepting. This mixed-methods evaluation assesses training strategies for PrEP use via survey and drug use evaluation (DUE).

METHODS: We surveyed 80 current and former family medicine residents (2014-2018) about their exposure to training components, self-reported confidence and competency in PrEP use, and practice behaviors reflecting CDC guidelines for patient eligibility and testing. In addition, we conducted a DUE of patients receiving PrEP from 2012-2018 for adherence to CDC guidelines. We report results with descriptive statistics, with \( \chi^2 \) analysis for group comparisons.

RESULTS: Survey response rate was 56.3%. Among respondents, 46.7% have prescribed PrEP and 55.5% self-assessed as competent to prescribe PrEP, with the majority (84%) rating precepting as most effective for building competence. Those self-assessed as competent were more likely to endorse practice behaviors reflecting CDC guidelines for monitoring PrEP (\( P <.05 \)). DUE identified 68 patients; 98.5% men who have sex with men. No women with recent sexually transmitted infections, nor persons who inject drugs (PWID) received PrEP. Initial testing completion ranged from 79.4% (HIV) to 54.4% (hepatitis B). Follow-up testing completion ranged from 41.5% (HIV) to 26.4% (syphilis).

CONCLUSIONS: Residents rated precepting as the most effective training. However, DUE demonstrated that PrEP underuse, as well as suboptimal testing, limited experiential training on CDC guidelines. Curricular updates should further emphasize appropriate patient selection for PrEP, including women, minorities, and PWID, as well as robust testing, to continue expanding PrEP access.

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Preexposure prophylaxis (PrEP) antiviral therapy is recommended to prevent HIV transmission in sexually active persons with risk factors and in persons who inject drugs (PWID). In 2017, only 8% of 1.2 million adults eligible per Centers for Disease Control and Prevention (CDC) recommendations used PrEP. Only 2%-9% of men who have sex with men (MSM) have ever used PrEP. Increasing PrEP coverage to 40% among indicated MSM could avert 33% of expected HIV infections. Patients taking PrEP remain at risk for HIV, STIs, and nephrotoxicity, among other risks, necessitating ongoing counseling, monitoring, and follow-up.

The American Academy of Family Physicians included PrEP in its 2016 HIV infection/AIDS curriculum guidelines. However, a purview paradox exists: neither primary care physicians (PCPs) nor HIV providers consider PrEP within their domain. PCPs reported limited knowledge and confidence about PrEP compared to HIV providers, although 75% of PCPs were willing to prescribe PrEP if trained. To our knowledge, this mixed-methods evaluation is the first report of resident training strategies for PrEP and endorsement of practice behaviors reflecting CDC guidelines in a residency-training clinic.

Methods

Our site is an urban family medicine residency practice where 51.4% of patients are Black; 40.1% are White. Payer mix consists of 53% commercial, 38% Medicaid/Medicare, and 9% uninsured/self-pay. The practice has prescribed PrEP since 2013 but does not provide medication directly. We incorporated PrEP education into the residency curriculum through

From the Department of Pharmacy and Therapeutics (Dr Aurora), and Shadyside Family Medicine Residency (Drs Ballard, Salter, and Skinker), University of Pittsburgh Medical Center, Pittsburgh, PA.
readings and by adding PrEP content to existing resident didactic lectures on HIV, preventive medicine, and care of LGBTQIA+ patients. Faculty champions also trained residents in prescribing PrEP during office visit precepting and contributed to PrEP information dissemination.

We completed two independent evaluations to assess PrEP learning: (1) a survey collecting self-assessed training exposure, confidence and competence in PrEP use, and endorsement of practice behaviors reflecting CDC guidelines for patient eligibility and monitoring; and (2) a retrospective drug use evaluation (DUE) chart review of CDC guideline adherence and prescribing practices, assessing the quality and quantity of opportunities for experiential office-based education.

We surveyed 30 current family medicine residents and 50 program graduates (2014-2018) by emailing a 10-question anonymous survey in October 2018 (Appendix A). Blinded electronic tracking sent two automatic reminders.

The DUE reviewed patients prescribed tenofovir-emtricitabine (TDF-FTC, Truvada) for PrEP from July 1, 2012 to June 30, 2018. Patients receiving at least one refill were included in assessment of follow-up testing. Chart review assessed adherence to CDC guidelines, including those related to HIV, sexually-transmitted infections (STIs; chlamydia, gonorrhea, and syphilis), renal function, hepatitis B, and pregnancy. Chlamydia and gonorrhea were always tested together, and testing was deemed completed if at least one body site (pharyngeal, rectal, or urine sample) was tested. Medication access was not assessed.

### Table 1: Participant Survey Responses (N=45)

| Status at Time of Survey | n (%) |
|--------------------------|-------|
| Current resident         | 12 (26.7) |
| Graduates                | 33 (73.3) |

| Current Practice Setting |       |
|--------------------------|-------|
| Private practice         |  6 (13.3) |
| Community health center  |  8 (17.8) |
| Academic/residency       | 16 (35.6) |
| Hospitalist              |  2 (4.4) |
| Other                    |  4 (8.9) |
| Did not answer           | 11 (24.4) |

| PrEP Training | Readings | Didactics | Patient Precepting | Other | Did Not Receive |
|---------------|----------|-----------|--------------------|-------|-----------------|
| Exposure to PrEP training | 28 (62.2) | 32 (71.1) | 35 (77.8) | 3 (6.7) | 5 (11.1) |
| Most effective training for competence | 2 (4.4) | 9 (20) | 29 (64.4) | 1 (2.2) | 4 (8.9) |
| Most effective training for confidence | 0 (0) | 6 (13.3) | 34 (75.6) | 1 (2.2) | 4 (8.9) |
| At residency completion, reached confidence to prescribe PrEP in practice? | | | Yes | No | Unsure |
| | | | 25 (55.6) | 7 (15.6) | 13 (28.9) |
| Do you prescribe PrEP in current practice setting? | | n (%) | | | |
| Yes, but I don’t have any active patients | | | 8 (17.8) |
| Yes, for 1-10 patients | | | 13 (28.9) |
| Yes, for more than 10 patients | | | 0 (0) |
| No, I have not prescribed PrEP although I am competent to do so | | | 8 (17.8) |
| No, I do not prescribe PrEP because I need additional training/skills | | | 11 (24.4) |
| No, prescribing PrEP is not relevant to my type of practice now | | | 5 (11.1) |

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Results

Forty-five respondents completed the survey (56.3%), including 33 graduates (73.3%). Forty-one experienced at least one teaching modality (91.1%); 21 reported currently prescribing PrEP (46.7%). Overall, 25 self-assessed as competent to prescribe PrEP (55.5%), of whom 21 rated precepting as most effective for building competence (84%, Table 1). Participants who reported exposure to all three training modalities were significantly more likely to self-assess as competent than those exposed to less training (P<.05). Additionally, those who self-assessed as competent were significantly more likely to endorse four or more PrEP practice behaviors (P<.05, Table 2).

During the study period, 68 patients were prescribed TDF-FTC for PrEP; 53 were included in follow-up testing analysis, and 15 were lost to follow-up. Patient demographics include White (82.3%), Black (11.8%), Asian (4.4%), and Hispanic/Latinx (1.5%); the median age was 35 years, and all were LGBTQIA+ community members, including 66 MSM (97%), one transfeminine patient who has sex with men (1.5%), one woman whose female partner is serodiscordant (1.5%). No women with recent STIs nor PWID received PrEP.

Prior to starting PrEP, initial testing rates were: HIV 79.4%, chlamydia and gonorrhea 76.5%, syphilis 73.5%, renal 66.2%, and hepatitis B 54.4%. Follow-up testing rates were: HIV 41.5%, chlamydia and gonorrhea 37.7%, syphilis 26.4%, and renal 32.1%. Monitoring tests for HIV, STIs, and renal function were significantly less likely to be completed at follow-up than initial (P<.05, Table 3).

Discussion

Developing strategies to train PCPs on PrEP is integral to expanded PrEP access. After our program incorporated PrEP education into existing lectures, offered readings, and discussed PrEP use in the course of precepting usual care, roughly half of residents and graduates endorsed competence and reported prescribing PrEP in their practice. Despite this, significantly fewer patients with non-MSM risk and minorities were
training and clinic resources must be provided for all precepting faculty, including community preceptors. Lab completion may be increased by use of order sets, availability of in-house phlebotomy, or rapid testing options. Utilizing other members of the health care team such as pharmacists and nurses for assistance with refills and monitoring can improve follow-up testing adherence. Additionally, PrEP eligibility screening may be integrated into other visits including contraception, substance use disorder, and testing, notification, and treatment for STIs.

**Conclusions**

Residents rated precepting as the most effective training modality. However, chart review demonstrated that PrEP underuse, as well as suboptimal testing, limited experiential training on CDC guidelines. Curricular updates should further emphasize appropriate patient selection for PrEP, including women, minorities, and PWID, as well as robust testing, to continue expanding PrEP access. Family physicians can play a key role in expanding access to PrEP, supported by well-developed resident training efforts.

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**CORRESPONDING AUTHOR:** Address correspondence to Dr Stephanie L. Ballard, PharmD, BCPS, UPMC Shadyside Family Health Center, 5215 Centre Avenue, Pittsburgh, PA 15232. 412-623-7954. ballards@upmc.edu.

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**Table 2: Self-assessed Competence, Training Exposure and Practice Behavior Endorsement (N=45)**

| Self-assessed Competence to Prescribe PrEP | Yes | No or Unsure | P Value* |
|------------------------------------------|-----|--------------|----------|
| Exposed to all three trainings           | 18  | 4            | 0.00525  |
| Exposed to fewer than three trainings    | 7   | 16           |          |
| Endorsed four or more PrEP practice behaviors | 19  | 8            | 0.014306 |
| Endorsed fewer than four PrEP practice behaviors | 6   | 12           |          |

Abbreviation: PrEP, preexposure prophylaxis.

*χ² P values for categorical data.

**Table 3: Initial and Follow-up Testing, by Test Type**

| Test Type               | Initial Testing, N=68 n (%) | Follow-up Testing, N=53 n (%) | P Value |
|-------------------------|-----------------------------|-------------------------------|---------|
| HIV                     | 54 (79.4)                   | 22 (41.5)                     | <.05    |
| Chlamydia/gonorrhea     | 52 (76.5)                   | 20 (37.7)                     | <.05    |
| Syphilis                | 50 (73.5)                   | 14 (26.4)                     | <.05    |
| Renal                   | 45 (66.2)                   | 17 (32.1)                     | <.05    |
| Hepatitis B             | 37 (54.4)                   | N/A                           | N/A     |

*Composite of hepatitis B testing (hepatitis B surface antigen or surface antibody or vaccination).
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