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Leveraging Momentum: Building Outreach Capacity and Point-of-Care Syphilis Rapid Testing and Treatment Practices

Overview of Results of a Locally Driven Collaborative Project 2023-2024

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Disclosures

- None to declare

Presentation Objectives

By the end of this session, participants will be able to:

- Describe the elements of flexible nursing outreach with POCT for syphilis/HIV, including identifying and overcoming barriers to implementation, and improving processes.
- Explain the ways in which capacity can be built across the province to implement and evaluate POCT for syphilis/HIV, including leveraging current and future evaluation findings.
- Describe how actors in local PHUs can foster inter-sectoral collaboration around syphilis diagnoses and treatment using POCT and outreach nursing models.

Acknowledgements

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The views of the presenters do not necessarily represent those of PHO or CIHR.

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Introduction

1. Why did we undertake this work?
2. How did we do this work?
3. What happened?
4. So what?

1. Why did we undertake this work?

Spike in Infectious Syphilis

From 2019 to 2023 in KFL&A PH

672% ⬆

6 congenital cases from 2022 to 2023 in KFL&A PH

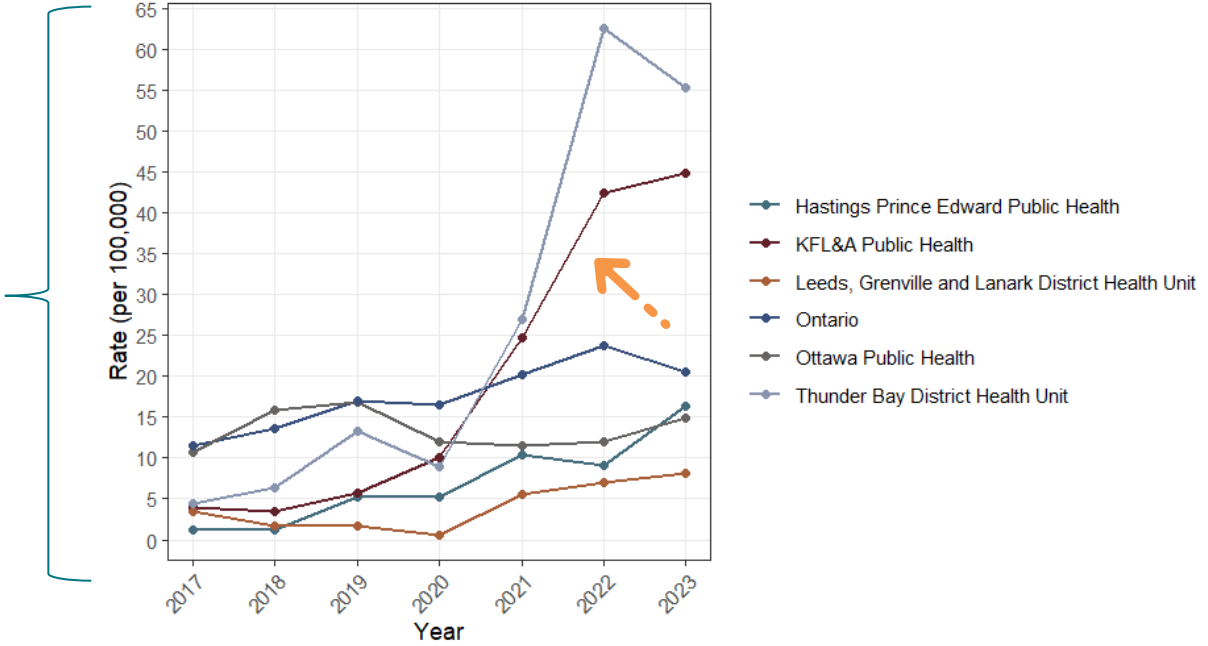


Figure 1. Infectious syphilis rate by LDCP-SPRITE Public Health Units (confirmed cases, Public Health Ontario ID Query 2017 to 2023, pulled 2024-02-08)

Risk Factors for Syphilis

- Inequities in rates of syphilis
- Social and economic risk factors more prevalent among women versus men
- Among women of childbearing age:
  - Rate almost 3x higher among those living in the most materially marginalized areas versus the least marginalized areas

Un(der)housed

Street involved

Use illicit drugs (opioids, crystal meth)

Sex work

Time to Treatment

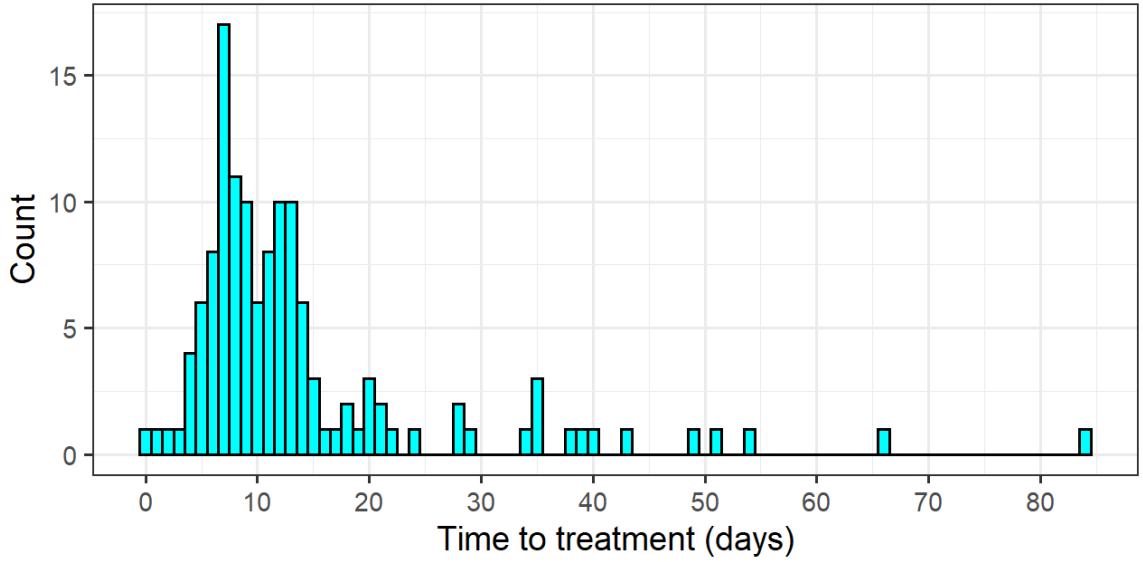
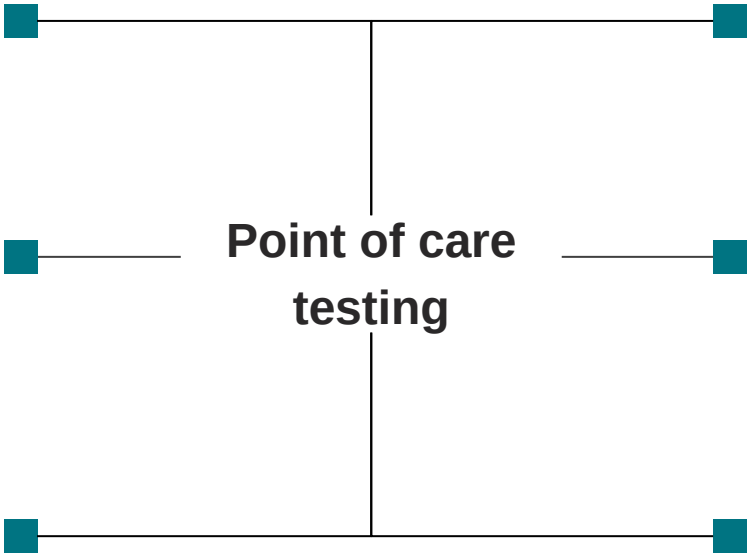


Figure 2 - Distribution of time to treatment for syphilis (new or reinfected cases only) in KFL&A PH, 2021 to 2022, Integrated Public Health Surveillance System

2. How did we do this work?

Low Barrier Testing for Syphilis (and HIV)



Identification and treatment in same interaction

Integration with public health unit (PHU) infectious disease prevention outreach

Medical directive to treat suspect cases and contacts of confirmed cases

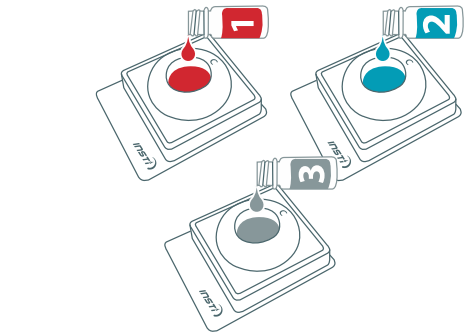
Target people who are underserved, street-involved

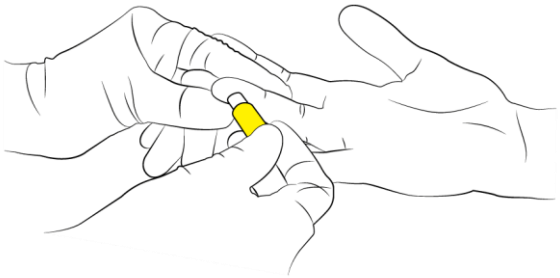
INSTI® Multiplex HIV 1/HIV 2 Syphilis Ab– Health Canada approved

Conduct confirmatory serology

INSTI® Multiplex HIV 1/2 Syphilis Antibody Test

Lancet finger prick, blood collected by pipette, mixed using sample diluent followed by colour developer, and clarifying solution. Results are read after one minute and are no longer valid after five minutes.





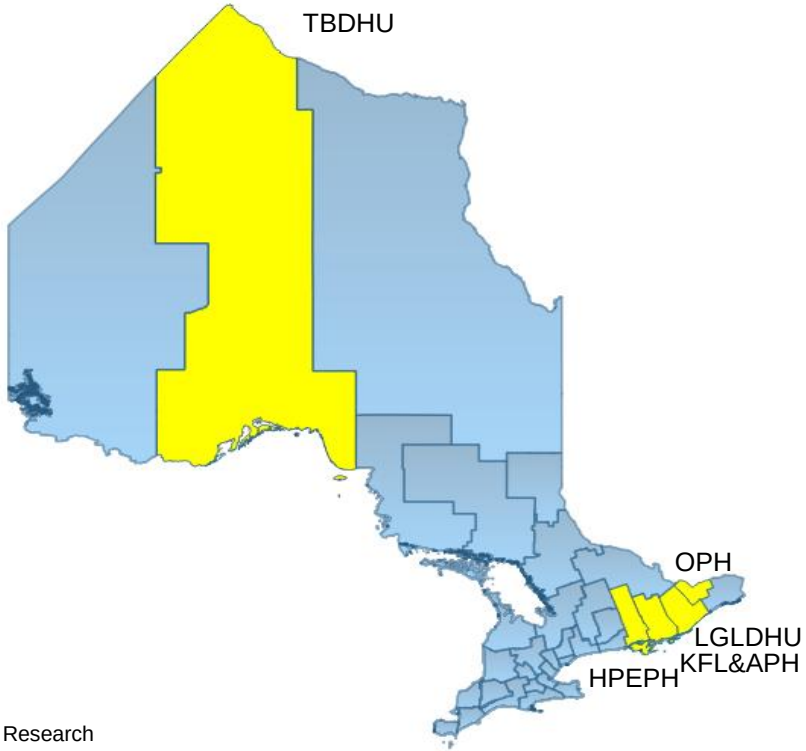
If reactive for syphilis and considered new/reinfection* – treated with Bicillin L-A 2.4 million IU by intramuscular injection.

*Based on clinical assessment including client history

Source of images: https://www.insti.com/multiplex-test/

Research Goal

- Goal: build capacity to implement and evaluate flexible outreach model with the syphilis/HIV INSTI® POCT in five PHUs.
- Target: un(der)housed, people who use drugs, street-involved individuals
- Locally Driven Collaborative Projects program, Public Health Ontario (LDCP–PHO) funded August 2023 to March 2024.
- Collaboration, data collection and knowledge translation continued until September 2024 (and beyond LDCP timeline).
- Ethics approval - Queen's University HSREB



*POCT – point-of-care test; ¥HSREB – Health Sciences and Affiliated Teaching Hospitals Research Ethics Board

Design

Objectives

- develop a community of practice
- monitor program process metrics
- assess performance of the POCT in real-world settings
- understand factors related to the delivery and utility of the test from a clinical and population health perspective

Mixed-methods

- preliminary implementation evaluation
- clinical data, survey of healthcare provider implementers, documentation
- quantitative and qualitative analyses

RE-AIM

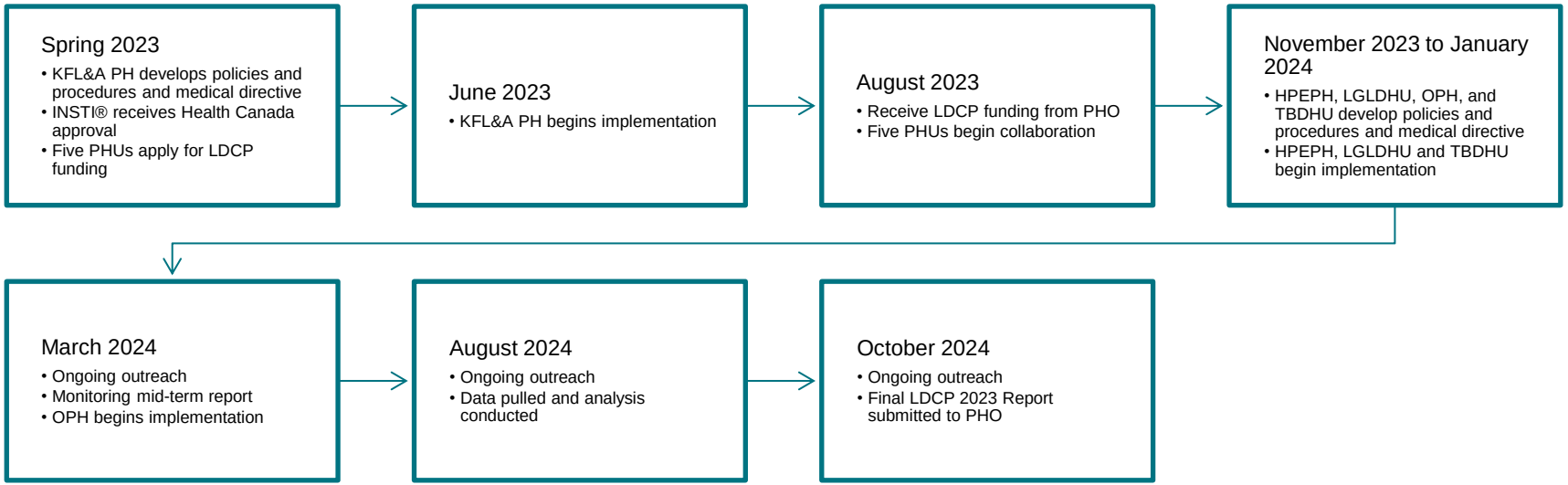
outcomes and indicators based on Reach, Effectiveness, Adoption, Implementation and Maintenance framework

Preliminary Data

KFL&A PH started POCT implementation just prior to this LDCP collaboration (June to August 2023). This data is included in results.

3. What happened?

Implementation



Implementation

Three PHUs used preexisting sexual health and harm reduction outreach teams. One reestablished outreach program. One revamped existing program. Addition of POCT to initiatives.

Most organize ‘blitzes’, ‘pop-ups’ or other testing events at partner locations, some advertise while others rely on word-of-mouth.

One to six public health nurses per activity (80% activities used one to two); dependent on type of activity.

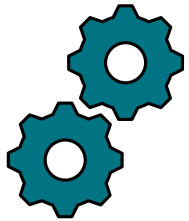
Types of staff that have been involved at outreach events: nurses, nurse practitioners, social workers, outreach workers, data clerks.

Varied client engagements - weather and site dependent. 76% of activities were indoors

One PHU offers POCTs from their mobile outreach van.

All provide incentives for POCT, except in mobile van (security reasons) – gift cards, or cash (best practice), rarely are they refused.

One PHU provides incentives for serology, which has increased uptake.



164

POCT outreach activities

Flexible Outreach Models of Care

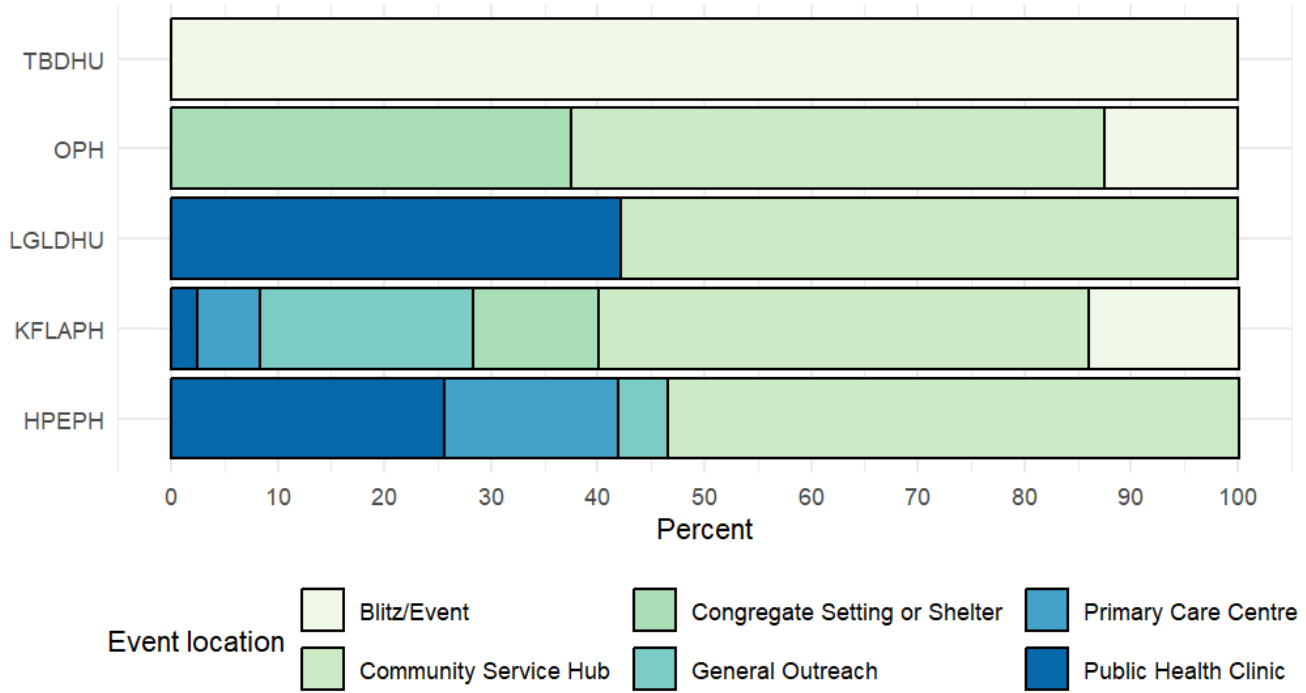
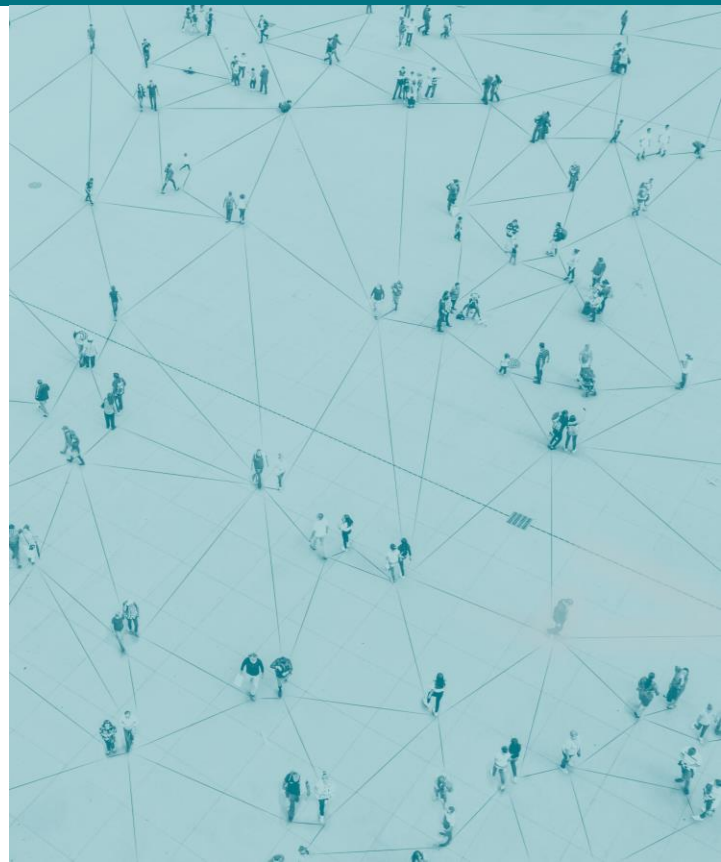


Figure 3 Distribution (% /164) of outreach event types across SPRITE PHUs (Jun 23, 2023 to Aug. 1, 2024)

Reach

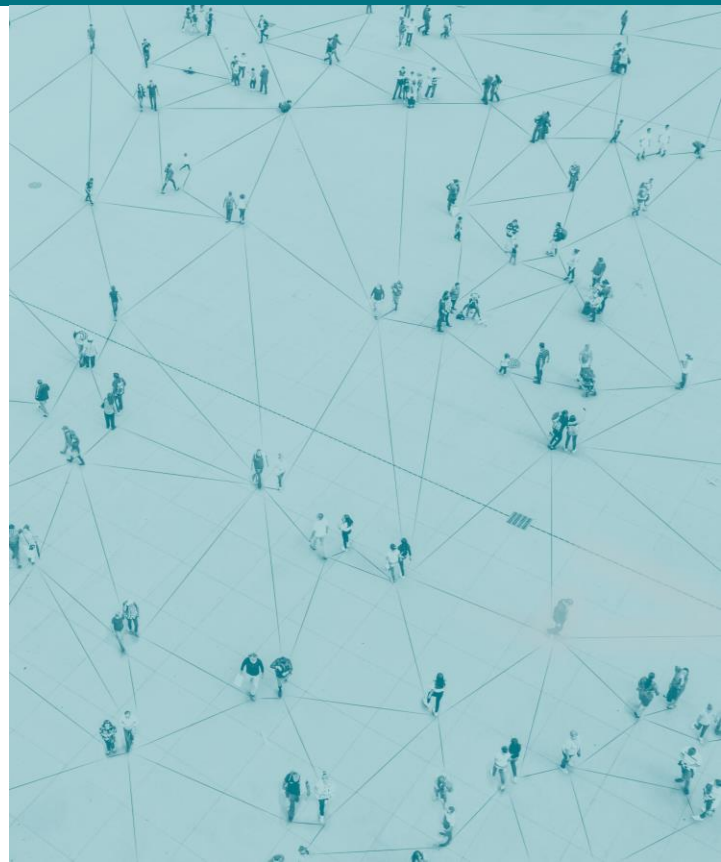
552

Valid POCTs of 512 individuals
567 tests attempted in total
(Jun 23, 2023 to Aug 22, 2024)



Reach

- HPEPH (**15.5** per cent), KFL&A PH (**46** per cent), LGLDHU (**6** per cent), OPH (**5.3** per cent) and TBDHU (**27.2** per cent).
- Mean age **39.9** years
- **41.3** per cent female
- **24.3** per cent not yet connected to community services
- **Less than four** per cent had symptoms of syphilis
- Most were tested at a blitz or pop-up testing event (**51.3**%), or at a community service hub (**26.8**%)



Reaching the Target Population

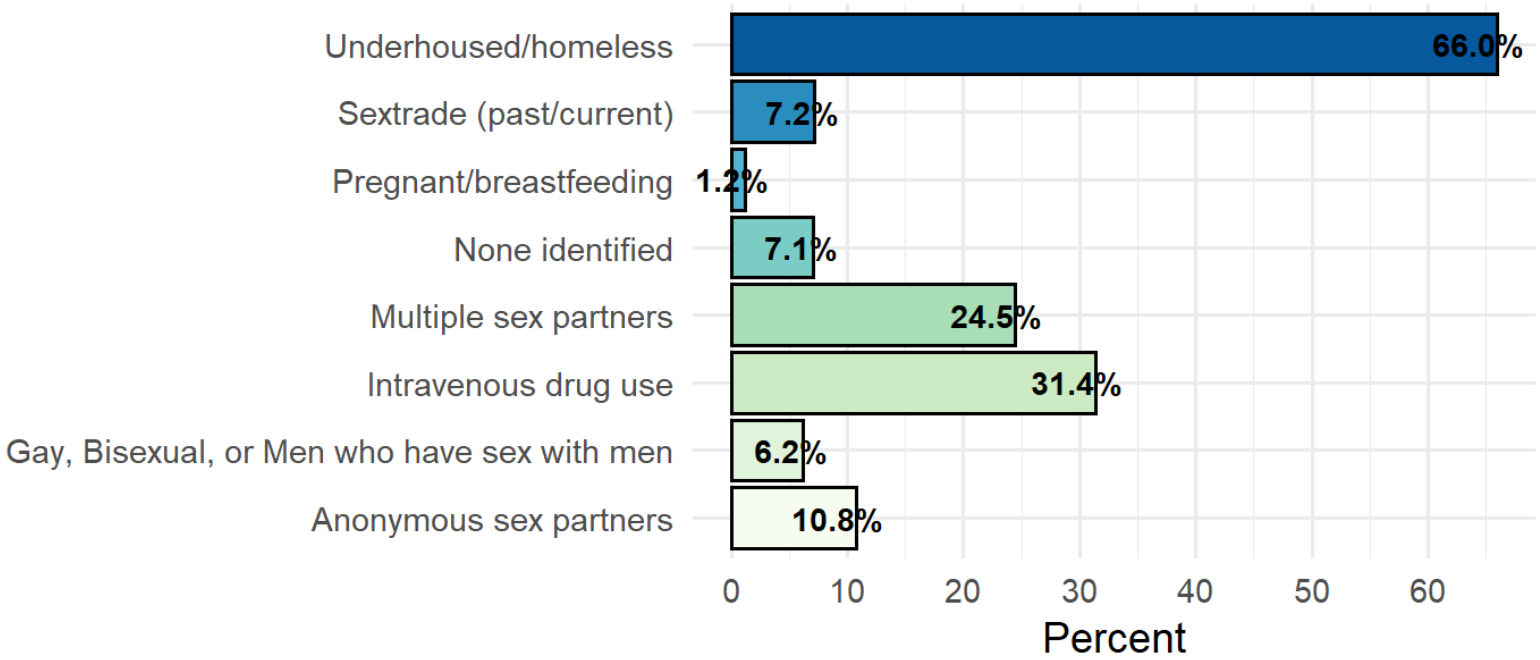


Figure 4. Risk factors (%), SPRITE, June 23, 2023 to Aug 22, 2024 (N=567)

Reaching the Target Population

47.1
per cent
did not report a postal code of residence

Of those that reported valid postal codes linked to deprivation index scores

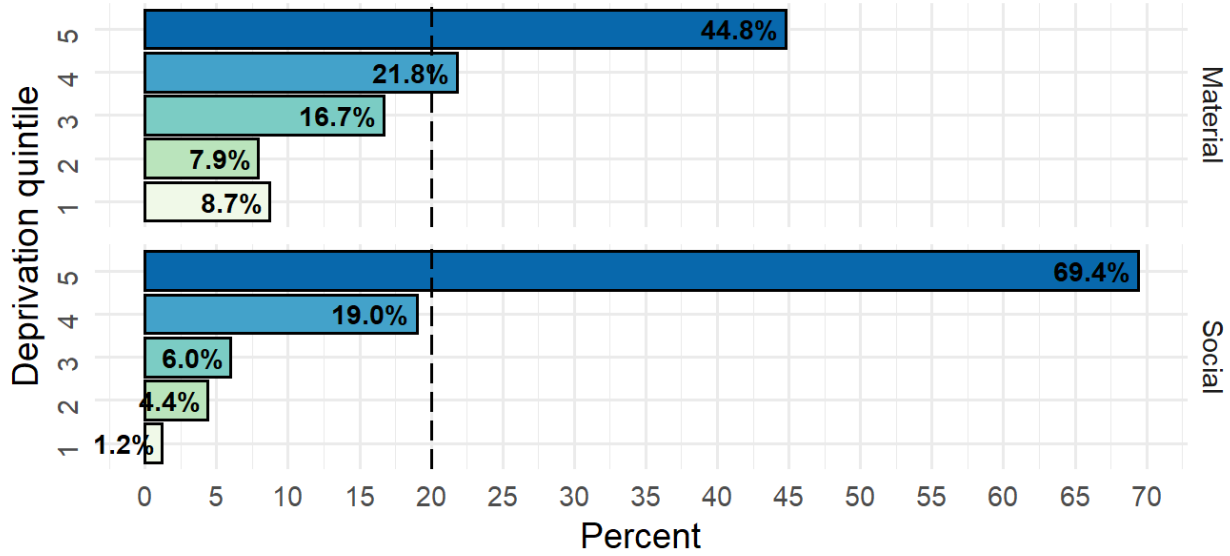


Figure 5 - Material and social deprivation quintile of those providing valid postal codes, SPRITE June 23, 2023 to Aug. 22, 2024 (N = 252, 1= least to 5= most deprived)

Overall Syphilis and HIV Test Results

Syphilis POCT	94.0% (519)	Nonreactive	**Syphilis serology**	90.6% (451)	Nonreactive
	5.6% (31)	**Reactive**		**7.6% (38)**	**Reactive**
	0.4% (2)	Indeterminate		1.8% (9)	Lab cancellation/Invalid
Total N	552		**Total N**	498	
HIV POCT	97.4% (538)	Nonreactive	**HIV serology**	97.0% (483)	Nonreactive
	2.2% (12)	**Reactive**		**1.6% (8)**	**Reactive**
	0.4% (2)	Indeterminate		1.4% (7)	Lab cancellation/Invalid
Total N	552		**Total N**	498	

Table 1. Overall Syphilis and HIV Test Results %(n), SPRITE June 23, 2023 to Aug. 22, 2024

POCT Performance

Performance Statistic	% (95% Confidence Interval)
POCT (Index) % Positive	**6.1** (4.1, 8.6)
Serology (Reference) % Positive	**7.7** (5.5, 10.5)
Sensitivity	**70.3** (53.0, 84.1)
Specificity	**99.3** (98.0, 99.9)
Positive predictive value	**89.7** (72.6, 97.8)
Negative predictive value	**97.6** (95.7, 98.8)

Table 2. Syphilis POCT Performance Statistics (95% confidence intervals). SPRITE, June 23, 2023 to Aug 22, 2024 (based on N=479 valid POCT and serology pairs). NOTE: these are preliminary and underpowered results, for monitoring purposes only

POCT Performance

True Positives (N=26)

- 15 new or reinfections
  - **12** treated at time of testing

False Positives (N=3)

True Negatives (N=439)

False Negatives (N=11)

- 73% previously treated infection (**3** new/reinfections missed)
- All **low RPR titres** (≤ 1:2 or nonreactive)

Syphilis Outcomes, SPRITE, June 23, 2023 to Aug 22, 2024 (based on N=479 valid POCT and serology pairs). NOTE: these are preliminary and underpowered results, for monitoring purposes only

Health Care Provider POCT Implementer Survey

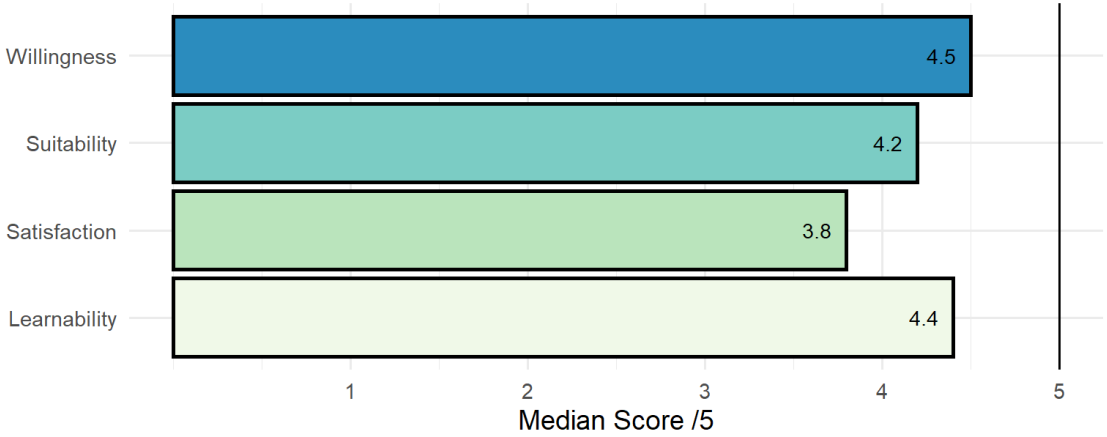


Figure 6 - Median subdomain scores (out of five) for the health care provider POCT implementer survey (N=26), SPRITE, 2023-2024.

High overall feasibility and acceptability

Identified issues:

- test accuracy with low RPRs
- confusion around comorbid infections that could affect test performance
- not perceived to reduce workload of health care providers
- functionality of the kit
- outreach conditions

Health Care Provider POCT Implementer Survey

Despite concerns:

- 100 per cent are willing to consistently offer and perform dual syphilis/HIV POCT, and
- 100 per cent feel the dual POCT should continue while providing outreach services.

"Excellent tool to engage clients in STBBI screening. The quick result is enough to engage clients to accept POCT screening, allowing the opportunity to discuss other STBBI screening and Public Health Services they could benefit from during that encounter. Anecdotally, the availability of the POCT has increased the number of individuals engaging [Public Health Nurse's] for STBBI testing during outreach encounters."

4. So what?

Main Points So Far

Reaching our target population

- A large proportion of clients report being un(der)housed, not having a residential address, or living in the most materially or socially deprived neighbourhoods.
- Notable proportion use injection drugs or have multiple sexual partners

Difficulty picking up low RPR titres

- Clients with low RPR titres have accounted for all false negatives thus far.
- INSTI® meant to detect both IgG and IgM antibodies.
- Consequences for identification of very early infections or latent infections.

More data needed

- Current results are underpowered – interpret with caution.
- Want ability to disaggregate by PHU to remove potential effect of regional variation in infectious syphilis rates.

Take Aways

Most interested in identifying and treating new or reinfections.

- As with serology, POCT **unable to distinguish** between new infections vs previously treated infections.
- Underlines **importance of clinical assessment and judgement** – more difficult in the field (i.e. contact tracing and symptom assessment).

Resulting questions and considerations

- Test may be most useful at the **beginning of an outbreak** or in a population with a **lower prevalence of syphilis** and thus less antibodies.
- For **interrupting the chain of transmission**, however, this outreach model with POCT appears to be **doing the job**. But more research is needed.

Meaningful engagement with underserved populations

- POCT has enabled discussion with clients with previously treated infection of the need for follow-up serology and assistance in identification of reinfections.
- More engagement in client population with respect to STBBI testing overall.

Partnerships and Spinoffs

Maintaining partnerships and building trust is key.

Partnerships and Spinoffs

- Extended to three northern, more rural PHUs (CIHR funded until March 2025).
- Ongoing projects (CIHR funded).
  - Evaluate longer-term effectiveness
  - Understand perspectives of target population and decision makers
  - Determine preferences for syphilis POCT in target population using discrete choice experiment.
- LDCP 2024-2025 – Building and evaluating a knowledge mobilization network

Thanks!

Do you have any questions?

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