

Evaluating HIV Rapid/Point of Care Testing Positive Predictive Value among Risk Factor Groups in Ontario, 2011-2018

Michelle Murti, Heather Rilkoff, Hadia Hussain, Juan Liu, Ken English, Abigail Kroch, Vanessa Allen
Canadian Conference on HIV/AIDS Research, May 2020

No Conflict of Interest to Declare



Background and Objectives

- Ontario's HIV Rapid/Point of Care (POC) testing program promotes access to HIV testing for populations at highest risk for HIV (priority populations)
- While sensitivity and specificity of the POC screening test are $>99\%$, there is an increased likelihood of false reactive results in populations with low prevalence of HIV
- In 2014, Ontario's Point of Care (POC) testing program was refined to specifically target priority populations at higher risk of HIV transmission
- We aim to describe changes in POC positive predictive value (PPV) by risk categories to assess impacts of focused testing

Methods

- Test requisition and linked confirmatory testing data (where applicable) for all POC tests in the province were extracted from Public Health Ontario Laboratories HIV Datamart
- Annual volumes of POC tests and associated positivity rate were assessed
- Using data from confirmatory testing results, the positive predictive value (PPV) of a positive POC test from 2011-2014 to 2015-2018 was compared by exposure category groups (Figure 1)
- PPV was calculated using the following: total number of confirmed positive test results / total reactive POC tests with a confirmatory blood sample

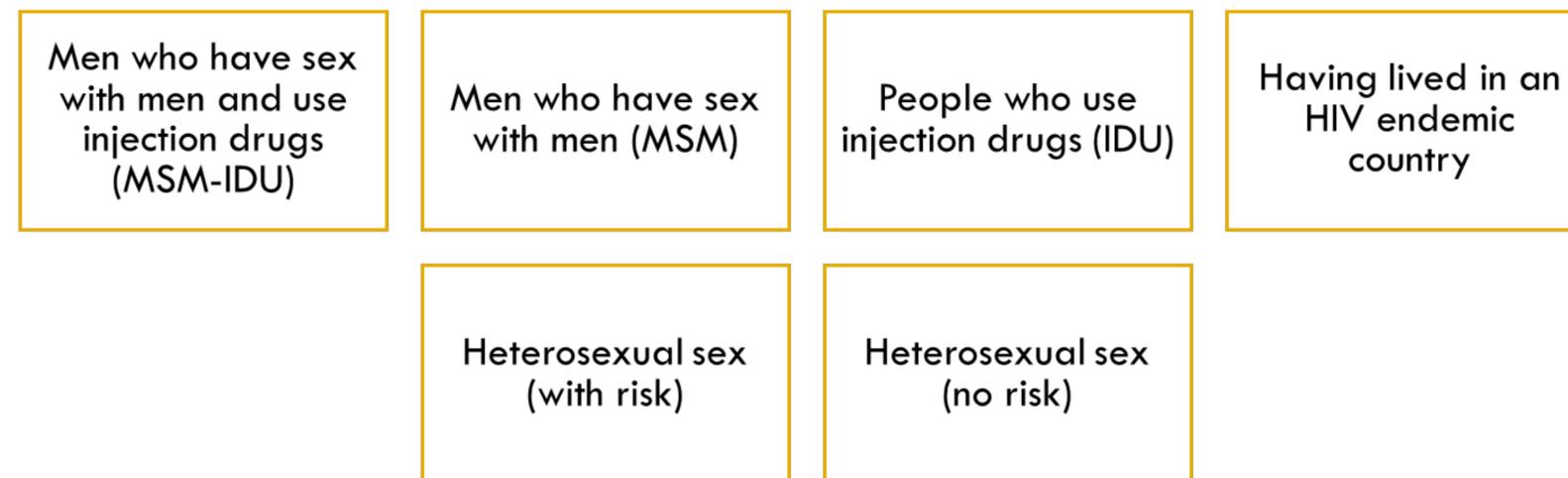


Figure 1. Exposure category groups

Results

- POC test volumes declined from 2015 to 2018, and overall POC positivity increased from 2015 (0.42%) to 2018 (0.69%) (Figure 2)
- Between 2011-2014 and 2015-2018 (Figure 3):
 - PPV remained similar for:
 - MSM IDU (100% to 100%)
 - MSM (95.2% to 95.6%)
 - PPV increased for:
 - IDU (80.6% to 82.4%)
 - Endemic (87.8% to 95.1%)
 - Heterosexual sex with risk (76.0% to 78.9%)
 - Heterosexual sex without other risk factor (46.7% to 65.7%)

Figure 2. Number of POC tests and positivity rate, Ontario, 2011-2018

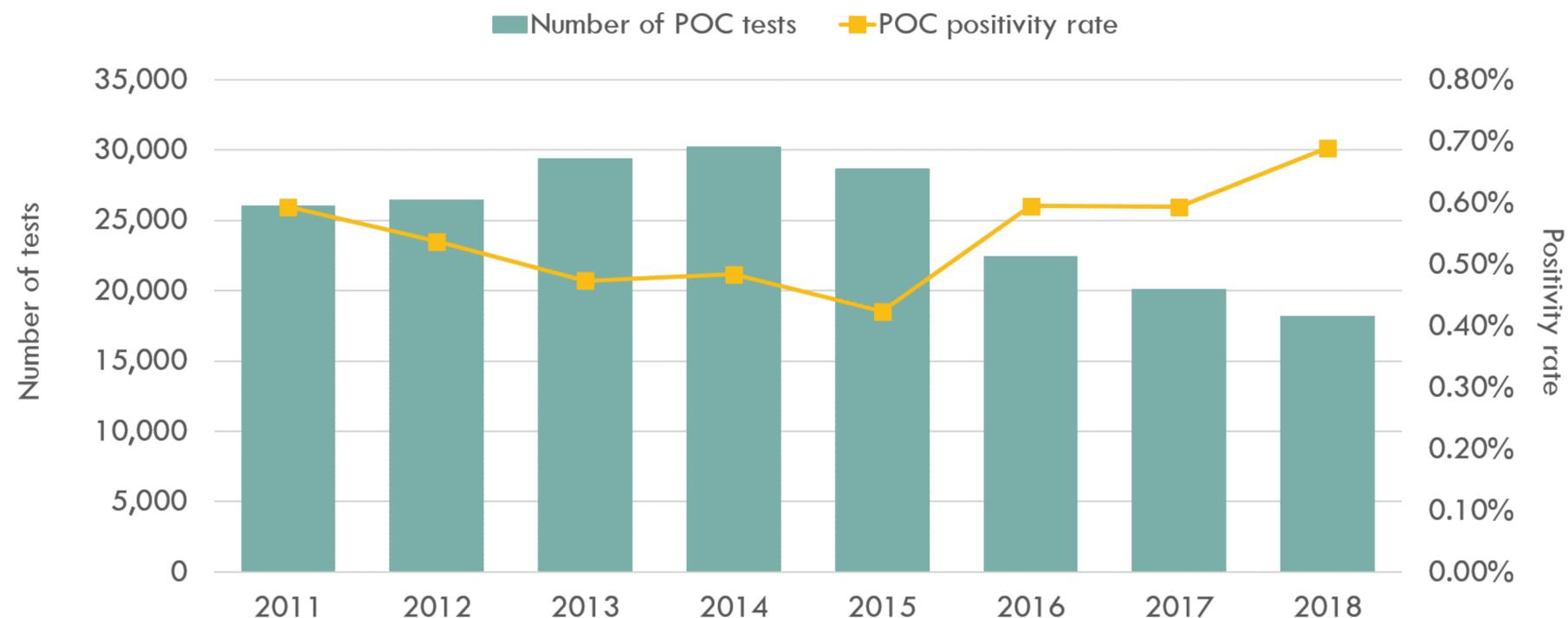
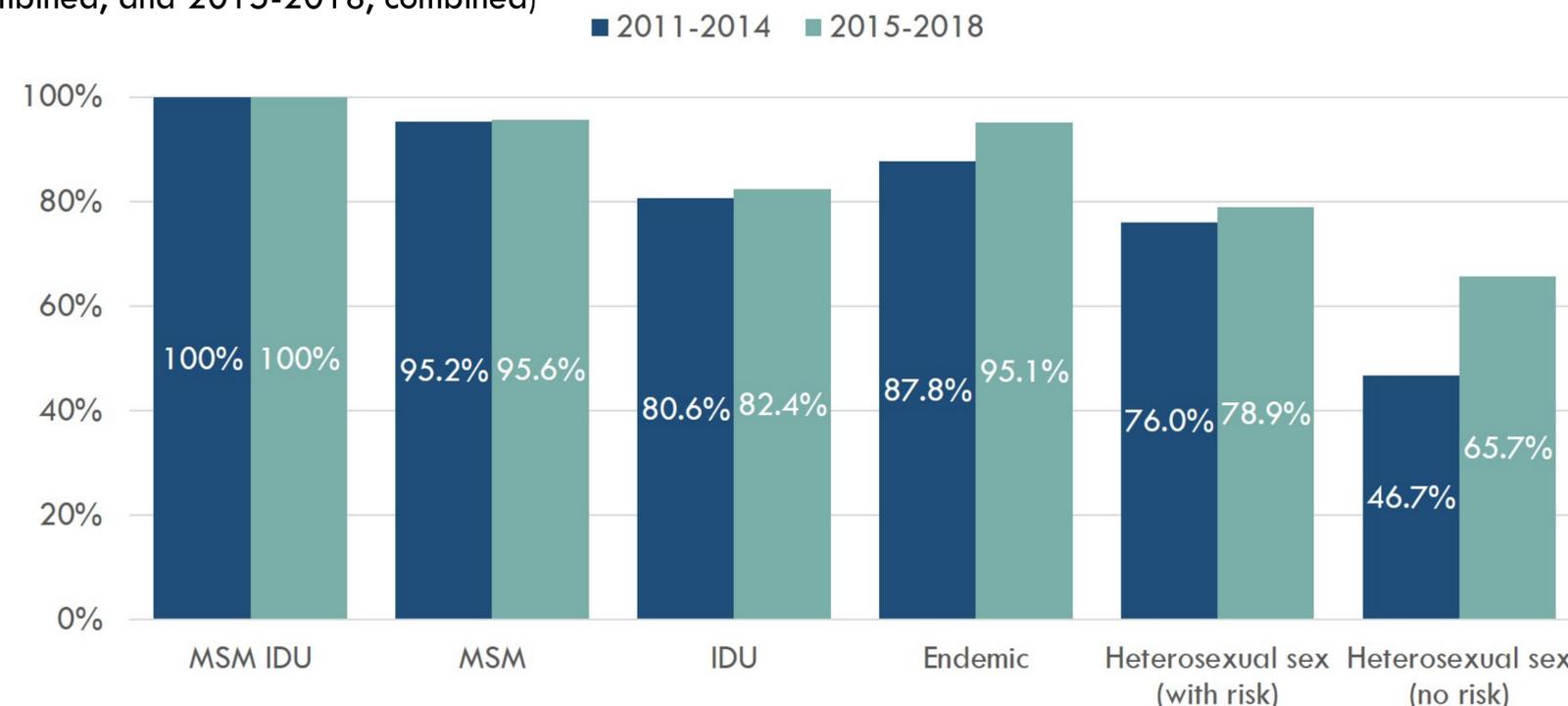


Figure 3. Positive predictive value (PPV) of positive POC test results, by exposure category (2011 to 2014, combined, and 2015-2018, combined)



Conclusions

- Focusing on priority populations resulted in a decrease in overall volumes of POC tests and an increase in overall positivity rates from 2015 to 2018.
- PPV remained high in high prevalence populations, and increased substantially amongst the ‘low-risk heterosexual sex’ exposure category, suggesting potential differences amongst those with the same risk factor pre-2015. Further exploration is needed to understand the factors influencing this shift.
- Despite improvements, PPV varied substantially between high and low prevalence populations. As new HIV testing modalities (e.g. home testing) emerge, these results have important implications for messaging around the interpretation of test results and likelihood of false reactive results in different risk groups.

Acknowledgements

HIV surveillance in Ontario is conducted collaboratively by the Ontario HIV Epidemiology and Surveillance Initiative (OHESI). We acknowledge the work of our OHESI partners: AIDS Bureau of the Ontario Ministry of Health (MOH), Public Health Ontario (PHO), the Public Health Agency of Canada (PHAC), and the Ontario HIV Treatment Network (OHTN) Applied Epidemiology Unit.

