

MULTIPLEXED TECHNOLOGIES FOR SEXUALLY TRANSMITTED INFECTIONS:

A SYSTEMATIC REVIEW OF GLOBAL EVIDENCE ON PREFERENCE, UPTAKE, FEASIBILITY, PREVALENCE AND IMPACT OUTCOMES

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BACKGROUND & OBJECTIVE

- Approximately one million individuals acquire sexually-transmitted infections (STIs) every day worldwide, many of which are asymptomatic and often left untreated
- Regular STI screening is a priority in at risk populations (i.e., men who have sex with men, injection drug users, pregnant women), and individuals residing in endemic settings
- Routine laboratory-based screening of STIs entails multiple patient visits which precipitates loss to follow-up
- Multiplexed technologies including point-of-care (POC) and molecular platform devices, offer a potential to screen for several STIs in a short turnaround time (TAT)
- In line with the aim to achieve the UNAIDS STI elimination and eradication targets by 2030, multiplexed technologies can help screen, stage, and link affected individuals rapidly to care
- We observed a gap in evidence syntheses and set out to conduct a systematic review
- **Our objective was to evaluate evidence on implementation outcomes: feasibility, uptake, preference, acceptability, and impact of multiplexed technologies in real-world settings**

METHODS & RESULTS

- For the period 2009-2019, we searched two electronic databases, PubMed and Embase, and bibliographies of included articles. We retrieved 3911 citations and after applying our eligibility criteria, we included a final set of 45 studies (Figure 1)
- Studies reporting data on multiplexed point-of-care tests or multiplexed platform devices were included
- Outcomes documented: preference (for multiplexed technologies over conventional testing, overall satisfaction/acceptance, recommendation of screening strategy to friends), uptake (increased usage of POC tests from baseline), feasibility (completion of multiplex testing, turnaround time, linkage to care), and impact (detection of new infections)
- Break up of outcomes, seroprevalence (n=42), preference (n=5), uptake (n=1), feasibility (n=13), and impact (n=3)
- 12 studies evaluated POC while 33 evaluated platform devices

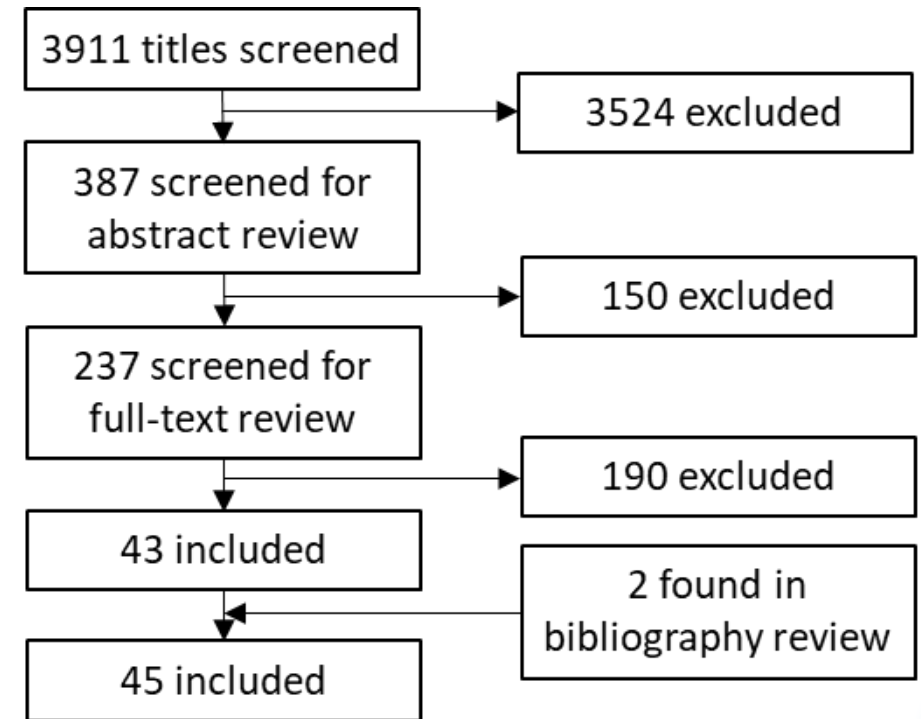


Figure 1: PRISMA Flow Diagram

RESULTS

- **Acceptability** : 100% of participants
- **Preference** (vs. conventional): 60.2%-97.2% of study participants
- **Uptake**: HCV (99.4%), TV (99.6%), HBV (78.6%), HIV (42%)
- **Test Completion**: 86.1%-93.0% of participants completed testing
- **TAT to test result**: POC devices 14 - 20 minutes vs. platform devices 14 - 300 minutes
- **Linkage to care**: 70.0%-100.0% of participants tested were linked to care
- **New infections detection** (range) : HIV (0.6% - 14.9% of participants), HBV (0.5%-20.0%), syphilis (0.2%-9.9%), HCV (0.5%) using multiplexed technologies
- **Molecular platforms detected more infections** (3.2% and 71.4% of TV) vs. *conventional labs* (culture and wet mount), respectively
- **Study sero-prevalence**: *Chlamydia trachomatis* (2.8%-30.2%), *Neisseria gonorrhoeae* (0.0%-30.3%), *Mycoplasma genitalium* (0.0%-12.0%), *Trichomonas vaginalis* (TV) (0.0%-32.7%), HIV (1.8%-29.9%), HSV(1/2) (0%-90.2%), *Treponema pallidum* (0.9%-27.0%) HBV (1.1%-23.9%), HCV (0.5%-42.2%), *Mycoplasma hominis* (1.8%-33.5%)

CONCLUSION

Both multiplexed technologies (POC biomarker devices and molecular platforms) were feasible, preferred by participants, and impacted a rapid detection of bacterial and viral STIs, with rapid linkages to care

Given their widespread availability, incorporation of multiplexed technologies into routine care can lead to an overall reduction in onwards STI transmission, impacting disease burden across global settings