

PROFESSIONAL DEVELOPMENT
AND EDUCATIONAL SCHOLARSHIP

Queen's University

Assessing the Impact of a new HIV
PrEP Training Module among PCPs in
Southeast Ontario: Results from
Immediate and 3-months Post-
Training Evaluation Surveys, 2024

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Table of Contents

Executive Summary	3
Introduction.....	5
Developing the PrEP module.....	5
Table 1. Summary of the PrEP module content and objectives	6
Figure 1: Logic model of the PrEP module	7
Objectives of the Evaluation	7
Methods	7
Data and Analysis	7
Results.....	9
Learners’ demographic characteristics at baseline.....	9
Table 2: Demographic characteristics of learners.....	9
Recency of PrEP prescription and referrals	10
Table 3a: Prescription patterns of PrEP at baseline	10
Table 3b: Prescription patterns of PrEP at 3 months post training	10
Assessment of PCPs’ prior knowledge of PrEP.....	10
Table 4: Validation of prior PrEP knowledge.....	11
Assessment of basic PrEP knowledge and familiarity	12
Table 5a: Basic PrEP knowledge and familiarity	12
Assessment of advanced knowledge of PrEP	13
Table 5b: More advanced PrEP knowledge.....	13
Comfortability with PrEP practices	15
Table 5c: Comfort with PrEP practices.....	15
Assessing the value, applicability, and utility of the PrEP module	16
Table 6: Value, applicability, and utility of the module	16
Strengths of the PrEP module	16
Table 7: Strengths of the online module	17
Weaknesses of the PrEP Module	18
Table 8: Weaknesses of the online module.....	19
Recommendations for improving module on PrEP	19
Table 9: Recommendations for improving the module.....	20
Discussion	21
Conclusion	22
References.....	22
Appendix A.....	23

Executive Summary

This study evaluated the impact of an online PrEP module of Primary Care Providers (PCPs') knowledge, comfortability, and familiarity with PrEP prescription and use among individuals who are at risk of HIV infections. We evaluated the extent to which the module has impacted PCPs' knowledge, skills, comfortability, and confidence with PrEP prescription, counselling and referrals. We also evaluated the value, applicability, utility, strengths, and weaknesses of the module, and analyzed PCPs' recommendations for improvements. Using data from pre- and post-module completion evaluation surveys, our analysis revealed the following key findings.

- PCPs' referral patterns (≤ 10 patients) and contact with infectious disease doctors increased moderately and respectively by 25% and 13%.
- PCPs' knowledge about the criteria used for initiating same-day PrEP increased significantly by 134%.
- Knowledge about referrals for patients who required unplanned PrEP discontinuation increased significantly by about 180% after completing the training module.
- Learners' knowledge about how to perform a planned PrEP discontinuation increased significantly by 84%.
- Significant increases were observed for knowledge about resources required for determining financial coverage for PrEP patients (73%) and how to guide patients to obtain PrEP coverage (83%).
- Knowledge about skills required to administer PrEP medications increased between 57% to 81% while increases in knowledge about how to start PrEP ranged from 19% to 46%.
- Knowledge about who can take TDF/FTC or TAF/FTC for PrEP respectively increased by 65% and 80%.
- There were significant improvements in learners' knowledge regarding how to prescribe PrEP daily or continuously (67%) or how to prescribe TDF/FTC for PrEP (57%) or TAF/FTC for PrEP (72%) or PrEP on demand (68%).
- PCPs' comfortability regarding PrEP decision making, counseling, and prescription significantly increased by 47%, 37%, and 38% respectively.
- PCPs' confidence level about how to rapidly find answers and support in situations outside their knowledge base increased significantly by about 18%.
- All learners (100%) agreed that the module met their expectations and was applicable to their learning in their clinical environment.
- All learners (100%) reported that they gained new knowledge and skills after completing the module.
- Learners found strengths of the module to be comprehensive, accessible, and easily navigable. They appreciated the straightforward information and resources, which are useful for future reference.
- Weaknesses of the module include concerns that it was too detailed and technical in content and had limited supplementary materials.

- Recommendations for addressing the weaknesses of the module include the inclusion of templates or guidelines for PEP dosing and prescribing, as well as the addition of supplementary materials.

Overall, the PrEP training module was well received by all PCPs who completed it. It has the potential to bridge the current knowledge gap in PrEP prescription among PCPs in Southeastern Ontario.

Introduction

HIV infections continue to rise across Canada with estimates showing that there were 2,242 new infections in 2018 (Public Health Agency of Canada, 2020), yet HIV pre-exposure prophylaxis (PrEP) prescription remains underutilized despite its known effectiveness in preventing infections (Cox et al., 2021; Colyer et al., 2021; Tan et al., 2021). In Ontario, incidence rates of HIV infections and the number of PrEP users have plateaued in recent years (Ontario HIV Treatment Network (OHTN), 2021). Although primary healthcare providers (PCPs) play important roles in implementing PrEP, most do not prescribe it. A recent Ontario study revealed that while 90% of physicians were aware of PrEP, only 27.5% had prescribed PrEP and only 62.5% of physicians were aware of the Canadian PrEP & PEP guidelines (Vincent & Woodward, 2020). A similar study conducted in Ontario found that only 21% of MSM were willing to consult their family physicians for PrEP prescription (Charest et al., 2021). While these grim statistics on PrEP prescription among physicians are beginning to improve in Ontario, more effort is needed to stem the tide.

Research shows that most of the PrEP dispensed in Ontario are prescribed mostly by family and general practitioners and less often by others including infectious disease physicians, nurse practitioners, internal medicine physicians, and public health and preventive medicine physicians (OHTN, 2021). Thus, given the central role PCPs play in PrEP delivery services, efforts to improve these services should involve PCPs who can effectively identify and offer PrEP services to individuals who are at risk of HIV infection. As other note, failure to engage PCPs and related activities can result in missed opportunities to prevent HIV acquisition (Cossarini et al., 2018; Zucker et al., 2018).

Based on the findings from our needs assessment study (Alvarado et al., 2023), we developed an online asynchronous module on PrEP prescription for PCPs and evaluated its impact. This report presents the findings of the evaluation study and highlights the importance of the newly developed PrEP module in bridging the current knowledge gap in PrEP prescription among PCPs in Southeastern Ontario.

Developing the PrEP module

The asynchronous PrEP training module was developed in English and implemented in an *Articulate 360* learning management system (LMS). The development of the module went through a 4-stage process of conceptualization, content collection and development, module production and implementation.

Phase 1. At the conceptualization stage, a team of educational developers, researchers, consultants and subject matter experts (SMEs) from the project team collaborated and determined the appropriate content, learning objectives, and assessment types to be included in the module.

Phase 2. At the content collection and development stage, the SMEs provided all educational content, videos and other materials for storyboarding. The educational development team ensured that the storyboarded content provided an appropriate context and flow between topics,

and suggested opportunities for formative learning (e.g., use open-ended questions to keep the learner actively engaged with the content) and the incorporation of multimedia to supplement the text.

Stage 3. At the stage of module production, the final content was storyboarded within *Articulate Storyline* to produce a visually appealing, high-quality, and interactive module. The draft version of the module underwent multiple rounds of testing and review by the SMEs and the educational development team to ensure content accuracy and great user experience.

Stage 4. Finally, at the implementation stage of the module development process, the completed module was uploaded into the *360 Articulate* LMS and tested again prior to its release. The testing ensured that communication links between the module and the LMS platform regarding learner interactions and progress are accurately reported. Table 1 summarizes the knowledge and skills that are delivered to learners in the training module. The module consists of four sections including basic and advance skills for PrEP delivery services. Figure 1 provides an overview of the input and activities employed in the creation of the module as well as the expected impact or outcomes of the module in the short and long terms following its initial launch.

Table 1. Summary of the PrEP module content and objectives

Section	Learning Objectives	Content
Section 1: PrEP basic knowledge	<ul style="list-style-type: none"> Describe what PrEP is, how it works, and what it is for. Identify the medications used in oral PrEP and its efficacy/effectiveness. Recognize PrEP overall safety and specific side effects. 	<ul style="list-style-type: none"> Video, key messages developed by researchers.
Section 2: PrEP basic skills	<ul style="list-style-type: none"> Learn how to obtain a sexual history and feel comfortable doing it. Learn how to help patients assess their risk of HIV acquisition. Learn what needs to be included in PrEP. counseling and effectively deliver PrEP counseling with your patients. Learn how to identify individuals at high risk of HIV acquisition. 	<ul style="list-style-type: none"> Summary of key points, link to card from PrEP Ontario Video on counseling for PrEP Link to CDC acquisition tool risk. Summary of guidelines for indication of PrEP in different populations.
Section 3. Building additional (advanced) knowledge and skills	<ul style="list-style-type: none"> Learn how to assess the risk of HIV and identify an acute HIV infection. Learn how to start an individual in PrEP. Learn how effectively do an adherence counseling. Learn how to monitor adverse effects. 	<ul style="list-style-type: none"> Video on starting patients on PrEP by preopontario. Summary of PrEP options. Resource and link for support PrEP adherence. Summary of side effects and links to drug interaction sites and additional documents.
Section 4. PrEP coverage and expert support	<ul style="list-style-type: none"> Gain understanding of how PrEP can be covered in Ontario. How to contact PrEP expert support when needed. 	<ul style="list-style-type: none"> Link to resources to obtain support from PrEP experts. Link to resources to cover for PrEP.

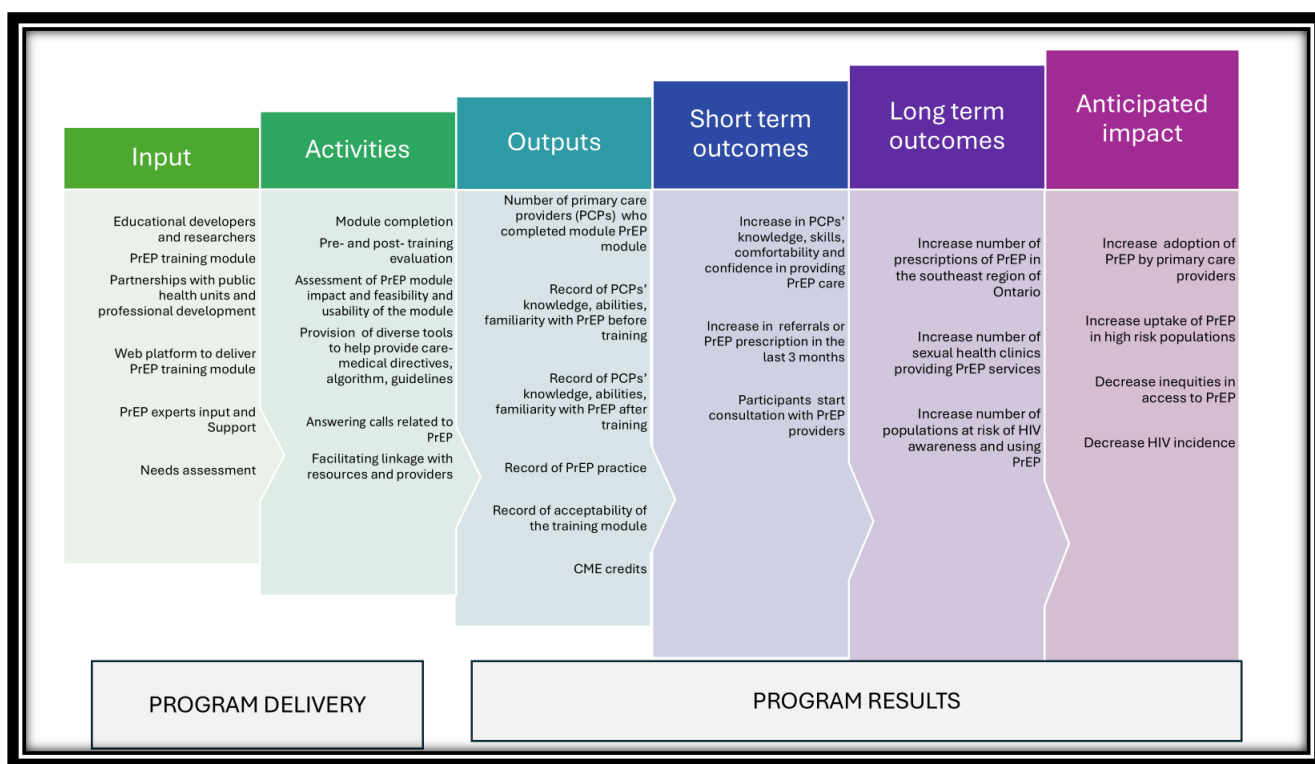


Figure 1: Logic model of the PrEP module

Objectives of the Evaluation

The evaluation was guided by the following objectives:

1. Evaluate the extent to which the PrEP educational online module has impacted PCPs' knowledge, comfortability, and familiarity with PrEP prescription and use among individuals who are at risk of HIV infections.
2. Evaluate the value, applicability, and utility of the PrEP module.
3. Strengths, weaknesses, and recommendations for improving the online PrEP module.

Methods

Data and Analysis

Data

This outcome-based evaluation is based on data obtained from pre ($n = 38$) and post ($n_{\text{immediate post}} = 21$; $n_{\text{post 3 months}} = 8$) evaluation surveys administered to PCPs who completed a 2-hour educational module on PrEP prescription and use via Qualtrics, an online platform for survey development and data collection. The evaluation surveys were reviewed and approved by the Queen's University Hospital Research Ethics Board (HSREB).

Recruitment of participants

Learners who completed the PrEP module and the evaluation surveys included family doctors at Queen's University family team, residents of the family medicine program, family doctors/nurse participating in sexual programs in Ontario, and family doctors/nurses from main college/university institutions in the region. The recruitment of learners started in January 2024 in which invitation letters for participation were sent by mail to providers of colleges, universities, family teams, and community care organizations working in South Eastern Ontario. Additional invitations were also sent to family residents in training through the director of their program and all PCPs from the 12 sexual health clinics who participated in the initial needs assessment study.

Completing the module and the evaluation surveys

PCPs who completed the training module on PrEP were first asked to complete an online pre-evaluation survey (Appendix A) that examined learners' prior knowledge and skills on PrEP as well as their previous experience with PrEP. Once completed, learners were promptly directed to the online training module. Immediately after completing the training module, learners received a link to complete a post evaluation survey that sought to assess the impact of the training module on learners' knowledge and skills on PrEP (Appendix A). After completing the immediate post survey, learners were given access to the training module and a 3-month follow-up evaluation survey was conducted. Learners who completed the training module and evaluation surveys received a certification of completion.

Measures

We measured PCPs' PrEP prescription and referral patterns in the last three months, correct knowledge of PrEP and how it works. Using a six-point Likert-type, we assessed PCPs' knowledge, skills, comfortability, confidence, and familiarity with PrEP prescription in varying contexts. Likert scale measures were also obtained for the value, applicability, and utility of the module. Open ended questions were used to obtain information about the strengths, weaknesses, and recommendations for improving the module. Information on learners' demographic characteristics including gender, age, medical specialty, and current setting of practice was also collected at baseline and all subsequent evaluation surveys.

Analysis

As appropriate, descriptive and inferential statistics (e.g., means, percentages, t-tests) were used to summarize and assess the data and the impact of the online modules on learners for all outcome variables of interest. Missing data arising from non-response and incomplete survey responses were assumed to be missing at random and were therefore excluded from the analysis. Due to the small number of responses from the 3-month post survey and a lack of acceptable statistical power, preliminary inferential statistical tests (e.g., t-tests) for group differences were

not found to be meaningfully interpretable and were, thus, not reported as the standard errors were deemed biased and inefficient (de Winter, 2023). The narrative survey data were thematically (Braun & Clarke, 2023) analyzed using NVivo software for analyzing qualitative data.

Results

Learners' demographic characteristics at baseline

At baseline, a little more than a third of (31.6%) of PCPs who completed the PrEP module identified as physicians in training and registered nurses (34.2%) while about 24% identified as family physicians or primary care doctors (Table 2). More than half (73.7%) of the learners were women and were more likely to be relatively young between ages 25 –34 years (44%) and 35-44 years (34.2%). Learners were also more likely to be currently practicing in Kingston (17.6%) and in sexual health clinics than in other settings (27.0%).

Table 2: Demographic characteristics of learners (categories with less than 5 participants not shown)

Respondents' Characteristics	Baseline	
	N	Percent (%)
Type of learner		
Physician in training	12	31.6
Primary care doctor/Family Physician	9	23.7
Registered Nurse	13	34.2
*Other	2	5.3
Gender		
Man	10	26.3
Woman	28	73.7
Age		
Between 25- 34	17	44.7
Between 35-49	13	34.2
Between 50-59	6	15.8
Currently work in		
A sexual health clinic	10	27
In a public health setting but not in the sexual health clinic	7	18.9
I work in a family practice team.	6	16.2
I am a physician or nurse in training	9	24.3
I work with college/university students	4	10.8

*Others include public health nurse and public health physician

Recency of PrEP prescription and referrals

At the time of completing the online module, learners were asked about the recency of their PrEP prescription and patient referral practices. Table 3a shows that a large majority of PCPs (81.6%) did not prescribe PrEP to any of their clients or patients in the last 3 months preceding the survey. Just about 41% of PCPs have referred their clients or patients to PrEP providers in the last 3 months. Approximately 92% of PCPs indicated that they did not contact an infectious disease doctor to ask questions about PrEP for their clients or patients 3 months prior to their PrEP. A follow-up survey after 3 months (Table 3b), however, revealed that PCPs' referral patterns (≤ 10 patients) and contact with infectious disease doctors increased moderately and respectively by 25% and 13%).

Table 3a: Prescription patterns of PrEP at baseline

In the last 3 months (before the Prep training) have you:	Pre survey N	Yes, to more than 10 patients Percent (%)	Yes, to 10 or less number of patients Percent (%)	No (%)
a) Prescribed PrEP to any of your clients or patients?	38	0.0	18.4	81.6
b) Referred your clients or patients to PrEP providers?	39	41.0	0.0	59.0
c) Talked about PrEP to any of your patients or clients?	39	12.8	56.4	30.8
d) Contacted an Infectious disease doctor to ask questions on PrEP for one of your clients or patients?	39	7.7	0.0	92.3

Table 3b: Prescription patterns of PrEP at 3 months post training

In the last 3 months have you:	3 months post survey N	Yes, to more than 10 patients Percent (%)	Yes, to 10 or less number of patients Percent (%)	No (%)
a) Prescribed PrEP to any of your clients or patients?	8	0.0	12.5	87.5
b) Referred your clients or patients to PrEP providers?	8	0.0	25.0	75.0
c) Talked about PrEP to any of your patients or clients?	8	0.0	62.5	37.5
d) Contacted an Infectious disease doctor to ask questions on PrEP for one of your clients or patients?	8	0.0	12.5	87.5

Assessment of PCPs' prior knowledge of PrEP

In both pre- and post-module evaluation surveys, we assessed the correctness of PCPs' prior knowledge of PrEP in specific contexts. A Chi-square test of association (Table 4) revealed that learners' pattern of responses on these questions did not significantly differ before and after completing the online PrEP module, although the proportion of learners who answered the questions correctly marginally increased after completing the module. Correct knowledge on how PrEP works, for example, improved from 92% at pre-evaluation to a 100% at post evaluation but the difference was not statistically significant ($\chi^2 = 1.75, p = 0.186$). Similarly, no

significant differences were observed for correct answers regarding the differences between *PrEP* and *PEP*, who is unlikely to have acute HIV infection, and the appropriate test that can detect acute HIV infection 4 weeks after infection. Table 4 further shows that both correct knowledge regarding who is unlikely to have acute HIV infection (60.5%), and the appropriate test for detecting acute HIV infection 4 weeks after infection (63.2%) were relatively low at pre-evaluation but improved modestly to about 71% at post evaluation.

Table 4: Validation of prior PrEP knowledge

	N	Pre-Survey	Immediate Post-Survey	Chi-square test+	P- value
		Percent correct or incorrect (%) N = 38	Percent correct or incorrect (%) N = 21		
A. I know that PrEP works through:					
Suppressing the viral load of a person who lives with HIV		7.9	0.0	1.747	0.186
By preventing HIV infection in someone who is HIV negative.*		92.1	100		
Preventing people from getting STIs		0.0	0.0		
B. HIV postexposure prophylaxis (PEP) is different from PrEP. PEP refers to:		38	21		
Taking a combination of antiretroviral medications (ARV) immediately (after) a potential exposure to HIV. *		97.4	95.2	0.187	0.665
Taking ARV after having confirmed infection with HIV		2.6	4.8		
Taking ARV to prevent STIs		0.0	N0.0		
C. Among the following, who is unlikely to have acute HIV infection?					
A man who had oral sex with another man without a condom three weeks ago		10.5	0.0	3.184	0.364
A man who had receptive anal sex without a condom two months ago and who now has a fourth generation HIV serology with a NON-reactive result.		10.5	4.8		
A gay man who has unprotected sex with his exclusive HIV-positive male partner who takes ART consistently, and has had an undetectable viral load for many years.		18.4	23.8		
All of the above.*		60.5	71.4		
D. Which of the following tests is the least likely to detect acute HIV infection 4 weeks after infection?					

	N	Pre-Survey	Immediate Post-Survey		
HIV viral load		18.4	14.3	0.413	0.813
Fourth generation HIV serology		18.4	14.3		
Rapid point-of-care HIV serology*		63.2	71.4		

Notes: *Correct answer is boldened. +All the Chi-square tests were not statistically significant at $p < 0.05$. Observations at 3-month post were too few for a meaningful analysis.

Assessment of basic PrEP knowledge and familiarity

The results in Table 5a indicate that immediately after completing the training module, basic PrEP knowledge regarding PCPs' ability to understand that HIV PrEP can reduce the number of new HIV cases if broadly used significantly increased by about 10% ($t = -2.56$, $p < 0.05$). Knowledge about PrEP effectiveness in preventing HIV in drug users also increased significantly by about 12% ($t = -2.87$, $p < 0.05$). Basic knowledge about the side effects of using tenofovir disoproxilfumarate/emtricitabine (TDF/FTC) for PrEP increased significantly by 17% as result of completing the training module on PrEP ($t = -2.42$, $p < 0.05$). There was also a significant increase (18%) in PCPs' knowledge about when a follow-up testing for HIV should be conducted at 3-month intervals for patients taking PrEP. Small to moderate improvements in learners' basic knowledge in other areas of PrEP but not statistically significant differences were observed (Table 5a).

Table 5a: Basic PrEP knowledge and familiarity

	Pre-Survey (a)	Immediate Post Survey (b)	T-test	Changes between (a) and (b)	3-Month Post Survey++
Please indicate your level of agreement with the following statement:	Mean	Mean	t	% Change [ND1][NC2]	Mean
Basic knowledge of PrEP					
a) I understand that HIV PrEP can reduce the number of new HIV cases if broadly used.	5.39	5.71	-1.452	5.94	5.83
b) When taken daily, PrEP is > 90% effective in preventing new HIV infections.	5.26	5.76	-2.564*	9.51	5.83
c) PrEP is effective at preventing HIV in people who inject drugs.	4.92	5.52	-2.870*	12.20	5.17
d) PrEP is effective at preventing HIV acquisition in men who have sex with men.	5.63	5.62	0.069	-0.18	6.00
e) HIV-positive patients are potential candidates for PrEP prescription.	2.26	1.52	1.918	-32.74	1.83
f) A patient with active Hepatitis B infection should not be prescribed PrEP.	3.18	3.67	-1.221	15.41	3.17

g) A creatinine clearance (CrCl) of ≥ 60 mL/min is required to safely initiate and maintain a patient taking PrEP.	4.34	4.05	0.820	-6.68	4.17
h) A decline in bone mineral density (BMD) is a potential, long-term side effect of using tenofovir disoproxilfumarate/emtricitabine (TDF/FTC) for PrEP.	4.13	4.85	-2.416*	17.43	4.67
i) Follow-up testing for HIV should be conducted at 3-month intervals for patients taking PrEP.	4.87	5.75	-3.975*	18.07	5.50
j) Using PrEP is linked to widespread HIV-resistance to tenofovir disoproxilfumarate/emtricitabine (TDF/FTC).	2.16	1.76	1.573	-18.52	1.67

*Significant at $p < 0.05$; ++ Significant differences were not reported as sample at 3-month post was too small for a meaningful analysis. Percentage changes reflect changes in pre and immediate post ratings.

Assessment of advanced knowledge of PrEP

Changes in PCPs' knowledge about their skills to start PrEP, skills to prescribe PrEP medications as well as their skills to monitor patients receiving PrEP were assessed before and after completing the training module. Table 5b reveals that learners' advanced knowledge in PrEP significantly and substantially increased in all areas assessed, particularly with regard to knowledge about PrEP monitoring skills (47% - 180%). For example, PCPs' knowledge about the criteria used for initiating same-day PrEP increased by 134% ($t = -8.21$, $p < 0.05$) while knowledge about referrals for patients who required unplanned PrEP discontinuation increased by about 180% after completing the training module ($t = -4.40$, $p < 0.05$). Similarly, learners' knowledge about how to perform a planned PrEP discontinuation increased significantly by 84% ($t = -5.33$, $p < 0.05$). Significant increases were also observed for knowledge about resources required for determining financial coverage for PrEP patients (73%) and how to guide patients to obtain PrEP coverage (83%). Changes in knowledge about skills required to administer PrEP medications increased between 57% to 81% while increases in knowledge about how to start PrEP ranged from 19% to 46%. Table 5b further indicates that knowledge about who can take TDF/FTC or TAF/FTC for PrEP respectively increased by 65% and 80%. Also, there were significant improvements in learners' knowledge regarding how to prescribe PrEP daily or continuously (67%) or how to prescribe TDF/FTC for PrEP (57%) or TAF/FTC for PrEP (72%) or PrEP on demand (68%).

Table 5b: More advanced PrEP knowledge

	Pre-Survey (a)	Immediate Post Survey (b)	T-test	Changes between (a) and (b)	3-Month Post Survey++
For each of the following statements, please rate your answer according to the degree of your knowledge:	Mean	Mean	t	% Change	Mean
Skills to start PrEP					

	Pre-Survey (a)	Immediate Post Survey (b)	T-test	Changes between (a) and (b)	3-Month Post Survey++
a) I am knowledgeable about the indications for prescribing PrEP to individuals at substantial risk of HIV acquisition.	3.55	4.90	-4.858*	38.03	5.00
b) I am knowledgeable about the clinical manifestations of acute HIV infection.	4.00	4.76	-2.997*	19.00	5.20
c) I am knowledgeable about the screening assessment and tests for individuals interested in starting PrEP.	3.42	5.00	-6.239*	46.20	5.00
Skills with PrEP medications					
d) I know who can take TDF/FTC for PrEP.	2.05	3.38	-4.808*	64.88	3.20
e) I know how to prescribe TDF/FTC for PrEP.	1.82	2.86	-3.724*	57.14	3.00
f) I know who can take TAF/FTC for PrEP.	1.87	3.38	-6.877*	80.75	3.00
g) I know how to prescribe TAF/FTC for PrEP.	1.63	2.81	-4.926*	72.39	3.00
h) I know how to prescribe daily/continuous PrEP.	1.79	3.00	-4.008*	67.60	3.20
i) I know how to prescribe on demand PrEP.	1.61	2.71	-4.788*	68.32	3.00
Skills for monitoring					
j) I know how to perform a PrEP follow-up visit.	1.82	3.24	-5.207*	78.02	3.25
k) I know what strategies I can use to support PrEP adherence in my patients.	1.87	3.10	-4.717*	65.78	2.75
l) I know how to monitor kidney function in a PrEP patient.	2.05	3.24	-3.687*	58.05	3.25
m) I know how to use available testing to detect acute/recent HIV infection.	2.39	3.52	-3.859*	47.28	3.25
n) I know what to do if a reduced eGFR occurs during PrEP.	1.50	2.67	-5.542*	78.00	2.75
o) I know where to check drug interactions relevant to PrEP medications.	2.24	3.48	-4.052*	55.36	3.25
p) I know when oral PrEP needs to be discontinued.	1.66	2.90	-5.198*	74.70	3.25
q) I know how to perform a planned PrEP discontinuation.	1.47	2.71	-5.331*	84.35	2.75
r) I know where to refer a patient, if needed, who has required unplanned PrEP discontinuation.	1.19	3.33	-4.400*	179.83	4.00
s) I know what resources to use to determine financial coverage for PrEP for my patient.	1.71	2.95	-5.273*	72.51	3.50
t) I know how to guide my patient to obtain PrEP coverage.	1.74	3.19	-5.565*	83.33	3.75
u) I know what criteria need to be met to make same-day PrEP possible.	1.34	3.14	-8.206*	134.33	3.25

	Pre-Survey (a)	Immediate Post Survey (b)	T-test	Changes between (a) and (b)	3-Month Post Survey++
v) I know when PEP is indicated and where to refer a patient who requires PEP.	2.32	3.67	-4.455*	58.19	3.50

*Significant at $p < 0.05$; ++Significant differences were not reported as the analytic sample at 3-month post was too small ($n=4$) for a meaningful analysis. Percentage changes reflect changes in pre and immediate post ratings.

Comfortability with PrEP practices

We assessed changes in the extent to which PCPs felt comfortable with PrEP prescription, decision making, counseling, and holding of sex related discussions with people with diverse gender orientations. Results in Table 5c suggest that there were significant improvements in learners' comfort levels after completing the training module. Comfort levels regarding PrEP decision making, counseling, and prescription significantly increased by 47% ($t = -6.15$, $p < 0.05$), 37% ($t = -4.87$, $p < 0.05$), and 38% ($t = -2.70$, $p < 0.05$) respectively. PCPs' confidence level about how to rapidly find answers and support in situations outside their knowledge base also increased significantly by about 18% ($t = -3.40$, $p < 0.05$).

Table 5c: Comfort with PrEP practices

	Pre-Survey (a)	Immediate Post Survey (b)	T-test	Changes between (a) and (b)	3-Month Post Survey ++
Please indicate your level of agreement with the following statement:	Mean	Mean	t	% Change	Mean
k) I feel comfortable making decisions about who can be a good PrEP candidate.	3.37	4.95	-6.145*	46.88	5.20
l) I feel comfortable discussing sexual behaviours with people whose gender/sexual orientation is different from mine (gbMSM, Transgender, non-binary).	5.08	5.33	-1.222	4.92	5.20
m) I feel comfortable counseling a patient about PrEP	3.51	4.81	-4.865*	37.04	5.00
n) I feel comfortable prescribing PrEP to patients	2.86	3.95	-2.701*	38.11	4.60
o) I am confident that I can rapidly find answers and support in situations outside my knowledge base	4.50	5.29	-3.495*	17.56	5.60

*Significant at $p < 0.05$; ++ Significant differences were not reported as the analytic sample at 3-month post was too small for a meaningful analysis.

Assessing the value, applicability, and utility of the PrEP module

Results from the immediate and 3-months post evaluation surveys reveal that nearly all learners agreed that the content and the interactivity functions of the training module were usable, valuable and applicable (Table 6). For instance, all learners (100%) agreed that the module met their expectations and that they found value in applying their learning in their clinical environment (100%). Similarly, all learners (100%) agreed they the training module has increased their comfort in understanding the role of PrEP in their practice. All learners (100%) reported that they have gained new knowledge and skills after completing the module. All learners reported that the objectives of the module were clearly defined. Almost all learners (95% - 100%) felt that the module was well organized and easy to use. About 95% to 100% found the content of the module useful to their work environment, and was presented at a level they could understand. All learners (100%) agreed that the technology used to access the module worked well.

Table 6: Value, applicability, and utility of the module

	Immediate Post	3-Months Post
Please indicate your level of agreement with the following statement:	Percent agreeing (%)	Percent agreeing (%)
a) The module met my expectations.	100	100
b) The length of the module was appropriate.	100	100
c) The objectives were clearly defined.	99.7	100
d) The content will be useful in my work environment.	95.2	100
e) The module has increased my comfort in understanding the role of PrEP in my practice.	100	100
f) The module has increased my knowledge about PrEP.	100	100
g) I will apply what I have learned in this module to my work environment.	100	100
h) This module was useful for my current clinical context.	90.0	75
i) I will recommend this module to others.	95.0	100
j) Through this module, I gained new skills.	100	100
k) The technology used to access the module worked well.	100	100
l) The module was well organized.	95.0	100
m) The module was interactive.	95.0	100
n) The module content was visually pleasing.	89.4	100
o) The module was easy to use.	100	100
p) The content was presented at a level I could understand.	100	100

Note: Percent agreeing includes agreed, slightly agreed, or strongly agreed responses.

Strengths of the PrEP module

Participants found the module to be both comprehensive and accessible and noted its ease of navigation and clarity (Table 7). They appreciated the straightforward information and resources, which are useful for future reference. The module's well-organized design, including links to PDFs, flowcharts, and supplementary materials, was particularly beneficial for deepening their understanding. Additionally, the

interactive elements—such as videos, specialist support, and shared tools—were highlighted as key strengths, making the content more engaging and enjoyable compared to traditional learning methods.

Table 7: Strengths of the online module

Themes	Supporting Quotations
<i>Comprehensiveness</i>	
Comprehensive approach	<i>Very concise and comprehensive approach.</i>
Comprehensive specialist support	<i>Easy to follow. Linkages to Ontarioprep. Shared tools. Comprehensive specialist support.</i>
<i>Conciseness and clarity</i>	
Clarity	<i>Simple, quick, clear.</i> <i>The format included very succinct and clear information in each section.</i> <i>Information was presented in a straightforward manner with resources that can be used in future.</i>
Concise	<i>Very concise and comprehensive approach.</i> <i>The format included very succinct and clear information in each section.</i>
Organized	<i>Excellent, very well organized, easy to follow, helpful links to PDFs and flowcharts.</i>
Quick read	<i>Simple, quick, clear.</i>
Simplicity	<i>Simple, quick, clear.</i>
Accessible	<i>The ease and accessibility of the module...</i>
Easy to access	<i>The ease and accessibility of the module...</i>
Easy to follow	<i>Excellent, very well organized, easy to follow, helpful links to PDFs and flowcharts.</i> <i>Easy to follow. Linkages to Ontarioprep. Shared tools. Comprehensive specialist support.</i>
<i>Supplementary materials</i>	
Good resources for future	<i>Interactive, gives good resources to look up in the future.</i>
Links for additional learning	<i>The ease and accessibility of the module... the way it was presented with interactive videos kept the module interesting and enjoyable to follow. I also really liked all the links to click on to support additional learning. For example, additional resources.</i>
Links for flowcharts	<i>Excellent, very well organized, easy to follow, helpful links to PDFs and flowcharts.</i> <i>The flowchart at the end was especially helpful to use in practice.</i>

Themes	Supporting Quotations
Links to Ontarioprep	<i>Easy to follow. Linkages to Ontarioprep. Shared tools. Comprehensive specialist support.</i>
Links to PDFs	<i>Excellent, very well organized, easy to follow, helpful links to PDFs and flowcharts.</i>
Mix of videos and reading materials	<i>Great mix of videos and reading material.</i>
Shared tools	<i>Easy to follow. Linkages to Ontarioprep. Shared tools. Comprehensive specialist support.</i>
Specialist support	<i>Easy to follow. Linkages to Ontarioprep. Shared tools. Comprehensive specialist support.</i>
Videos	<i>The ease and accessibility of the module... the way it was presented with interactive videos kept the module interesting and enjoyable to follow. I also really liked all the links to click on to support additional learning. For example, additional resources.</i> <i>Videos linked were informative and interesting.</i>
User engagement	
Enjoyable to follow	<i>The ease and accessibility of the module... the way it was presented with interactive videos kept the module interesting and enjoyable to follow. I also really liked all the links to click on to support additional learning. For example, additional resources.</i>
Excellent	<i>Excellent, very well organized, easy to follow, helpful links to PDFs and flowcharts.</i>
Interactive	<i>Interactive, gives good resources to look up in the future.</i>
Interesting to follow	<i>The ease and accessibility of the module... the way it was presented with interactive videos kept the module interesting and enjoyable to follow. I also really liked all the links to click on to support additional learning. For example, additional resources.</i>

Weaknesses of the PrEP Module

Table 8 outlines some key weaknesses identified by learners, particularly regarding the scope of the content. The analysis of the narrative feedback indicated, for example, that the video on renal impacts of PrEP was excessively detailed and too technical for primary care use, suggesting a need for simplification. The initial encounter with specialized knowledge was also mentioned as a challenge, with some learners feeling that the module introduced specialized knowledge that might be new to several clinicians. Next, a lack of supplementary materials was identified as a

concern. Specifically, learners highlighted the need for more strategy videos and activities focused on HIV risks, noting that the current content did not sufficiently address this area. Furthermore, the module was critiqued for insufficient auditory materials, with one learner expressing difficulty learning from text-based content. While some learners identified these weaknesses, many provided no feedback in this category.

Table 8: Weaknesses of the online module

Themes	Supporting Quotations
<i>Scope of content for users</i>	
Excessively detailed content Lengthy videos on renal impacts Videos on renal impacts is too technical	<i>Video on renal impacts of PrEP too detailed for primary care use - needs to be shorter and less technical.</i>
Initial encounter with specialized knowledge	<i>Specialized knowledge likely first exposure for several clinicians.</i>
Lack of supplementary materials Insufficient strategic activities on HIV risks Insufficient strategy videos on HIV risks	<i>Provide more strategy videos/activities for clients to reflect on HIV risk.</i>
Insufficient Auditory Materials	<i>All presented in text other than the videos. As someone who learns better with auditory materials this was difficult for me to learn from.</i>
No Identified Weaknesses	<i>Nil.</i> <i>I can't think of any.</i>

Recommendations for improving module on PrEP

Learners recommended several improvements for the module (Table 9). They suggested increasing supplementary materials, particularly strategy videos and activities related to HIV

risks. Additionally, they recommended incorporating check-in and scenario-based questions to enhance knowledge application. Some learners proposed templates for overdosing and/or prescribing on demand and reviewing dosing scripts for PEP. Simplifying content was also emphasized, with a focus on making renal impact videos less technical and shorter. To improve accessibility, learners suggested offering a PDF version of the module and adding an auditory function. Notably, while some learners made these recommendations, many provided no feedback in this category.

Table 9: Recommendations for improving the module

Themes	Supporting Quotations
<i>Increase supplementary materials</i>	
More strategy activities on HIV risks	<i>Provide more strategy videos/activities for clients to reflect on HIV risk.</i>
More strategy videos on HIV risks	<i>Provide more strategy videos/activities for clients to reflect on HIV risk.</i>
<i>Addition of questions</i>	
Check-in questions	<i>Have an option to have the content read to you in addition to being available as text. Have a few more check-in questions to see about applying the knowledge. Scenario based questions to end the module for looking at how to apply to practice.”</i>
Scenario-based questions	<i>Have an option to have the content read to you in addition to being available as text. Have a few more check in questions to see about applying the knowledge. Scenario based questions to end the module for looking at how to apply to practice.</i>
PEP Dosing and Prescribing Guidance	<i>Perhaps could go overdosing/prescription template especially for prescribing on demand, review dosing/script for PEP.</i>
Simplify content	<i>Video on renal impacts of PrEP too detailed for primary care use - needs to be shorter and less technical.</i>
Make renal impact videos less technical	

Themes	Supporting Quotations
Shorten videos on renal impacts	
<i>Increase accessibility</i>	
PDF version of the module	<i>A PDF version of the module for easy access.</i>
The addition of an auditory function	<i>Have an option to have the content read to you in addition to being available as text. Have a few more check in questions to see about applying the knowledge. Scenario based questions to end the module for looking at how to apply to practice.</i>
No Identified Recommendations	<i>I have nothing to add at this time. I thought it was great.</i> <i>Nil.</i>

Discussion

This evaluation study has examined the impact of the PrEP module on PCPs' knowledge and prescription patterns among individuals who are at risk of HIV infections. We evaluated the extent to which module has impacted PCPs' knowledge, skills, comfortability, and confidence with PrEP prescription and use. We also assessed the acceptability of the module as well as the strengths, weaknesses, and recommendations for improving the online PrEP module.

The findings revealed that PCPs were positively impacted by the PrEP training module. While a large majority of PCPs were not prescribing PrEP in the 3 months preceding their PrEP training, their referral patterns and contact with infectious disease doctors increased moderately after completing the training. Regarding the correctness of PCPs' prior knowledge of PrEP, we found that the training module produced only marginal improvements in topical areas regarding how PrEP works, who is unlikely to have acute HIV infection, and the appropriate test for detecting acute HIV infection 4 weeks after infection. These findings appear to be consistent with expectation as a large majority of PCPs did possess some basic prior PrEP knowledge before completing the module. Statistically significant and moderate improvements were, however, observed in other areas of PrEP knowledge. These areas include PCPs' ability to understand that HIV PrEP can reduce the number of new HIV cases if broadly used, knowledge about PrEP effectiveness in preventing HIV in drug users, and the side effects of using tenofovir disoproxilfumarate/emtricitabine (TDF/FTC).

In terms of advanced PrEP knowledge, the evidence demonstrates that PCPs who completed the training module significantly and substantially increased in all areas of PrEP knowledge assessed, particularly knowledge about PrEP monitoring skills. Similarly, PCPs comfort levels regarding PrEP decision making, counseling, and prescription significantly and substantially increased. We also observed a significant increase in PCPs' confidence level regarding how to rapidly find answers and support in situations that fall outside of their knowledge base.

In examining the acceptability of the training module, the findings revealed that nearly all PCPs agreed that the content and other features of the training module were usable, valuable and applicable to their work environment. For example, all learners agreed that the module met their expectations, was applicable to the clinical environment, and enabled them to gain new knowledge and skills on PrEP. In terms of the strengths of the module, learners found the module to be comprehensive, accessible, and easily navigable. They appreciated the straightforward information and resources that were provided. The module was perceived as well-organized in design, quite interactive, and engaging. The module, was however, criticised for being too detailed and technical in content. Learners also identified a lack of supplementary materials and insufficient auditory materials as major weaknesses of the module. To address these weaknesses, learners recommended the inclusion of templates or guidelines for PEP dosing and prescribing, supplementary materials including videos, check-in and scenario-based questions to enhance knowledge application as well as the provision of a PDF version of the module with an auditory function to improve accessibility.

Conclusion

The newly developed asynchronous PrEP training module was well received by all PCPs who completed the module. Overall, the module met their expectations and led to moderate-to-substantial improvements in PCPs' knowledge, skills, comfortability, and confidence regarding PrEP prescription, counseling and referrals. This module has the potential to bridge the current knowledge gap in PrEP prescription among PCPs in the study setting.

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Appendix A

PrEP: Pre-Training survey

Increasing Adoption of HIV PrEP in **Southeastern** Ontario: Pre-Training Evaluation Survey

Thank you for your interest in this project. Please take a few minutes to complete this survey before completing the module on HIV PrEP adoption. Your responses will help generate empirical evidence to inform the review and expansion of current opportunities for increasing PrEP adoption among Primary Care Providers in Ontario. It should take no more than 10 minutes to complete.

The detailed Letter of Information is available here: [Letter of information and consent program evaluation prep](#)

SUBJECT STATEMENT AND APPROVAL SECTION: I have read and understand the consent form for this study. I have been given sufficient time to consider the above information and to seek advice if I choose to do so. I have had all my questions answered. I have been directed to maintain a copy of the LOI/CF for my records. A signed copy of the LOI/CF will be kept by the Researcher.

Answering yes to the question below indicates that you have read the above Letter of Information and are giving your free and informed consent to participate in this study.

Q1 I verify that I have read the Letter of Information and that all my questions have been answered.

- ☐ Yes, I consent to participate. (1)
- ☐ No, I do not consent to participate. (2)

Skip To: End of Survey If I verify that I have read the Letter of Information and that all my questions have been answered. = No, I do not consent to participate.

Q2 UNIQUE IDENTIFIER: These questions will give us the opportunity to obtain a unique identifier and link your data from the pre and post evaluation surveys.

Q3 Please indicate the last two letters of your last name (e.g., if your last name is Prince, write CE).

Q4 Please indicate the month in which you were born (e.g., if you were born in April, write 04).

Q5 Now, indicate the first two letters of the name of your mother (e.g., if your mother's name is Diane, write DI).

Q6 In the last 3 months have you:

	Yes, to more than 10 patients	Yes, to 10 or less number of patients	No
Prescribed PrEP to any of your clients or patients?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Referred your clients or patients to PrEP providers?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Talked about PrEP to any of your patients or clients?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contacted an Infectious disease doctor to ask questions on PrEP for one of your clients or patients?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q7 What are your educational learning needs for HIV PrEP?

Q8 For the following statements, please indicate the extent to which you agree or disagree.

	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly Agree
I understand that HIV PrEP can reduce the number of new HIV cases if broadly used	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When taken daily, PrEP is > 90% effective in preventing new HIV infections	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PrEP is effective at preventing HIV in people who inject drugs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PrEP is effective at preventing HIV acquisition in men who have sex with men.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
HIV-positive patients are potential candidates for PrEP prescription	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A patient with active Hepatitis B infection should not be prescribed PrEP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A creatinine clearance (CrCl) of ≥ 60 mL/min is required to safely initiate and maintain a patient taking PrEP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A decline in bone mineral density (BMD) is a potential, long-term side effect of using tenofovir disoproxilfumarate/emtricitabine (TDF/FTC) for PrEP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Follow-up testing for HIV should be conducted at 3-month intervals for patients taking PrEP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using PrEP is linked to widespread HIV-resistance to tenofovir disoproxilfumarate/emtricitabine (TDF/FTC)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q9 I know that PrEP works through:

- ☐ Suppressing the viral load of a person who lives with HIV
- ☐ Preventing people from getting STIs
- ☐ By preventing HIV infection in someone who is HIV negative

Q10 HIV postexposure prophylaxis (PEP) is different from PrEP. PEP refers to:

- ☐ Taking a combination of antiretroviral medications (ARV) immediately (after) a potential exposure to HIV
- ☐ Taking ARV after having confirmed infection with HIV
- ☐ Taking ARV to prevent STIs

Q11 For the following statements, please indicate the extent to which you agree.

	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly Agree
I am knowledgeable about the indications for prescribing PrEP to individuals at substantial risk of HIV acquisition	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am knowledgeable about the clinical manifestations of acute HIV infection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am knowledgeable about the screening assessment and tests for individuals interested in starting PrEP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable making decisions about who can be a good PrEP candidate.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable discussing sexual behaviours with people whose gender/sexual orientation is different from mine (gbMSM, Transgender, non-binary).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
I feel comfortable counseling a patient about PrEP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
I feel comfortable prescribing PrEP to patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

I am confident
that I can rapidly
find answers and
support in
situations outside
my knowledge
base

☐ ☐ ☐ ☐ ☐

Q12 Among the following, who is unlikely to have acute HIV infection?

- ☐ A man who had oral sex with another man without a condom three weeks ago
- ☐ A man who had receptive anal sex without a condom two months ago and who now has a fourth generation HIV serology with a NON-reactive result.
- ☐ A gay man who has unprotected sex with his exclusive HIV-positive male partner who takes ART consistently, and has had an undetectable viral load for many years.
- ☐ All of the above

Q13 Which of the following tests is the least likely to detect acute HIV infection 4 weeks after infection?

- ☐ HIV viral load
- ☐ Fourth generation HIV serology
- ☐ Rapid point-of-care HIV serology

Q14 For each of the following statements, please rate your answer according to the degree of your knowledge.

	None at all	A little	A moderate amount	A lot	A great deal
I know who can take TDF/FTC for PrEP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know how to prescribe TDF/FTC for PrEP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know who can take TAF/FTC for PrEP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know how to prescribe TAF/FTC for PrEP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know how to prescribe daily/continuous PrEP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know how to prescribe on demand PrEP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q15 For the following statements please rate your answer according to your degree of knowledge

	None at all	A little	A moderate amount	A lot	A great deal
I know how to perform a PrEP follow-up visit.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know what strategies I can use to support PrEP adherence in my patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know how to monitor kidney function in a PrEP patient	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know how to use available testing to detect acute/recent HIV infection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know what to do if a reduced eGFR occurs during PrEP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know where to check drug interactions relevant to PrEP medications	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know when oral PrEP needs to be discontinued	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know how to perform a planned PrEP discontinuation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know where to refer a patient, if needed, who has required unplanned PrEP discontinuation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q16 For the following statements, please rate your answer according to your degree of knowledge.

	None at all	A little	A moderate amount	A lot	A great deal
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I know what resources to use to determine financial coverage for PrEP for my patient.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know how to guide my patient to obtain PrEP coverage.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know what criteria need to be met to make same-day PrEP possible	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know when PEP is indicated and where to refer a patient who requires PEP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q17 I am a:

- ☐ A physician in training
- ☐ Primary care doctors or family Physician
- ☐ Registered Nurse
- ☐ Nurse Practitioner
- ☐ Practical Nurse
- ☐ Other, please specify _____

Q18 How do you self-identify in terms of gender?

- ☐ Man
- ☐ Woman
- ☐ I do not identify with gender binary
- ☐ I prefer not to disclose information concerning my gender

Q19 What is your age?

- ☐ Less than 25
- ☐ Between 25-34
- ☐ Between 35- 49
- ☐ Between 50 -59
- ☐ 60 and more

Q20 I currently work in (select all that apply)

- ☐ A sexual health clinic
- ☐ In a public health setting but not in the sexual health clinic
- ☐ I work in a solo clinic.
- ☐ I work in a family practice team.
- ☐ I work in a community health center

- I am a physician or nurse in training.
- I work with college/university students

Q21 In which city do you currently practice

Q24 Please enter an email address so that we can send you the link to the HIV module that you can use for rapid access. After you submit this survey, search that email address for Queen's HIV PrEP and you'll quickly be able to gain access to the module. This data is not used in analysis or evaluation.

Q25 When you click submit, you will be re-directed to the HIV PrEP module. Thanks for participating!

PrEP: Post-Training Evaluation Survey

Increasing Adoption of HIV PrEP in **Southeastern** Ontario: Post-Training Evaluation Survey

Thank you for your interest in this project. Please take a few minutes to complete this post training evaluation survey. Your responses will help generate empirical evidence to inform the review and expansion of current opportunities for increasing PrEP adoption among Primary Care Providers in Ontario. It should take no more than 15 minutes to complete.

Q2 UNIQUE IDENTIFIER: These questions will give us the opportunity to obtain a unique identifier and link your data from the pre and post evaluation surveys.

Q3 Please indicate the last two letters of your last name (e.g., if your last name is Prince, write CE)._____

Q4 Please indicate the month in which you were born (e.g., if you were born in April, write 04)_____

Q5 Now, indicate the first two letters of the name of your mother (e.g., if your mother's name is Diane, write DI).

Q6 In the last 3 months have you:

	Yes, to more than 10 patients	Yes, to 10 or less number of patients	No
Prescribed PrEP to any of your clients or patients?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Referred your clients or patients to PrEP providers?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Talked about PrEP to any of your patients or clients?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contacted an Infectious disease doctor to ask questions on PrEP for one of your clients or patients?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q7 For the following statements, please indicate the extent to which you agree or disagree.

I understand that HIV PrEP can reduce the number of new HIV cases if broadly used	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When taken daily, PrEP is > 90% effective in preventing new HIV infections	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PrEP is effective at preventing HIV in people who inject drugs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PrEP is effective at preventing HIV acquisition in men who have sex with men.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
HIV-positive patients are potential candidates for PrEP prescription	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A patient with active Hepatitis B infection should not be prescribed PrEP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A creatinine clearance (CrCl) of ≥ 60 mL/min is required to safely initiate and maintain a patient taking PrEP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A decline in bone mineral density (BMD) is a potential, long-term side effect of using tenofovir disoproxilfumarate/emtricitabine (TDF/FTC) for PrEP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Follow-up testing for HIV should be conducted at 3-month intervals for patients taking PrEP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using PrEP is linked to widespread HIV-resistance to tenofovir disoproxilfumarate/emtricitabine (TDF/FTC)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q8 I know that PrEP works through:

- ☐ Suppressing the viral load of a person who lives with HIV (1)
- ☐ Preventing people from getting STIs (4)
- ☐ By preventing HIV infection in someone who is HIV negative (5)

Q9 HIV postexposure prophylaxis (PEP) is different from PrEP. PEP refers to:

- Taking a combination of antiretroviral medications (ARV) immediately (after) a potential exposure to HIV
- Taking ARV after having confirmed infection with HIV
- Taking ARV to prevent STIs (5)

Q10 For the following statements, please indicate the extent to which you agree.

	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
I am knowledgeable about the indications for prescribing PrEP to individuals at substantial risk of HIV acquisition	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am knowledgeable about the clinical manifestations of acute HIV infection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am knowledgeable about the screening assessment and tests for individuals interested in starting PrEP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable making decisions about who can be a good PrEP candidate.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable discussing sexual behaviours with people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

whose
gender/sexual
orientation is
different from
mine
(gbMSM,
Transgender,
non-binary).

I feel
comfortable
counseling a
patient about
PrEP

☐ ☐ ☐ ☐ ☐ ☐

I feel
comfortable
prescribing
PrEP to
patients

☐ ☐ ☐ ☐ ☐ ☐

I am confident
that I can
rapidly find
answers and
support in
situations
outside my
knowledge
base

☐ ☐ ☐ ☐ ☐ ☐

Q11 Among the following, who is unlikely to have acute HIV infection?

- ☐ A man who had oral sex with another man without a condom three weeks ago
- ☐ A man who had receptive anal sex without a condom two months ago and who now has a fourth generation HIV serology with a NON-reactive result
- ☐ A gay man who has unprotected sex with his exclusive HIV-positive male partner who takes ART consistently, and has an undetectable viral load for many years.
- ☐ All of the above

Q12 Which of the following tests is the least likely to detect acute HIV infection 4 weeks after infection?

- ☐ HIV viral load
- ☐ Fourth generation HIV serology
- ☐ Rapid point-of-care HIV serology

Q13 For each of the following statements, please rate your answer according to the degree of your knowledge.

	None at all	A little	A moderate amount	A lot	A great deal
I know who can take TDF/FTC for PrEP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know how to prescribe TDF/FTC for PrEP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know who can take TAF/FTC for PrEP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know how to prescribe TAF/FTC for PrEP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know how to prescribe daily/continuous PrEP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know how to prescribe on demand PrEP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q14 For the following statements please rate your answer according to your degree of knowledge

	None at all	A little	A moderate amount	A lot	A great deal
I know how to perform a PrEP follow-up visit.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know what strategies I can use to support PrEP adherence in my patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know how to monitor kidney function in a PrEP patient	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know how to use available testing to detect acute/recent HIV infection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I know what to do if a reduced eGFR occurs during PrEP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know where to check drug interactions relevant to PrEP medications	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know when oral PrEP needs to be discontinued	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know how to perform a planned PrEP discontinuation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know where to refer a patient, if needed, who has required unplanned PrEP discontinuation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q15 For the following statements please rate your answer according to your degree of knowledge

	None at all	A little	A moderate amount	A lot	A great deal
I know what resources to use to determine financial coverage for PrEP for my patient.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know how to guide my patient to obtain PrEP coverage.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know what criteria need to be met to make same-day PrEP possible	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know when PEP is indicated and where to refer a patient	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

who requires
PEP

Q16 Please indicate your level of agreement with the following statements:

	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
The module met my expectations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The length of the module was appropriate.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The objectives were clearly defined.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The content will be useful in my work environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The module has increased my comfort in understanding the role of PrEP in my practice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The module has increased my knowledge about PrEP.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will apply what I have learned in this module to my work environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q17 Please indicate your level of agreement with the following statements

	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Strongly agree
This module was useful for my current clinical context.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will recommend this module to others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Through this module, I gained new skills.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The technology used to access the module worked well.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The module was well organized.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The module was interactive.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The module content was visually pleasing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The module was easy to use.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The content was presented at a level I could understand.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Accreditation Question: The learning objectives were met	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Accreditation Question: This program enhanced my knowledge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q29 Accreditation Question: Did you detect any degree of bias in any part of this program?

- ☐ Yes (please specify) _____
- ☐ No

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- ☐ Collaborator
- ☐ Communicator
- ☐ Medical Expert/Family Medicine Expert
- ☐ Health Advocate
- ☐ Leader
- ☐ Professional
- ☐ Scholar

Q18 What are the strengths of this educational module on PrEP?

Q19 What are the weaknesses of this educational module on PrEP?

Q20 What recommendations do you have for improving this module?

Q21 I am a:

- ☐ A physician in training
- ☐ Primary care doctors or family Physician
- ☐ Registered Nurse
- ☐ Nurse Practitioner
- ☐ Practical Nurse
- ☐ Other, please specify _____

Q22 How do you self-identify in terms of gender?

- ☐ Man
- ☐ Woman
- ☐ I do not identify with gender binary
- ☐ I prefer not to disclose information concerning my gender

Q23 What is your age?

- ☐ Less than 25
- ☐ Between 25-34
- ☐ Between 35- 49
- ☐ Between 50 -59
- ☐ 60 and more

Q24 I currently work in (select all that apply)

- ☐ A sexual health clinic
- ☐ In a public health setting but not in the sexual health clinic
- ☐ I work in a solo clinic.
- ☐ I work in a family practice team.
- ☐ I work in a community health center
- ☐ I am a physician or nurse in training.
- ☐ I work with college/university students

Q25 In which city do you currently practice

Q26 [Link to the prize draw and certificate generator](#)

Thank you, now use the above link to enter your information to enter the draw and generate your certificate of completion with your learning hours.

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Q4 Please indicate the month in which you were born (e.g., if you were born in April, write 04)_____

Q5 Now, indicate the first two letters of the name of your mother (e.g., if your mother's name is Diane, write DI).

Q6 In the last 3 months have you:

	Yes, to more than 10 patients	Yes, to 10 or less number of patients	No
Prescribed PrEP to any of your clients or patients?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Referred your clients or patients to PrEP providers?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Talked about PrEP to any of your patients or clients?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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Q7 For the following statements, please indicate the extent to which you agree or disagree.

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When taken daily, PrEP is > 90% effective in preventing new HIV infections	
PrEP is effective at preventing HIV in people who inject drugs	
PrEP is effective at preventing HIV acquisition in men who have sex with men.	

HIV-positive patients are potential candidates for PrEP prescription

A patient with active Hepatitis B infection should not be prescribed PrEP

A creatinine clearance (CrCl) of ≥ 60 mL/min is required to safely initiate and maintain a patient taking PrEP

A decline in bone mineral density (BMD) is a potential, long-term side effect of using tenofovir disoproxilfumarate/emtricitabine (TDF/FTC) for PrEP

Follow-up testing for HIV should be conducted at 3-month intervals for patients taking PrEP

Using PrEP is linked to widespread HIV-resistance to tenofovir disoproxilfumarate/emtricitabine (TDF/FTC)

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Q10 For the following statements, please indicate the extent to which you agree.

	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
I am knowledgeable about the indications for	○	○	○	○	○	○

prescribing
PrEP to
individuals at
substantial risk
of HIV
acquisition

I am
knowledgeable
about the
clinical
manifestations
of acute HIV
infection

○ ○ ○ ○ ○ ○ ○

I am
knowledgeable
about the
screening
assessment
and tests for
individuals
interested in
starting PrEP

○ ○ ○ ○ ○ ○ ○

I feel
comfortable
making
decisions
about who can
be a good
PrEP
candidate.

○ ○ ○ ○ ○ ○ ○

I feel
comfortable
discussing
sexual
behaviours
with people
whose
gender/sexual
orientation is
different from
mine
(gbMSM,
Transgender,
non-binary).

○ ○ ○ ○ ○ ○ ○

I feel
comfortable
counseling a
patient about
PrEP

○ ○ ○ ○ ○ ○ ○

I feel
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○ ○ ○ ○ ○ ○ ○

prescribing
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patients

I am confident
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Q11 Among the following, who is unlikely to have acute HIV infection?

- ☐ A man who had oral sex with another man without a condom three weeks ago
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Q12 Which of the following tests is the least likely to detect acute HIV infection 4 weeks after infection?

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- ☐ Fourth generation HIV serology
- ☐ Rapid point-of-care HIV serology

Q13 For each of the following statements, please rate your answer according to the degree of your knowledge.

	None at all	A little	A moderate amount	A lot	A great deal
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I know how to prescribe TDF/FTC for PrEP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know who can take TAF/FTC for PrEP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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I know how to prescribe daily/continuous PrEP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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	None at all	A little	A moderate amount	A lot	A great deal
I know how to perform a PrEP follow-up visit.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know what strategies I can use to support PrEP adherence in my patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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I know how to use available testing to detect acute/recent HIV infection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I know what to do if a reduced eGFR occurs during PrEP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know where to check drug interactions relevant to PrEP medications	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know when oral PrEP needs to be discontinued	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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I know where to refer a patient, if needed, who has required unplanned PrEP discontinuation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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I know how to guide my patient to obtain PrEP coverage.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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who requires
PEP

Q16 Please indicate your level of agreement with the following statements:

	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
The module met my expectations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The length of the module was appropriate.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The objectives were clearly defined.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The content will be useful in my work environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The module has increased my comfort in understanding the role of PrEP in my practice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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I will apply what I have learned in this module to my work environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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This module was useful for my current clinical context.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will recommend this module to others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Through this module, I gained new skills.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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- ☐ Yes (please specify) _____
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- ☐ Primary care doctors or family Physician
- ☐ Registered Nurse
- ☐ Nurse Practitioner
- ☐ Practical Nurse
- ☐ Other, please specify _____

Q22 How do you self-identify in terms of gender?

- ☐ Man
- ☐ Woman
- ☐ I do not identify with gender binary
- ☐ I prefer not to disclose information concerning my gender

Q23 What is your age?

- ☐ Less than 25
- ☐ Between 25-34
- ☐ Between 35- 49
- ☐ Between 50 -59
- ☐ 60 and more

Q24 I currently work in (select all that apply)

- ☐ A sexual health clinic
- ☐ In a public health setting but not in the sexual health clinic
- ☐ I work in a solo clinic.
- ☐ I work in a family practice team.
- ☐ I work in a community health center
- ☐ I am a physician or nurse in training.
- ☐ I work with college/university students

Q25 In which city do you currently practice

Q26 [Link to the prize draw and certificate generator](#)

Thank you, now use the above link to enter your information to enter the draw and generate your certificate of completion with your learning hours.