

Potential impact of HCV point-of-care testing on the HCV epidemic among MSM in Taiwan: a modelling study

Authors:

Wu HJ¹, Shih STF¹, Applegate TL¹, Gray RT¹

¹ The Kirby Institute, UNSW Sydney, Australia

Background: Complex diagnosis pathways are a barrier to treatment and care for hepatitis C virus (HCV) infection. Even though there is universal access and free-of-charge direct-acting antiviral (DAA) treatment for HCV in Taiwan, there is an increasing HCV epidemic among men who have sex with men (MSM). Point-of-care (POC) testing has the potential to improve treatment uptake among MSM and help achieve elimination targets. We investigated the potential impact of HCV POC testing strategies on the HCV epidemic among MSM in Taiwan.

Methods: We developed a compartmental deterministic model incorporating the natural history of HCV disease progression and the care cascade among four subpopulations of MSM in Taiwan, i.e. HIV-negative not using HIV pre-exposure prophylaxis (PrEP), HIV-negative using PrEP, undiagnosed HIV-positive, and HIV-diagnosed on HIV treatment. The model was calibrated to available data for HCV and HIV epidemiology and population demographics. POC testing scenarios included POC HCV antibody testing, dried blood spot testing, reflex RNA testing, and POC RNA testing. We projected the impact of POC testing strategies on the HCV epidemic among MSM to the end of 2030.

Results: Under current testing and treatment levels, HCV new infections would increase from 1740 in 2022 to 2561 by 2030 with 65.2% of people living with HCV cured by 2030. POC testing reduces HCV new infections by 18.6% (POC Antibody testing) to 49.8% (POC RNA testing). All POC testing strategies improved the HCV care cascade by 2030 with increase cured proportion from 70.5% to 80.1%. The reduction in incidence due to POC testing is mitigated if substantial levels of re-infection following cure occurred.

Conclusion: POC testing could significantly reduce HCV incidence and improve HCV care cascade among Taiwanese MSM. Ongoing prevention strategies will be required to reduce HCV reinfection and achieve HCV elimination targets among MSM.

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