THE POTENTIAL IMPACT OF PROVIDING POST-EXPOSURE PROPHYLAXIS TO MSM ON THE INCIDENCE OF GONORRHOEA AND INFECTIOUS SYPHILIS COMPARED WITH STANDARD PRACTICE

Authors:
Hui BB[1], Gray RT[1], Regan DG[1]

[1]The Kirby Institute, UNSW Sydney

Introduction:
Gonorrhoea and syphilis are frequently diagnosed STIs among men who have sex with men (MSM) in Australia. Clinical trials of doxycycline post-exposure prophylaxis (Doxy-PEP) suggest it could be effective in reducing STI incidence. We used mathematical modelling to estimate the impact of providing Doxy-PEP to MSM on the incidence of gonorrhoea and syphilis in Australia.

Methods:
An individual-based model was developed to simulate the transmission of gonorrhoea and syphilis in an urban MSM population in Australia. The estimated incidence of gonorrhoea and syphilis over a five-year period under standard practice was compared with the provision of Doxy-PEP to 30%, 50% and 70% of MSM.

Results:
Under standard practice, the modelled average incidence of gonorrhoea and infectious syphilis over 5 years is 17.16 (IQR: 16.66 – 17.68) and 2.04 (IQR: 2.02 – 2.06) per 100 person-years, respectively. If Doxy-PEP – assumed to prevent the development of both STIs following exposure – is used by 70% of MSM following sexual contact, gonorrhoea and infectious syphilis incidence is reduced to 0.69 (IQR: 0.66 – 0.73) and 0.44 (IQR: 0.43 – 0.45) per 100 person-years, respectively. Incidence is reduced to 1.66 (IQR: 1.59 – 1.72) and 0.80 (IQR: 0.79 – 0.82) per 100 person-years, respectively, if 50% of MSM use Doxy-PEP, and to 3.81 (IQR: 3.67 – 3.95) and 1.24 (IQR: 1.23 – 1.26) per 100 person-years, respectively, if 30% of MSM use Doxy-PEP.

Conclusion:
Our results suggest that Doxy-PEP could be effective in reducing the incidence of STIs. Doxy-PEP is likely to be more effective for gonorrhoea prevention among MSM than for syphilis because of its higher transmission probability and because it is already endemic in the population. Further modelling is needed to investigate other factors, such as varying effectiveness for different STIs, the effect of dosage and uptake, and the potential impact on antimicrobial resistance.

Disclosure of Interest Statement:
The Kirby Institute is funded by the Australian Government Department of Health and is affiliated with the Faculty of Medicine, University of New South Wales. The views expressed in this publication do not necessarily represent the position of the Australian Government.