Increasing Syphilis Prevalence Among MSM Across India Despite Improvements in the HIV Care Continuum

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Matthew M. Hamill[1] **Mihili P. Gunaratne[2]** Allison M. McFall[2] H. Syed Iqbal[3] Canjeevaram K. Vasudevan[3] Santhanam Anand[3] Sunil S. Solomon[1] Shruti H. Mehta[2] Aylur K. Krishnan[3] David D. Celentano[2] Gregory M. Lucas[1]

[1]The Johns Hopkins University School of Medicine, Baltimore, MD, USA; [2]The Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA;
[3]YR Gaitonde Centre for AIDS Research and Education, Chennai, India

BACKGROUND

- Syphilis rates have sharply increased in men who sex with men (MSM) in high income countries
- Infectious syphilis is strongly associated with HIV acquisition and transmission in MSM
- Nationally representative syphilis prevalence data from MSM in low-and-middle-income countries such as India are lacking

OBJECTIVE

- To evaluate changes over 5 years in syphilis prevalence and high titer (HT) RPR ≥1:8 syphilis across 10 Indian cities

METHODS

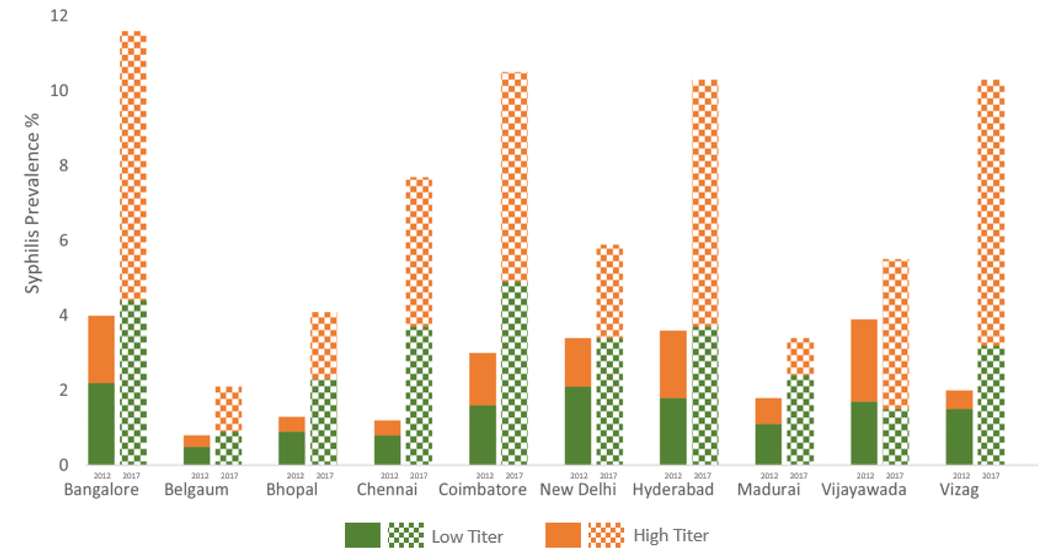
- Respondent-driven sampling (RDS) was used to accrue independent samples of MSM (n=1000 per sample) in 10 Indian cities between 2012-2013 and again in 2016-2017 for a cluster-randomized trial
- Archived samples from these MSM in 2012-2013 and 2016-2017 were used
- All participants underwent contemporaneous serological testing for syphilis using Rapid Plasma Reagin (RPR) and TPHA MonlabTest® in both cycles
  - Additional testing was performed on stored sera for those who tested positive (RPR+ and TPHA+) to determine RPR titer (n=320 for 2012-2013 cycle; n=791 for 2016-2017 cycle)
- Associations with HIV status and sociodemographic and behavioral data were explored for the second (2016-2017) survey cycle using multilevel multinomial logistic regression

Table 1: Characteristics of syphilis positive participants by survey cycle and titer

n(%)	2012-2013 (N=320)		2016-2017 (N=791)	
	Low Titer	High Titer	Low Titer	High Titer
Syphilis prevalence	186 (60)	134 (41)	362 (47)	429 (53)
N	186	134	362	429
HIV prevalence	64 (22)	52 (27)	133 (37)	160 (37)
HIV viral suppression	144 (86)	94 (79)	302 (88)	330 (80)
Self-reported diagnosis of syphilis	18 (5)	18 (8)	42 (11)	40 (5)
Condomless anal intercourse	95 (49)	66 (48)	170 (47)	210 (54)

Increase in community burden of syphilis and higher likelihood of high-titer syphilis among those living with HIV viremia suggests unmet need for STI prevention, screening, and treatment and HIV treatment support

Figure 1: Syphilis prevalence in Indian MSM by City and by high (≥1:8) and low (<1:8) RPR titer



The median increase in syphilis prevalence from 2013 to 2017 was 4.65% (range:1.6% to 7.5%) with increase in HT syph (2.7% [range: 1.2% to 4.8%]) accounting for a larger share of the overall increase than low titer (<1:8) syphilis (1.6% [range 1.3 to 2.2])

Table 2: Characteristics of 2016-2017 cycle n(%)/median (IQR)	Low Titer N=362	High Titer N=429
Age	34 (27-41)	27 (23-34)
HIV Status and RNA		
Negative	229 (61)	269 (66)
Positive, HIV RNA<=1000	107 (31)	102 (21)
Positive, HIV RNA>1000	26 (8)	58 (13)
Condom use with last male sex partner (past 6 months)		
No condom use	21 (7)	13 (2)
Used condom	65 (15)	84 (20)
No sex partner	276 (78)	332 (78)
Self-reported gonorrhea	19 (4)	16 (2)
Self-reported chlamydia	13 (3)	12 (2)
Any sexually transmitted infectious (STI) symptoms (past 6 months)	38 (14)	34(8)

Figure 2: Correlates of HT syphilis vs syphilis negative among MSM living with HIV (2016-2017)

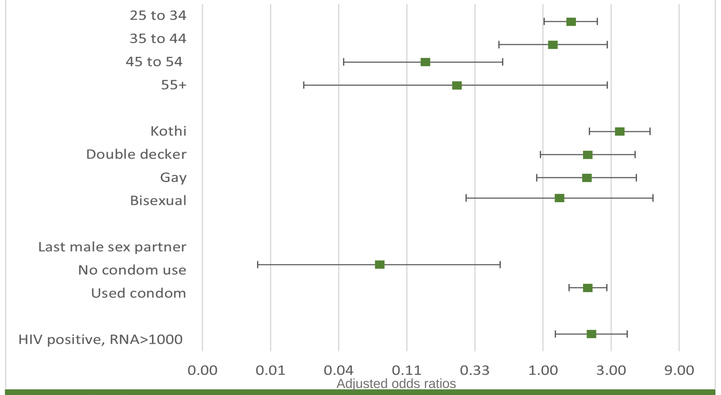
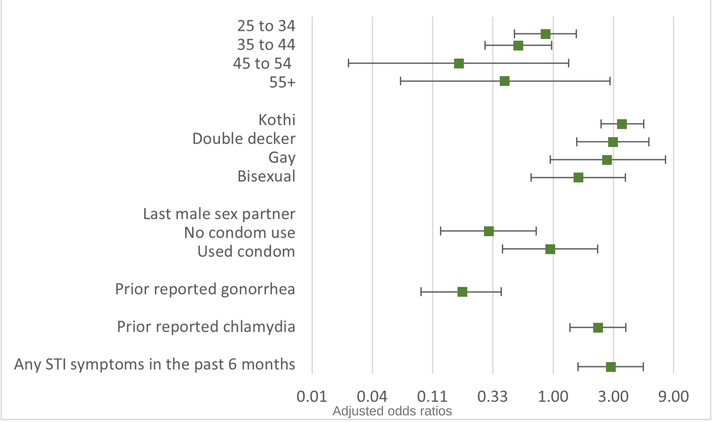


Figure 3: Correlates of HT syphilis vs syphilis negative among MSM living without HIV (2016-2017)



LIMITATIONS

- We were unable to confirm stage of syphilis limiting exploration of syphilis stage and RPR titer

CONCLUSIONS

- In this large sample of Indian MSM in 10 cities syphilis prevalence increased by 141% and HIV viral suppression increased over 5 years
- Associations with HT syphilis and HIV viremia suggest increased opportunities for transmission of both infections
- ART adherence support, syphilis prevention, and early diagnosis and treatment are required
- The efficacy of doxycycline PEP should be explored in this setting

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