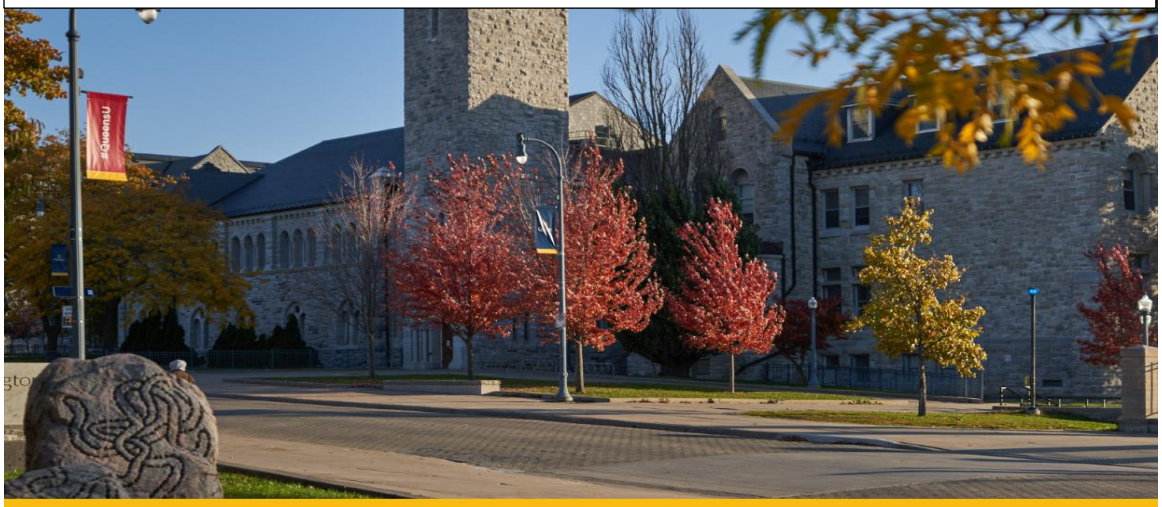
Adoption of HIV Pre-Exposure Prophylaxis (PrEP) among PCPs in Southeast Ontario

August 2023



Queen's UNIVERSITY
HEALTH SCIENCES
Professional Development
and Educational Scholarship

Authorship credits

Conceptualization	Jorge Luis Martinez, Beatriz Alvarado, Hugh Guan, Bradley Stoner, Pilar Camargo
Methodology	Jorge Luis Martinez, Beatriz Alvarado, Hugh Guan, Bradley Stoner, Pilar Camargo, David Taylor, Nicholas Cofie, Nancy Dalgarno
Validation	Beatriz Alvarado, Nicolas Cofie
Formal analysis	Oluwatoyosi Kuforiji, Nicolas Cofie
Investigation	Emma Nagy, Aamir Sholapur, Joseph Braimah, Oluwatoyosi Kuforiji
Resources	Jorge Luis Martinez, Beatriz Alvarado, Hugh Guan, Nicholas Cofie, Nancy Dalgarno
Data Curation	Emma Nagy, Aamir Sholapur , Oluwatoyosi Kuforiji, Nicolas Cofie, Beatriz Alvarado
Writing - Original Draft	Oluwatoyosi Kuforiji, Nicolas Cofie
Writing - Review & Editing	Oluwatoyosi Kuforiji, Nicolas Cofie, Beatriz Alvarado, Jorge Martinez
Visualization	Oluwatoyosi Kuforiji, Nicolas Cofie,
Supervision	Jorge Luis Martinez, Beatriz Alvarado, Hugh Guan, Bradley Stoner, Pilar Camargo
Project administration	Beatriz Alvarado, Emma Nagy, Hugh Guan, Jorge Martinez, Pavla Zabojnikova
Funding acquisition	Jorge Luis Martinez, Beatriz Alvarado, Hugh Guan, Bradley Stoner, Pilar Camargo

Cite as: Cofie, N; Kuforiji O, Alvarado B, Nagy E, Stoner B, Camargo P, Guan H, Martinez JL. **Adoption of HIV Pre-Exposure Prophylaxis (PrEP) among PCPs in Southeast Ontario. Report No 1. PrEP-SEO study.**

Study funded by OHTN Breaking New Grant

Table of Contents

Executive Summary

This study has examined the perceptions of PCPs regarding the adoption of PrEP in Southeastern Ontario. We also identified barriers faced by PCPs in implementing PrEP in their practice. Using semi-structured interview data, our analysis revealed the following key findings.

- Half (50%) of the PCPs sampled had experience with PrEP prescription.
- The majority of PCPs with PrEP experience were located in the Eastern region of Ontario (66.7%), particularly the Kingston area.
- Participants believed PrEP prescription is an effective strategy for preventing HIV infections.
- PrEP has negative side effects that may cause users to discontinue their uptake of PrEP medications or treatment.
- Some PCPs are concerned that the availability of PrEP may create a false sense of security among PrEP users.
- Participants cited a limited number of PrEP providers as a major barrier to accessing PrEP services in the region.
- PCPs in health units with predominantly large post-secondary student populations reported limited opportunities for offering PrEP.
- Participants noted that increased availability of PrEP guidelines and policies would enhance PCPs' ability to offer PrEP services.
- PCPs are willing to receive educational training on PrEP prescription.
- Participants believed that efforts at increasing PrEP prescription and uptake should include the promotion of partnerships between PCPs with health units and the government as whole.

Overall, participants recognized that while barriers reduce the rates of current PrEP prescription and utilization, these barriers are surmountable. Participants recommended the need to increase community awareness on PrEP, provide concise PrEP training for health professionals, eliminate the stigma associated with PrEP and incentivize people at risk of HIV acquisition to use PrEP.

Background and Literature review

Incidence of HIV has been rising in Canada with estimates showing that there were 2,242 new infections in 2018 (Public Health Agency of Canada, 2020). While HIV pre-exposure prophylaxis (PrEP) prescription has been shown to greatly reduce the incidence and prevalence of HIV infections across the world in people at risk of HIV acquisition (PRHA) (Hampel et al., 2022), it is still underutilized (Cox et al., 2021; Colyer et al., 2021; Tan et al., 2021). Despite advances in HIV treatment delivery and retention in care in Ontario, the province has had a

relatively stable HIV incidence since 2010 with 738 incident cases in 2018 and 687 in 2019, of whom 75% were in males and 53.6% in GBMSM (OHESI, 2020). Currently, the total estimated number of PrEP users in Ontario has increased between 2016 and 2021 with the largest increase occurring between 2017 to 2018. There was, however, a plateau in the number of PrEP users in 2020 compared to 2019 (Ontario HIV Treatment Nwetwork (OHTN), 2021). Estimates from the Ontario HIV Treatment Network indicate that a total of 11,042 individuals were dispensed PrEP over the full year of 2021, while 7,295 were dispensed PrEP over the last quarter of 2021 (OHTN, 2021).

As others note, healthcare providers in Canada including family physicians, nurse practitioners and general internists can play an important role in implementing PrEP, but unfortunately most of them do not prescribe PrEP (Sinno et al., 2021). Consistent with this observation, a recent study conducted among physicians in Hamilton and Niagara Ontario 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 & nPEP guidelines (Vincent & Woodward, 2020). Another Ontario study found that only 21% of MSM were willing to consult their family physicians for PrEP prescription (Charest et al., 2021). Fortunately, these grim statistics on PrEP prescription among physicians are moderately beginning to improve in Ontario. In 2021, the majority of PrEP dispensed were prescribed by family and general practitioners (57.7%), followed by infectious disease physicians (22.1%), nurse practitioners (9.2%), internal medicine physicians (7.1%), public health and preventive medicine physicians (0.6%) and other physicians (3.2%) (OHTN, 2021).

While much has been learned and modest progress has been made, HIV elimination in Ontario would require that PrEP is offered when needed and maintained for the duration of substantial risk of HIV acquisition. Timely use of PrEP can only happen when it can be accessed readily. For PrEP to exert the strongest impact, it needs to be easily accessible at the sites where PRHA seek care, where possible. This can only be done with the full involvement of primary care providers (PCPs) who can effectively identify individuals who are at risk of HIV infection and offer PrEP or make referrals for easy access to responsive PrEP services (e.g., sexual health clinics, dedicated PrEP clinics, or PCP with consistent PrEP practice). Failure to perform these activities can result in missed opportunities to prevent HIV acquisition (Cossarini et al., 2018; Zucker et al., 2018

In Ontario, PrEP was first offered by specialists with high familiarity with HIV medicine. By 2019, approximately 61% of the 1,420 PrEP prescribers in Ontario practiced in the Greater Toronto Area (GTA) and Ottawa, yet these two areas make up only 27.4% of Ontario's population (OHTN, 2021). Consequently, the GTA and Ottawa have the highest PrEP-to-need ratio (35.7%) (OHTN, 2021). The PrEP-to-need ratio is a measure of PrEP provision relative to HIV burden among a population, where larger numbers indicate more optimal HIV prevention. Of the 41 PrEP clinics listed on the ontarioprep.ca website, 17 are in the GTA, and the remaining are distributed across Ontario.

Context and current state of PrEP care in Southeastern Ontario

Given the disproportionate number of PrEP prescribers in the GTA and Ottawa, there is a need to increase PrEP adoption/capacity in Southeastern Ontario (SEO). In Kingston, the Infection and Immunology Clinic (IIC), a subspecialist-led clinic has provided care to people living with HIV (PLH) since the 1990s including PrEP care since 2014. Between 2018 and 2020, the IIC followed 20-30 PrEP users, and currently follows 18 users who had been referred by family physicians, or sexual health clinics. Dr. Guan, the current acting medical officer of health, Kingston Frontenac Lennox and Addington (KFLA), set up a nurse-led, medical-directive driven PrEP services in the KFLA and a sexual health clinic in 2020 and is currently following 30-40 patients. In response to the COVID-19 pandemic, both clinics provide the bulk of PrEP care by telemedicine. Most PrEP patients seen in the IIC and KFLA are referred by PCPs with limited experience with PrEP. The trend in referrals has not changed over the last 3 years (15-20 patients per year). The County Drugstore PrEP clinic offers PrEP in Picton. Notably, other than KFLA, no other sexual health clinic under the Hastings and Prince Edward (HPE) districts and the Leeds, Grenville, and Lanark (LGL) districts public health units (PHU) offer PrEP services. The IIC still receives PrEP referrals from the Queen's University student health services which serve over 25,000 students). Currently, KFLA offers sexual health services to Saint Lawrence College (approx. 2,400).

Currently, it is unknown the number of PrEP users being followed elsewhere in SEO. This may be due to few requests for PrEP services, or other health providers offering this service elsewhere (e.g., via telemedicine). Notwithstanding this, we suspect that there are many more people in need of PrEP in SEO than those currently taking it. The SEO catchment population is approximately 560,000 with an estimated GBMSM population of between 2,800 to 8,400 (1 to 3% of all men) (Purcell et al., 2012; Rich et al., 2018). Thus, for a PrEP coverage target of 30% (arguably a modest target) of behaviourally eligible GBMSM (~50%), the range of PrEP-eligible individuals falls between 420 to 1,260 in SEO (Cordioli et al., 2021; Snowden et al., 20217). The 2020 OHTN report on PrEP estimated that there were 144 PrEP users and 62 PrEP prescribers in the Eastern Ontario region (which also includes the population covered by the Eastern Ontario PHU and the Renfrew Health Units) by the first quarter of 2020, a figure three times lower than the lowest estimate of PrEP-eligible individuals only in SEO, which is a portion of the Eastern region (OHTN, 2021). While the PrEP-prescriber-to-need ratio in Eastern Ontario is higher than elsewhere in Ontario, it is unlikely that the current prescribers in SEO can absorb additional PrEP users over time.

Objectives of the study

This study was guided by the following objective:

1) Determine the perceptions of primary care providers (PCPs) regarding the adoption of PrEP.

2) Determine barriers to the implementation of PrEP among primary care providers.

Data and methods

Qualitative data (*n* = 28) were collected through semi-structured interviews with PCPs comprising physicians (family and emergency physicians), resident physicians, sexual health managers, public health nurses, and an executive director from a community based organization. The participants were from different regions within Ontario including East, South, Southeast, Northwest, Central east, and Central west regions. The interviews explored participants role, history of the health units, participants' perceptions about PrEP and resources required and barriers to the implementation of PrEP within health units. The data were thematically analyzed using open coding and NVivo, a qualitative data analysis software program. Each participants' narrative responses were coded, and grouped into themes and subthemes. The qualitative analysis identified six overarching themes. These overarching themes and subthemes are presented below and discussed.

Reflexivity

To address reflexivity, the research team was aware of individual biases and assumptions and engaged in thorough ongoing discussions to ensure that they did not influence data collection and analysis (Barry et al., 1999; Palagamas et al., 2017). Team members discuss codes to ensure there was shared meaning and inter-coder reliability. Discrepancies in codes and interpretation of key themes or concepts were resolved by members of the research team via discussion. This reflexive process together with post-interview debriefings with participants ensured that the interpretation of data was consistent with participants' perspectives (Cofie, Braund, & Dalgarno, 2022).

Results

Participants' Characteristics

Participants were recruited from different health care settings within the Southeastern region of Ontario. Participants had different specialties including family physicians (*n* = 5, 17.86%), emergency physicians (*n* = 1, 3.57%), executive director (*n* = 2, 7.14%), family medicine resident (*n* =1, 3.57%), public health nurses (*n* = 6, 21.43%), clinical practice lead (*n* = 1, 3.57%) and sexual health clinic managers (*n* = 12, 42.86%). Participants' length of time in their current role varied from 2 years and 5 months to 18 years with an average of 6.2 years and mostly resident in Eastern Ontario. Most of the participants (*n* = 27, 96.43%) had prior experience with HIV care and prevention while practicing in different health care settings. These experiences ranged from providing guidance to practitioners who care for HIV patients, providing direct

support to individuals living with HIV and treating severely related illnesses. Some participants obtained HIV care experience while undergoing public health residency training, counselling clients, managing HIV cases, risk reduction counseling, and connecting individuals with local resources.

Half (50%) of the sample had experience with PrEP which varied across work location, health facilities and region. The majority of participants with PrEP experience were located in the Eastern region of Ontario (66.7%), particularly the Kingston area (66.7%) (Table 1a). Fifty percent (50%) of participants with PrEP experience practiced in sexual health clinics.

Table 1a: Distribution of participants with PrEP Experience

Distribution of participants with PrEP Experience		
	PrEP Experience	
	No	Yes
Region	n (%)	n (%)
Central East	1 (6.25)	2 (16.67)
Central West	2 (12.50)	0 (0.00)
East	6 (37.50)	8 (66.67)
Northwest	3 (18.75)	0 (0.00)
South Eastern	2 (12.50)	1 (8.33)
Southern	1 (6.25)	0 (0.00)
South Western	1 (6.25)	1 (8.33)
Location of practice		
Barrie	1 (6.25)	0 (0.00)
Belleville	1 (6.25)	1 (8.33)
Brockville	2 (12.5)	0 (0.00)
Dryden	1 (6.25)	0(0.00)
Hamilton	2 (12.5)	0 (0.00)
Kenora	2 (12.5)	0 (0.00)
Kingston	4 (25)	8 (66.66)
Newmarket	1 (6.25)	1 (8.33)
Owen Sound	1 (6.25)	1 (8.33)
Unionville	0 (0.00)	1 (8.33)
Windsor	1 (6.25)	0 (0.00)
Type of health facility		
Community organization	0 (0.00)	1 (8.33)
Health unit	1 (6.25)	0 (0.00)
Hospital	4 (25.00)	3 (25.00)
SHC	11 (68.75)	6 (50)
Student center	0 (0.00)	2 (16.67)
Overall PrEP experience	14(50.00%)	14 (50.00%)

Findings from the semi-structured interviews

Participants provided insights into their perception of PrEP in preventing HIV acquisition, the resources required to implement PrEP, strategies to increase People at risk of HV/AIDS (PRHAs) willingness to use PrEP and recommendations to increase accessibility to PrEP within the community. Six overarching themes emerged from this study. These themes include 1) Perception of PrEP, 2) PrEP implementation, 3) Staff training and resources on PrEP, 4) Population at risk of HIV, 5) Organizational partnership, and 6) Recommendations.

Theme 1: Perceptions of PrEP

Participants described their perceptions of PrEP from different perspectives including, as a strategy to prevent HIV transmission, possible side effects of PrEP, frequency of usage, and mode of prescription. Additionally, some participants described their beliefs about PrEP as positive or negative impressions resulting from their experience with PrEP prescription and use.

The physicians described PrEP as an effective strategy to prevent HIV acquisition and this was supported by the SHC Managers. Additionally, the SHC managers emphasized PrEP as an important tool for HIV prevention. Table 1b presents these subthemes and sample quotes from different groups of participants.

A strategy to prevent HIV transmission

Regardless of the type of role and setting of practice, participants reported similar perspectives about PrEP being an effective strategy to prevent HIV acquisition. They felt PrEP is an important tool against HIV acquisition if used properly. Citing previous research, participants believed that PrEP could be up to a hundred percent effective if treatment regimes are properly adhered to by users.

Table 1b: A strategy to prevent HIV transmission

Subtheme	Sample Quotation	Role	Ontario Region
As an effective strategy	*So, PrEP is **an effective** intervention. It [PrEP] is for a disease that is also high priority. It is a highly effective strategy to prevent HIV acquisition. P001.*	SHC Manager	East

Subtheme	Sample Quotation	Role	Ontario Region
	I know PrEP is a prevention therapy. If used properly, I would say about 90-100% effective in terms of studies. P012.	PCP Family Doctor	East
	*I do recall that there are solid high-quality studies demonstrating that PrEP is **effective** for HIV prevention. So that to me suggests that this is something that's very effective. P004.*	PCP Family physician.	East
	Well, I mean, I know it's [PrEP]quite effective. P005.	PCP Emergency Physician	East
	*PrEP when it's used as prescribed, is a highly effective HIV prevention medication, 99% it's highly effective in preventing HIV acquisition**.** P023.*	SHC Manager	Central-East
	So taking [PrEP] perfectly you know is 99% effective against HIV acquisition so you know it's [PrEP] a very important tool in the toolbox for HIV prevention. P021.	SHC Manager	Central-East

Possible side effects of PrEP

Physicians shared their perspectives about possible side effects of PrEP. Specifically, the PCPs described the side effects impacting on PHRA's willingness to continue the medication when prescribed. The PCPs identified some of the side effects of PrEP such as stomach pain and loss appetite, and the miniscule effect on bone density. These side effects have contributed to the increase in the dropout rate in PrEP treatments as well as PrEP users'treatments and the unwillingness of individuals at risk of HIV infections to continue their medication as prescribed.

Table 2: Side effects of PrEP

Subtheme	Sample Quotation	Role	Ontario Region
Possible side effects of PrEP	*I usually tell people about **common side effects** and you know, stomach pain and loss of appetite. We talked a little bit about the very miniscule effect on bone density with Truvada. P004.*	PCP Family physician	East

Subtheme	Sample Quotation	Role	Ontario Region
	*The thing is, I do know that certain people have **side effects** and I know that there is a reasonable like dropout rate of people that started but unfortunately find that they can't continue because of the side effects sometimes. The negative parts of it [PrEP] are just generally the side effects like the symptoms that people get P005.*	PCP Emergency physician	East
	*There's lots of, **side effects** and follow up that's required, so I'm not sure that that would be the best bang for our buck. I feel like we'd probably want to support more of our physicians and nurse practitioners and building up their competencies in order to do that [prescribe PrEP]. P003.*	Clinical Educator	East

PrEP usage or dosage

The physicians described PrEP as a medication that is taken once a day and can be used on demand or taken periodically. This perspective was from their practice of prescribing PrEP to individuals at risk of HIV. This was corroborated by a few SHC managers who supported and cared for individuals at risk of HIV that are taking PrEP. SHC managers also described PrEP as a medication prescribed every three months after a positive HIV results.

Table 3: PrEP usage

Subtheme	Sample Quotation	Role	Ontario Region
PrEP usage/dosage	*I know that, officially using it [PrEP] **every single day is recommended**. However, some patients can use it as needed, if they're going to [meet with partners], if their sexual practices sort of come in waves, that can be more practical for some people just to make sure that they actually use it. P004.*	PCP Family Physicians	East
	*Something [PrEP] **taken daily to prevent HIV** for people that are high risk for HIV. I have prescribed it and have monitored people that are on it. Probably 3 patients so far. P012.*	Family Physicians	Southeast

Subtheme	Sample Quotation	Role	Ontario Region
	*So, I mainly prescribed PrEP as **the once-a-day** option. Although **I have done the [PrEP] on demand** as well. P008.*	PCP Public health and family physician	East
	*It's [PrEP] **a daily** treatment. P018.*	SHC Manager	Northwest
	*I know that it's [PrEP] prescribed every three months after their [People at risk of HIV (PRHA)] results are in. I know you can give **PrEP on demand,** which is very, very helpful for people who don't want to take it every day**.** P011.*	SHC Manager	East
	*So it [PrEP] is a medication, an antiviral, that individuals would take either in an ongoing fashion Or **they take episodically** prior to high risk activities or activities that put them at risk for acquiring HIV disease. P009.*	*SHC Manager*	East

Prescription of PrEP

Physicians and SHC managers described their perceptions of PrEP based on their knowledge about PrEP prescription, testing and protocols required before and after administrating the medication. PCPs described more specifically the types of testing protocols involved before prescribing PrEP. This often requires a series of blood work (testing) to be conducted on any potential clients to ascertain if they do not already have HIV or Hep C. These tests are done to ensure there are no pre-existing liver function abnormalities. This perspective was supported by SHC managers who described their knowledge about conducting an array of blood tests to determine an individual's eligibility for PrEP.

Table 4: Prescription of PrEP

Subtheme	Sample Quotation	Role	Ontario Region
Workup protocol before prescribing of PrEP	*Generally, we do a **little bit of a workup** beforehand to make sure they [patients] don't have any existing HIV or Hep C for that matter. Check there's no pre-existing liver function abnormalities and make sure that patients are counseled that treatment for HIV really do need to be tested regularly to continue taking it. P004.*	PCP family physician	East

Subtheme	Sample Quotation	Role	Ontario Region
	I know that the client have to do all the testing before they are prescribed PrEP and then their initial appointment, then one month after. I know every three months they [PRHA] have to do a full screen. P011.	SHC Manager	Southeast
	What we realized was that with PrEP, you are going to be testing them[patients] for everything anyways. P001.	SHC Manager	East
	*There's a **different criterion around the eligibility of** where the sort of the risk benefit ratio lies. And that the guidelines that came out a couple of years ago are fairly clear in terms of what that eligibility criteria looks like before prescribing PrEP. P016.*	PCP Family physician.	East

Beliefs about PrEP

Participants across the different groups (PCPs and SHC managers) shared similar beliefs about PrEP from a positive and negative perspective. Most of the shared beliefs were positive because participants felt PrEP is an important medication that can help keep individuals stay healthy and safe. However, one SHC manager expressed concerns about the inability of individuals to maintain a daily medication regime due to their personal circumstances such as being unhoused while a PCP expressed concerns about PrEP giving individuals a false sense of security.

Table 5: Beliefs about PrEP

Subtheme	Sample Quotation	Role	Ontario Region
Beliefs about PrEP	*I think for me in terms of **negative aspects of PrEP, nothing**. I guess the only thing that comes up is does it give people **a false sense of security**? But I think from the general public point of view, I don't know. I can't say I've come across a whole lot of negative beliefs about it. P004.*	PCP Family Physicians	East
	*..**nothing** that's coming to mind that **would dissuade me** from prescribing PrEP. P016.*	PCP Family Physician	East
	I look at everything through a harm reduction lens, so I see that there's a place for it [PrEP], for people who are	SHC Manager	Northwest

Subtheme	Sample Quotation	Role	Ontario Region
	just at an ongoing risk. I can't really think of anything ***negative about PrEP****. P017.*		
	My sort of ***negative beliefs****, what keeps me from getting super excited about PrEP is the daily treatments. A lot of the increases [in HIV] that we're seeing locally in terms of our case numbers are related to people who use injection drugs and are currently under house, the homeless. So in terms of inability to maintain daily medications and access to a daily medication, it tends to be challenging here. P018.*	SHC Manager	Northwest
	I do think we're making improvements regionally, provincially and nationally at, having PrEP be more accessible. There's more awareness around PrEP. So I don't have ***any negative belief****. P021.*	SHC Manager	Central east
	I mean, so the ***positive beliefs*** *are kind of obvious like that it could actually prevent HIV in at risk populations. I think that's the biggest positive there. P005.*	PCP Emergency physician	East
	So my beliefs are, I am strongly wanting to have individuals or candidates that are potentially at higher risk of acquiring HIV, being able to access PrEP. P023.	SHC Manager	East

Theme 2: Implementation of PrEP

Participants across different groups and work settings described similar factors and barriers to implementation of PrEP within their health units irrespective of region.

Barriers to PrEP implementation

Participants described barriers to the implementation of PrEP such as lack of role clarity among staff, staff shortages or reduced staff capacity, limited time for patient follow-up, lack of medical directors, limited local healthcare providers, and rebuilding after the COVID-19 pandemic. Despite the similarities in barriers identified across groups, the SHC Managers identified other barriers including lack of physicians' interest in PrEP and view of PrEP as a complicated medication, lack of dedicated sexual health physicians lack of adequate knowledge on PrEP and PrEP program not being a priority within the health unit and lack of PrEP specific training for healthcare providers. Tables 6a-6d present the sub-themes and selected participant quotes.

Table 6a: PrEP guidelines and policies required to implement PrEP

Subtheme	Sample Quotation	Role	Ontario Region
Limited providers and staff resources	*Specifically, to our clinic is that we don't have enough practitioners. Period. I mean, a barrier is that we don't* ***have enough providers*** *versus any other reason. P002.*	Clinical Educator	East
	We don't have any dedicated ***sexual health physicians*** *that are working with us. So, we have our medical officer of health, and we have the odd resident who is here that helps support some of the needs of our* ***clients.*** *But we don't have any hours of service to facilitate the ongoing thing that would need physician support. P013.*	SHC Manager	Southeast
	I think having dedicated resources for follow up and routine care is something that maybe a trained qualified physician or nurse practitioner would be best suited to manage. And, again, we don't have ***those [staff] resources available*** *to us presently. So, I would say probably one of the barriers at this point. P013.*	SHC Manager	Southeast
	So we don't have as far as you know, like interpreting lab results and like the ongoing support, we don't have the internal capacity currently to be able to do that… I don't think so[any other barriers] Frontline staff capacity would be the only other thing. P006.	SHC Manager	East

Table 6b: Limited demand for PrEP

Subtheme	Sample Quotation	Role	Ontario Region

Limited demand for PrEP	*I don't think **we really have enough students** accessing it [PrEP] or who would want to access it where we would need to train our nurses to do it. And also, I don't think that they [doctors] would be able to maintain their competency because it is a pretty complicated medication. P003.*	Clinical Educator	East
	*We haven't **had a huge demand** for it [PrEP]. P018.*	SHC Manager	Northwest

Table 6c: Limited time to follow-up patients for PrEP

Subtheme	Sample Quotation	Role	Ontario region
Limited time	*Well, that's a good question. In my setting, it's a little difficult, like all of my appointments are 10-minute appointments, so they're very quick. The ability to see somebody and follow-up is a little bit limited**.** P005.*	PCP – Emergency Physician	East
	*The barrier is that **we're very short staffed**. And we're already dealing with like a huge influx of patients each year in September, and I think there's so much demand for other kinds of services that sometimes, they[nurses] **feel time pressure** to not raise this [PrEP] with everybody who might be eligible for PrEP or who might benefit from the program. P004.*	PCP – Emergency Physician	East
	*We don't have any medical directors in the works or any increases **in time** with our nurse practitioners or physicians in any of our clinical settings. Currently, that time is sort of maxed out just on basic Sexual Health Clinical Services. P018.*	SHC Manager	Northwest

Table 6d: Physicians' reluctance to prescribing PrEP

Subtheme	Sample Quotation	Role	Ontario Region
Physicians' reluctance to prescribing PrEP	*Among the family physician community, I think a lot of people [family physician] think it's hard to prescribe or challenging or dangerous, which is not true. It's very safe. And as long as you follow the guidelines, it's pretty straightforward to prescribe. I think that there's a*	PCP Public Health and	East

	little bit of concern among some family physicians, that it is outside their wheelhouse, and see it has too complicated, when in reality, it's very simple to prescribe. P008.	Family Physician	
	Doctors are simply not comfortable prescribing it or getting involved. P007.	SHC Manager	East

Resources required to implement PrEP

Participants described the resources required to implement PrEP. The SHC Managers believe they require more staff resources, PrEP specific training for healthcare providers and medical directives to implement PrEP. The PCPs feel additional staff resources are required and this was supported by the SHC managers. Other resources identified by the SHC Manager and PCPs include PrEP guidelines and policies, dedicated physician support and funding to recruit additional nurses or practitioners (see Tables 7a – 7d).

Table 7a: PrEP guidelines and policies required to implement PrEP

Subtheme	Sample Quotation	Role	Ontario Region
PrEP guidelines and policies	*So the PrEP guidelines is needed, the Canadian PrEP guidelines by Doctor [name]- or he's first author on them. P001.*	SHC Manager	East
	*One thing that we've talked about since this survey came to us **is having a policy**. Like a written policy so that if we did have a practitioner came and didn't normally give PrEP they could quickly and easily read something and initiate in their own practice. Probably a policy to make it easier for them [doctors] to get the learning under hand. P002.*	Clinical Educator	East
	*I think to just like have **written resources** is really helpful because, you may try to do something but then not encounter it for six months. So being able to refer back to something like internal policies and guidelines. P003.*	Clinical Educator	East
Physician support	*Well, probably having **dedicated physician support and** having it [PrEP] become a part of our prioritized public health mandate and direction. P013.*	SHC Manager	East

Table 7b: Training and written resources required to implement PrEP

Subtheme	Sample Quotation	Role	Ontario Region
Training and written resources	*Education of course is needed, like some my team is just starting to learn about this [PrEP]. We don't really have that. We would* ***probably need training****. P017.*	SHC Manager	Northwest
	We need general education*, case management in terms of, strategies for keeping people engaged with PrEP. Just more info, we haven't really done a deep dive into PrEP. So in terms of better understanding, we haven't provided PrEP for clients. P018.*	SHC Manager	Northwest
	I think training would be required. I think what's happening now because I'm the HIV [role] if any HIV labs come in or someone coming in and interested in PrEP then another staff member will come in with me to learn. P011.	SHC Manager	East
	What I think would be really helpful is if we had like a very brief succinct down to earth presentation from an infectious disease doctor or something like that saying, here's the practical tip. I think that would be well received. P004.	PCP Family Physician	East
	Things that can help like, sometimes lunch and learns or those kinds of things where you have an expert that comes and discusses exactly what we're talking about, and then tells you about the the different ways of doing it [Prescribing PrEP]. P005.	PCP Emergency Physician	East

Table 7c: Increased staff capacity

Subtheme	Sample quotation	Role	Region
Additional staff required	*From a time capacity standpoint, we just don't have the funds to pay somebody an extra three hours a week or four hours a week to do this [prescribe PrEP], or whether, we actually need more people. P016.*	PCP Family physician	East

	*I think we would **need an increase in like nurse clinician**, as well as, like nurse practitioner or physician time as well. P018.*	SHC Manager	Northwest
	*So we **would need more nurses** to do more clinic time like we'd have to have clinic more days a week. We'd have to be able to hold them [PRHA] more in the community. So I need more staff to do that. P017.*	SHC Manager	Northwest

Table 7d: Medical directives

Subtheme	Sample quotation	Role	Ontario Region
Medical directives	*We would need nurses **and need a medical directive**. We don't have a physician working in our clinics. Like [health unit] does the nurses? Do almost everything by medical directive we would need a medical directive to do this. P011.*	SHC Manager	East
	*I think some resources that would help are sample protocols and **medical directives** that already exist, so people [doctors] don't feel like they're starting from scratch, because that can feel really overwhelming. So, I think that that could really help. P016.*	PCP Family Physician	East
	*We need a **medical directive**. If we can work under a medical directive so that we know what we have to do to get somebody on PrEP. Like what Blood work needs to be done and if they need to see a physician or a nurse practitioner. P019.*	SHC Manager	Northwest

Theme 3: Staff training for PrEP provision

Participants described the type and frequency of training received on PrEP and HIV care. SHC managers and PCPs noted that the training was majorly online self-led modules and other formats included shadowing healthcare professionals and attending relevant webinars. Specifically, the SHC managers described the training as inadequate and would rather have actual professional-led training sessions where they can have the opportunity to ask questions. Additionally, some SHC managers highlighted that there is no formal training process implemented within their unit and relied more on the organizational management to pass information through to frontline staff or use online resources to educate themselves (see Tables 8a and 8b).

Table 8a: Staff training format - Self taught

Subtheme	Sample Quotation	Role	Ontario Region
Self-taught trainings	*When we first launched, we did an actual training session where we just went through step by step how things were going to work in our clinic. The physicians who prescribe PrEP would normally have like a shadow shift with another physician, if needed, before they would do their own clinic. That's about it. P001.*	SHC Manager	East
	*Most of our **physicians are sort of self-taught**. If they want to treat these kinds of patients, then they go out and seek the information and learn how to do it and then they implement on their own. P002.*	Clinical Educator	East
	*It's [training] **self directed learning** so there's no expectation for you to like complete it. We haven't had anything as a group in terms of a group training specific to HIV care**.** P018.*	SHC Manager	Northwest
	We don't really have a formalized system for that [training], so within my team around anything to do with our services when there are new updates, they get emailed out to my team. We talk about them at our team meetings, but we don't have a formal method to do training on HIV prevention. P017.	SHC Manager	Northwest

Table 8b: Training incentives for PCPs

Subtheme	Sample Quotation	Role	Region
Training incentives for PCPs	*We **don't get bribes**. No, but I find there are things that are mandatory and those [trainings] happen. And then there are things that nurses really want to do or start to panic about because there's something new that they're not knowledgeable about. They often will raise the need for something. So I think it's a motivated group. I don't think there's any incentives provided. No**. P006.*	SHC Manager	East
	*It's [training] **part of the job** you're expected to know that [attend trainings]. P009.*	SHC Manager	East
	Usually, it's a drug rep that would contact us and say, can I come and bring lunch and talk to the doctors. Then we pay the doctors to come to lunch and they also get lunch, which is also always a draw, and some information from the drug rep. So that would be the one way we get them trained if we needed to. I don't think we've had a PrEP person contact us though. So, I haven't done in PrEP specific training. P002.	Student Centre - Clinical Educator	East

Theme 4a: Population at risk of HIV

The PCPs and SHC managers described similar populations they believed were at risk of HIV transmission and willing to use PrEP. These identified groups of people at risk of HIV acquisition are mainly gay and bisexual men, injection drug use population and sex workers (see Tables 9a and 9b).

Table 9a- Gay and bisexual men

Subtheme	Sample Quotation	Role	Ontario Region
Gay and bisexual men (GBM)	*I do think that group [**gay and bisexual**] in particular is. for the most part, like quite willing to consider PrEP. P001.*	SHC Manager	East
	*We have small pockets of **men who have sex with men** and a couple of our communities like a few people who will usually travel to Toronto or Winnipeg to go to bath houses or that kind of thing and come back. P017.*	SHC Manager	Northwest

Subtheme	Sample Quotation	Role	Ontario Region
	*We do see a high percentage of **GBM** clients in sexual health in general and that does make up the largest component of our PrEP clientele for sure. P021.*	SHC Manager	Central east
	*For our rooms of patients, it's most likely going to be the young **men having sex with other men,** with multiple partners, for trans women are having sex with multiple partners. And those are probably the priority populations for us. P004.*	PCP Family Physician	East
	*I mean, ours [patients], it's all like gay male is what I would classically say. I mean, **gay and bisexual** potentially, that would be our major population. P005.*	Emergency Physician	East
	*So the vast majority of people that I provided PrEP to have been individuals who identify as gay men and would fall under kind of the **MSM category**. I have had a few transgender patients who are based on who they're having sex with would be considered at risk. So I think the vast majority of patients I've seen has been individuals who would fall under the MSM category. P008.*	PCP Public Health and Family Physician	East

Table 9b: Other group of people at risk of transmission

Subtheme	Sample Quotation	Role	Ontario Region
Injection and drug use individuals	*It's [people at risk of HIV] been almost exclusively, I'd say **people who would be at risk from sexual transmission**. P016.*	PCP Family Physician	East
	*So generally, in our catchment area, the people that are most at risk I could say are **meth driven**. Meth has really brought in a real increase in change in behaviors. From just opioids. So we're seeing people that you know we have a very hard time connecting with rationalizing with. So, all of our cases have been injection drug users**.** P017.*	SHC Manager	Northwest
	*So we're seeing young adults primarily **who use drugs by injection,** who are currently under-housed or homeless*	SHC Manager	Northwest

	with complex medical needs, generally sort of equal distribution between male and female. P018.		

Theme 4b: Barriers to PRHAs accessing PrEP

The SHC managers described barriers to PRHAs accessing PrEP including stigma around HIV and the use of PrEP, cost of PrEP and medical insurance processes to acquire the medication, PRHAs' mental health status and concerns about the side effect of PrEP. Additionally, the PCPs highlighted other barriers to PRHA accessing PrEP including; PRHAs'inability to start conversations about PrEP and reluctance and concerns about disclose to the PCPs (see Tables 10a - 10d).

Table 10a: Stigma around PrEP and PRHAs mental health status

Subtheme	Sample quotation	Role	Ontario Region
Stigma	*The **outing and the stigma** around taking the medication [PrEP] would be the biggest barrier or one of the barriers that people would have. I think if someone comes that is taking it appropriately and has a series of side effects, that would be the other barrier. P002.*	Clinical Educator	East
	*A lot of **stigma and discrimination** in the region. Especially towards indigenous people, which is typically you're either white or indigenous. We don't have the exposure to other cultures, we don't have. It's bad here. It's like the racism is really pretty horrific here. P017.*	SHC Manager	Northwest
	*I do know that there is **a huge stigma** to it [PrEP] and that's why a lot of clients are either unwilling to receive PrEP or simply unaware of what PrEP is or where it's available. Or when they can actually have PrEP. P024.*	SHC Manager	Southeast
PRHAs' Mental health status	*So within our population, a lot of them are homeless or under housed, and the cases that we have right now have various mental health. some have schizophrenia, some are involved with psychiatry quite a bit for fetal alcohol Syndrome. They have a hard time. P017.*	SHC Manager	Northwest

Table 10b: Cost of assessing PrEP

Subtheme	Sample quotation	Role	Ontario Region
Cost of accessing PrEP	*What can I tell you? It's [PrEP] expensive. There are gaps in access for a lot of individuals, particularly financial barriers to taking that [PrEP]. P009.*	SHC Manager	East
	It [barriers to accessing PrEP] would still be costing $400.00 or $500.00 a month, so they [PRHA] stopped taking it [PrEP]. I just cannot believe that it's [PrEP] not covered [under insurance]. It's a life-saving medication. And it's a public health concern as well. P011.	SHC Manager	Southeast
	*I would say for the people who are interested who are not accessing it **cost is generally the biggest barrier** right now. P018.*	SHC Manager	Northwest
	*There are constraints with **PrEP cost for clients which is a big one** [constraint] … Just because our clientele tends to not be able to have the financial access for that more expensive PrEP option. P021.*	SHC Manager	Central East

Table 10c: Concerns about potential side effects of PrEP

Subtheme	Sample quotation	Role	Ontario Region
Potential side effects of PrEP	*They [PRHA] are **concerned about side effects**. P023.*	SHC Manager	Central East
	*They are weary about some of the real or perceived health concerns with being on PrEP so you know, like creatinine elevations, different things like that. These **side effect concerns them [PRHA]** and makes them [PRHA] a little bit more on the fence regarding their willingness to take PrEP**.** P021.*	SHC Manager	Central East

Table 10d: Concerns about disclosure

Subtheme	Sample quotation	Role	Ontario Region
Inability to start conversation on PrEP with PCP	*I think people [PRHA]* ***may not know how to ask for it****. How we [PCPs] can start a conversation on it the same way we have other conversations. Also, people being worried about risks and how to monitor them. The time I prescribed it, it was brought up by a patient. The question is how to bring it up and how to talk about it. I think it is a question of education****.*** *P012.*	PCP Family Doctor	East
	It's important to have places where people can be referred or self refer to someone you know, like the health unit instead of their family doctor in there. You know, sometimes people have ***real barriers to disclosure with your doctors****, that sort of thing. P008.*	PCP Public Health and Family Physicians	East

Table 11: PRHA group to be prioritized for PrEP

The PCPs and SHC managers described similar populations that should be prioritized for PrEP which are GBMs and injection drug users. However, some of the participants expressed their dissatisfaction about prioritizing a group over the other and noted that PrEP should be available and accessible to anyone at risk of HIV and willing to use PrEP.

Subtheme	Sample Quotation	Role	Ontario Region
Gay Men and Injection drug users (IDU)	*I think* ***men having sex with men****, people using IV drugs, sex workers, people with multiple sex partners and people having unprotected sex. I think that those will be people in the high-risk situation****.*** *P012.*	PCP Family Doctor	East
	*You know, gay men and other men who have sex with men certainly should be a prioritized group. I think that is a group that very much can benefit from this preventative program. I think another area where it would be very well applied but much more challenging to support I think is the IDU group as well****.*** *P013.*	SHC Manager	Southeast
	I am people who inject drugs. It definitely it should be like you know, for men who have sex with men. We have some	SHC Manager	Northwest

	overlapping. So women who are engaging in sex trade, they're also injecting drugs. P017.		
	Individuals at risk for rectal infections, infectious syphilis So that's a kind of a priority group that we're in our mind wanting to see accessing prep. P023.	SHC Manager.	Central east

Theme 5: Partnership with other health organization

Participants (PCPs and SHC managers) described similar partnerships with other healthcare organizations. However, SHC managers noted that there was a limited to no partnership with the government. This was mainly linked to lack of access to funding for additional resources required to implement or prescribe PrEP. The PCPs supported this view by highlighting the potential benefits of government partnership on PrEP including making it easier for physicians and nurse practitioners to get involved with PrEP (see Tables 12a – 12b).

Table 12a Partnerships with other healthcare organizations

Subtheme	Sample Quotation	Role	Ontario Region
Partnership with other heath units	*Yeah, so public health is a big one KFLA public health. We partner with them [public health] a lot. Like on a lot of things. So public health is a really big one when it comes to like sexual health and we've done a lot of partnering with them for COVID stuff and monkeypox as well as kind of the next thing that we're working with them on. P003.*	Clinical Educator	East
	We have a relationship with [Location] Health Sciences infectious disease clinic. So, we have some ability to make referrals if needed, consult as needed and [Location] Community Health Center itself would be probably likely to refer clients to us. Nothing municipally, though. P009.	SHC Manager	East
	We also kind of collaborate with community partners to get people on different kinds of treatments. So, like, elevate out of Thunder Bay, we work with them to get people on hep C treatment and, also, they'll help us get clients on PrEP and HIV treatment. P019.	SHC Manager	Northwest
	Only collaborations we have is really with HIV clinics like the local clinics we do have those collaborations, but nothing in terms of like others. P024.	SHC Manager	Southeast

Table 12b: Limited government partnership on PrEP

Subtheme	Sample Quotation	Role	Ontario Region
Government partnership on PrEP.	*We're pretty distanced from the government, I would say just because like we don't receive any money from that, like, aside from OHIP billing. We are almost like a private clinic just because we're run for students. So other organizations like family health teams can get funding for nurse practitioners, but we can't because we're not a family health team. So I suppose it's like peripherally related, because if we were able to ask the government for money for nurse practitioners, it potentially could increase our provision of prep if it was warranted, but yeah, we're not really so involved with the government because they don't really give us funds. P003.*	Clinical Educator	East
	I think we could collaborate as long as there's someone to kind of champion it at a higher level and start to institute some processes to make it easier for the physicians and nurse practitioners to get involved. Like for example, they [government] you know, we could have some standard processes like someone makes an inquiry about PrEP, maybe there's a medical directive that they can have their baseline blood test done by a nurse and then review it with the physician. P004.	PCP Family Physician	East
	We're not part of a regional government. So, whereas other health units like [Region], they're part of a regional government, right? P009.	SHC Manager	East
	No [government collaboration], not that I'm aware of. Not since I've been in this role. I haven't, and I don't believe the previous team leader or manager has had as well. P007.	SHC Manager	East
	So no collaboration with the government, and for the most part, no. P013.	SHC Manager.	Southeast

Theme 6: Recommendations

The PCPs and SHC managers suggested recommendations that could increase the provision, accessibility and usage of PrEP (Tables 13a – 13c). These recommendations include:

- Increasing community awareness on PrEP through the promotion of provincial campaigns.

- Providing concise PrEP training for healthcare professionals.
- Increasing efforts to eliminate stigma associated with PrEP.
- Developing strategies to incentivize PHRA to use PrEP.
- Providing education/ information for people on how and where to access prep.
-

Table 13a: Increasing community awareness on PrEP

Subtheme	Sample Quotation	Role	Ontario Region
Raising awareness on PrEP	*I think we could do better in terms of like using some of our colleagues in the **clinic to promote PrEP**, like for example, you know, having some kind of nursing directive saying hey, you know, if a student is asking about, I don't know, STI testing or something like that, maybe can we do a quick questionnaire to see if they could be eligible for PrEP? So there's certain systemic things we could implement that would enhance access. And the rest is just kind of physicians will have to embrace something new. P004.*	PCP Family Physician	East
	*There could be a benefit rather than a need for **it [PrEP] to be showcased a little bit more so in the community** right now Syphilis is getting a lot of attention and public health has been coming out. And I think that's been helping move this on the higher on the priority list of all the different things that primary care can and could be getting involved with and in public. The emphasis, I think that's been going towards the Awareness Month and the leadership around that has been helpful. And perhaps we need something additional around PrEP, as well to be kind of showcasing it a little bit more to have the **added advantage of awareness** been coming from multiple sources**.** P016.*	PCP Family Physician	East
	*One of the things we recognize in particular is groups of women, who may be good candidates for it, who are not as aware of it as they could be. And so that's part of the women's strategy worker to **help build that awareness through promoting provincial campaigns** that have been developed and trying to get them to people who might benefit from them. P010.*	Community Organization	East
	*Again, **raising awareness of it [PrEP],** I mean think about monkey pox, for example, and nobody really knew what it was, but just the mere fact that it involved risky behaviors.*	SHC manager	Southeast

	People wanted to know more about monkey pox and get vaccinated, so a lot of yeah, the information just knowing is important. P024.		

Table 13b: PrEP specific training for healthcare professionals

The PCPs and SHC managers both agreed there is a need for more concise PrEP training for the healthcare professionals. More generally, training staff in terms of HIV treatment and this should be led by experts in PrEP. The participants emphasized that the training delivery format should have embedded within it the opportunity for staff to ask questions.

Subtheme	Sample Quotation	Role	Ontario Region
Improved training quality and format	*Just keeping it [training] engaging, providing lots of time to ask questions. I think also going through like some not so classic scenarios is sometimes really helpful because there's always going to be, you know, things that come up that aren't sort of as cookie cutter. So really being able to work through like, some additional scenarios, I think is important too. And yeah, just targeting it to the audience as well. P003.*	Clinical Educator	Southeast
	I mean, most people are quite busy. So I would say you can't do anything that's longer than like about an hour's worth…. And so like a lunchtime format, often works really well with our group. P005.	PCP Emergency Physician	East
	I think a lot of priority should be given to training staff in terms of HIV treatment. To educate us on how to discuss PrEP with patients. Just like how to have conversations, who we should have that with. Just the review and monitoring of people on PrEP. And again, the big question about PrEP financing, how does it work, what covers it? Is it a health plan? P012.	PCP Family Doctor	East
	Someone instructing and an opportunity for Q&A. I think [it] would always be beneficial. It's one thing to read a document and implement you know the necessary steps, but it's another thing to have someone sort of walk you through it, explain the rationale and the importance of certain things, and then have an opportunity for people to questions. P013.	SHC Manager	Southeast

Subtheme	Sample Quotation	Role	Ontario Region
	I think training with an actual trainer not a pre-recorded training, but an actual training with a live person. Been at scheduled times with being helpful like bringing everybody together is challenging because we are all over the place. P018.	SHC Manager	Northwest

Table 13c: Other recommendations for the implementation of PrEP

Subtheme	Sample Quotation	Role	Ontario Region
Need to eliminate stigma	*in general, a lot of people, especially the ones that used to come to the health unit for sexual health reasons, do say, oh, you know, we came to the health unit because, you know, there's no stigma here and we're more comfortable here. But I think it's also a double-edged sword because we also want to remove the stigma from the community. So if we keep putting a bandaid on that and not letting it go to the community and Primary Health care providers. We will never remove the stigma. P024.*	SHC Manager	Southeast
Incentivising PRHA to use medications	*How to incentivize them [PRHA] to keep taking their medications or at least to get care, stay connected with their care. Because we also know that if you stay connected with care you have better outcomes not only for your health wise, but from a public health standpoint. So that was an incentive piece that we had done. P009.*	SHC Manager	East
Diverting resources to manage capacity issues	*We just diverted resources. We reprioritized the resources and then in terms of knowledge, the one resource that we didn't have was knowledge about PrEP. So there was the onboarding of all of our staff and, you know, making sure that everybody was up to speed with what was needed to be known about it and how you cared for patient. P009.*	SHC Manager	East
Education/ information for people to access prep	*We do the education and the information for people to access prep. I don't see it happening on our health unit. I would like to see it happen. P011.*	SHC Manager	Southeast

Discussion

This study has examined the perceptions of PCPs regarding the adoption of PrEP, and identified barriers faced by PCPs in the implementation of PrEP prescription services in southeastern Ontario. Half of the PCPs sampled had experience with PrEP prescription with two-thirds of them practicing in the Eastern region of Ontario, particularly the Kingston area. Findings from the thematic analysis highlight the important role PCPs' perceptions of PrEP plays in the prevention of HIV infections. First, participants recognized PrEP as an effective strategy for preventing HIV acquisition among people at risk of infection. Participants believed the effectiveness of PrEP in preventing the acquisition among people at risk of HIV/AIDS could be close to 99% if they can adhere to treatment regimes. However, consistent with prior research, participants noted that barriers such as the fear of side effects of PrEP, inability to commit to treatment schedules due to personal lifestyle, cost of PrEP and limited access to healthcare professionals could limit access to PrEP treatments (Cox et al., 2021; Charest et al., 2021; Hample et al., 2022; Heendeniya, Tumarkin, & Bogoch, 2019).

The findings also indicate that while there are healthcare providers currently prescribing PrEP services in the southeastern region, the number of providers offering such services is limited due to several barriers. These barriers include a lack of access to PrEP guidelines and policies, limited time to follow-up patients, and physicians' general reluctance to prescribe PrEP. Additionally, PCPs in health units with predominantly large post-secondary student populations reported limited opportunities for offering PrEP. Fortunately, Canadian PrEP guidelines are becoming more publicly and freely available and can provide front-line health care providers with the necessary tools to offer PrEP care (Heendeniya, et al., 2019).

Despite the identified barriers, participants are willing to prescribe PrEP within their health unit if provided with the required resources including adequate guidelines and PrEP policies, training to facilitate implementation, increased staff capacity and medical directives. The current study found that healthcare providers do not receive the training required to confidently implement or prescribe PrEP. As Hansen and colleagues (2005) note, physicians may not receive adequate training in sexual health during their medical education. The lack of adequate training has meant staff had to search online resources to equip themselves with information needed to support their patients effectively. Furthermore, this has contributed to the increase in referrals to online services offering PrEP including GO Freddie.

The findings also highlight limited government collaboration on PrEP among healthcare providers. Participants feel increased partnership with the government can potentially increase the awareness of PrEP among the community. Participants made recommendations for improving people at risk of HIV acquisition access to PrEP including increased community awareness on PrEP, staff training, incentivise PRHA to use medications and increased health human resources.

Conclusion

A considerable number of PCPs in the Southeastern region of Ontario does not offer PrEp services. The findings demonstrate the need to provide increased PHRA's access to PrEP to limit the possibility of HIV acquisition. Primary care providers play an important role in PrEP implementation. Hence, PCPs need to be equipped with the right resources and training to effectively prescribe PrEP. Fortunately, PCPs in this region are willing to receive continuous professional development training on the adoption and implementation of PrEP services in their clinical practice.

References

Barry, C.A., Britten, N., Barber, N., Bradley, C., & Stevenson, F. (1999). Using reflexivity to optimize teamwork in qualitative research. *Qualitative health research, 9*(1):26-44. https://doi.org/10.1177/104973299129121677

Charest, M., Sharma, M., Chris, A., Schnubb, A., Knox, D. C., Wilton, J., Shahin, R., Chan, A., Mishra, S., Grace, D., Bayoumi, A. M., Maxwell, J., Bogoch, I. I., & Tan, D. H. S. (2021). Decentralizing PrEP delivery: Implementation and dissemination strategies to increase PrEP uptake among MSM in Toronto, Canada. *PloS one*, *16*(3), e0248626. https://doi.org/10.1371/journal.pone.0248626

Cofie, N., Braund, H., & Dalgarno, N. (2022). Eight ways to get a grip on intercoder reliability using qualitative-based measures. *Canadian medical education journal*, *13*(2), 73–76. https://doi.org/10.36834/cmej.72504

Colyer, S., Lachowsky, N. J., Schmidt, A. J., Adam, B. D., Paquette, D., Hart, T. A., Brennan, D. J., Blais, M., & Kroch, A. E. (2021). Measures of HIV Pre-exposure Prophylaxis Uptake Among Gay, Bisexual, and Other Men Who Have Sex with Men in Canada and Demographic Disparities Among Those at Elevated Likelihood for HIV Acquisition. *AIDS and behavior*, *25*(11), 3638–3650. https://doi.org/10.1007/s10461-021-03336-3

Cordioli, M., Gios, L., Huber, J. W., Sherriff, N., Folch, C., Alexiev, I., Dias, S., Nöstlinger, C., Gama, A., Naseva, E., Valkovičová Staneková, D., Marcus, U., Schink, S. B., Rosinska, M., Blondeel, K., Toskin, I., & Mirandola, M. (2021). Estimating the percentage of European MSM eligible for PrEP: insights from a bio-behavioural survey in thirteen cities. *Sexually transmitted infections*, *97*(7), 534–540. https://doi.org/10.1136/sextrans-2020-054786

Cossarini, F., Hanna, D. B., Ginsberg, M. S., Blackstock, O. J., Anastos, K., & Felsen, U. R. (2018). Missed Opportunities for HIV Prevention: Individuals Who HIV Seroconverted Despite Accessing Healthcare. *AIDS and behavior*, *22*(11), 3519–3524. https://doi.org/10.1007/s10461-018-2162-x

Cox, J., Apelian, H., Moodie, E. E. M., Messier-Peet, M., Hart, T. A., Grace, D., Moore, D. M., Lachowsky, N. J., Armstrong, H. L., Jollimore, J., Skakoon-Sparling, S., Rodrigues, R., Tan, D. H. S., Maheu-Giroux, M., Noor, S. W., Lebouché, B., Tremblay, C., Olarewaju, G., Lambert, G., & Engage Study Team (2021). Use of HIV pre-exposure prophylaxis among urban Canadian gay, bisexual and other men who have sex with men: a cross-sectional analysis of the Engage cohort study. *CMAJ open*, *9*(2), E529–E538. https://doi.org/10.9778/cmajo.20200198

Hansen, L., Barnett, J., Wong, T., Spencer, D., Rekart, M. (2005). STD and HIV counseling practices of British Columbia primary care physicians. AIDS Patient Care & Stds, 19(1), 40-8.

Hempel, A., Biondi, M. J., Baril, J. G., & Tan, D. H. S. (2022). Pre-exposure prophylaxis for HIV: effective and underused. *CMAJ: Canadian Medical Association journal*, *194*(34), E1164–E1170. https://doi.org/10.1503/cmaj.220645

Heendeniya, A., Tumarkin, E., & Bogoch, I. I. (2019). HIV preexposure prophylaxis in Canadian primary care and community settings. *Canadian family physician*, *65*(4), 271–272.

OHESI (2020). *News and Updates: Ontario HIV Epidemiology and Surveillance Initiative.* Retrieved August 16, 2023, from https://www.ohesi.ca/

Ontario HIV Treatment Nwetwork (2021). *Pre-exposure prophylaxis (PrEP) in Ontario, 2021*. Retrieved August 12, 2023, https://www.ohtn.on.ca/wp-content/uploads/2023/04/OHTN-PrEP-report-2021-2023APR06.pdf

Palaganas, E. C., Sanchez, M. C., Molintas, M. P., & Caricativo, R. D. (2017). Reflexivity in Qualitative Research: A Journey of Learning. *The Qualitative Report*, *22*(2), 426-438. https://doi.org/10.46743/ 2160-3715/2017.2552

Public Health Agency of Canada. (2020). *Estimates of HIV incidence, prevalence and Canada's progress on meeting the 90-90-90 HIV targets, 2020.* Ottawa: Public Health Agency of Canada; modified 2022 July 25. Retrieved July 12, 2023 from https://www.canada.ca/en/public-health/services/publications/diseases-conditions/summary-estimates-hiv-incidence-prevalence-canadas-progress-90-90-90.html

Purcell, D. W., Johnson, C. H., Lansky, A., Prejean, J., Stein, R., Denning, P., Gau, Z., Weinstock, H., Su, J., & Crepaz, N. (2012). Estimating the population size of men who have sex with men in the United States to obtain HIV and syphilis rates. *The open AIDS journal*, *6*, 98–107. https://doi.org/10.2174/1874613601206010098

Rich, A. J., Lachowsky, N. J., Sereda, P., Cui, Z., Wong, J., Wong, S., Jollimore, J., Raymond, H. F., Hottes, T. S., Roth, E. A., Hogg, R. S., & Moore, D. M. (2018). Estimating the Size of the MSM Population in Metro Vancouver, Canada, Using Multiple Methods and Diverse Data Sources. *Journal of urban health : bulletin of the New York Academy of Medicine*, *95*(2), 188–195. https://doi.org/10.1007/s11524-017-0176-8

Sinno, J., Doria, N., Cochkanoff, N., Numer, M., Neyedli, H., & Tan, D. (2021). Attitudes and Practices of a Sample of Nova Scotian Physicians for the Implementation of HIV Pre-Exposure Prophylaxis. *HIV/AIDS (Auckland, N.Z.)*, *13*, 157–170. https://doi.org/10.2147/HIV.S287201

Snowden, J. M., Chen, Y. H., McFarland, W., & Raymond, H. F. (2017). Prevalence and characteristics of users of pre-exposure prophylaxis (PrEP) among men who have sex with men, San Francisco, 2014 in a cross-sectional survey: implications for disparities. *Sexually transmitted infections*, *93*(1), 52–55. https://doi.org/10.1136/sextrans-2015-052382

Tan, D. H. S., Dashwood, T. M., Wilton, J., Kroch, A., Gomes, T., & Martins, D. (2021). Trends in HIV pre-exposure prophylaxis uptake in Ontario, Canada, and impact of policy changes: a population-based analysis of projected pharmacy data (2015-2018). *Canadian journal of public health*, *112*(1), 89–96. https://doi.org/10.17269/s41997-020-00332-3

Vincent, J., & Woodward, K. (2020, April 21). *HIV Pre-exposure Prophylaxis (PrEP) Adoption in Primary Care: An Online Survey of Ontario Physicians. Canadian Association for HIV Research Annual Conference 2020; Quebec City2020*. Retrieved August 16, 2023, from https://www.cahr-acrv.ca/wp-content/uploads/2020/04/EPHP611.pdf

Zucker, J., Patterson, B., Ellman, T., Slowikowski, J., Olender, S., Gordon, P., Morrison, E. A. B., & Sobieszczyk, M. E. (2018). Missed Opportunities for Engagement in the Prevention Continuum in a Predominantly Black and Latino Community in New York City. *AIDS patient care and STDs*, *32*(11), 432–437. https://doi.org/10.1089/apc.2018.0127