

Impact of simplified HCV diagnostic strategies on HCV epidemic among MSM in Taiwan: a modelling study

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Surveillance, Evaluation, and Research Program (SERP)

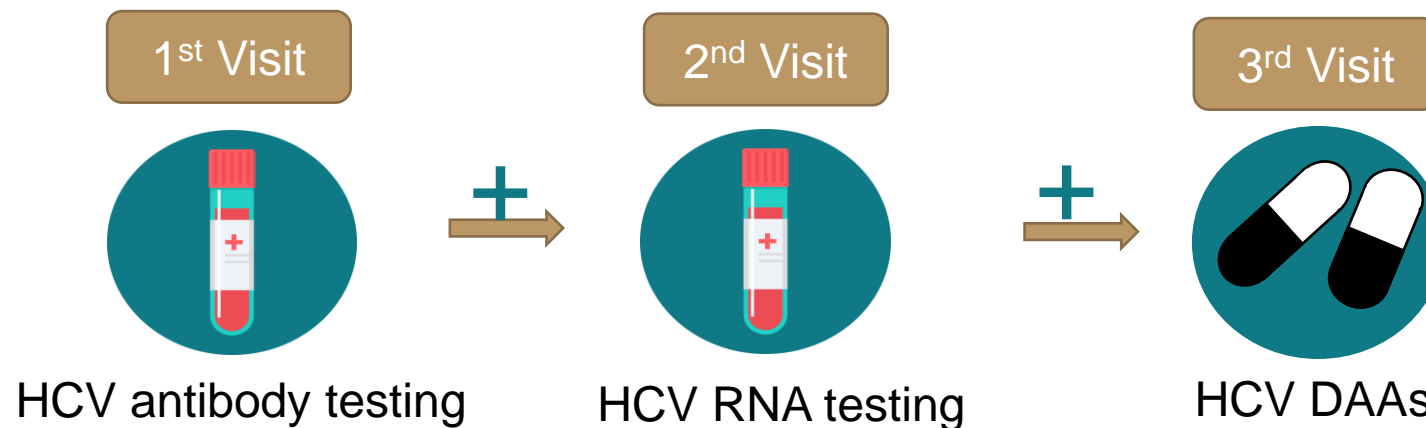
Kirby Institute, UNSW Sydney

HCV epidemic in MSM globally & in Taiwan

	Prevalence in general population, %	Overall prevalence in MSM		HIV-negative		HIV-positive	
		Pooled prevalence, %	PR (95% CI)	Pooled prevalence, %	PR (95% CI)	Pooled prevalence, %	PR (95% CI)
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Western Pacific region	NA	2.7%	1.29 (0.91-1.67)	1.4%	2.68 (1.63-3.74)	6.5%	5.10 (3.23-6.96)
Australia	1.30%	2.8%	2.16 (1.78-2.61)	0.8%	0.61 (0.32-1.07)	8.7%	6.70 (5.83-7.66)
China	1.21%	1.0%	0.83 (0.76-0.89)	0.5%	0.41 (0.28-0.58)	2.8%	2.34 (1.39-3.70)
Taiwan	3.28%	3.5%	1.07 (0.97-1.18)	0.7%	0.22 (0.11-0.41)	4.5%	1.37 (1.25-1.50)
Japan	0.98%	2.1%	2.10 (1.32-3.18)	NA	..	2.1%	2.10 (1.32-3.18)
Mongolia	9.80%	18.0%	1.84 (0.84-3.49)	18.0%	1.84 (0.84-3.49)	NA	..
Singapore	1.70%	0.0%	0.00 (0.00-0.83)	NA	..	0.0%	0.00 (0.00-0.83)
South Korea	1.30%	4.1%	3.13 (1.66-5.34)	NA	..	4.1%	3.13 (1.66-5.34)
Vietnam	1.49%	24.6%	16.53 (14.97-28.20)	21.9%	14.67 (13.01-16.49)	55.2%	37.01 (32.16-42.38)
Overall	NA	3.3%	3.04 (2.55-3.53)	1.4%	1.58 (1.14-2.01)	6.3%	6.22 (5.14-7.29)

The long journey to access to HCV treatment in Taiwan

- DAAs has been reimbursed to all HCV patients by National Health Insurance (NHI) Program since 2019
 - All doctors can prescribe DAAs without referring to hepatologists since October 2021
- Access to diagnosis and treatment is low
 - Access to HCV testing is varied based on the engagement of health services
 - Complexity of the current diagnostic algorithm's complexity for HCV

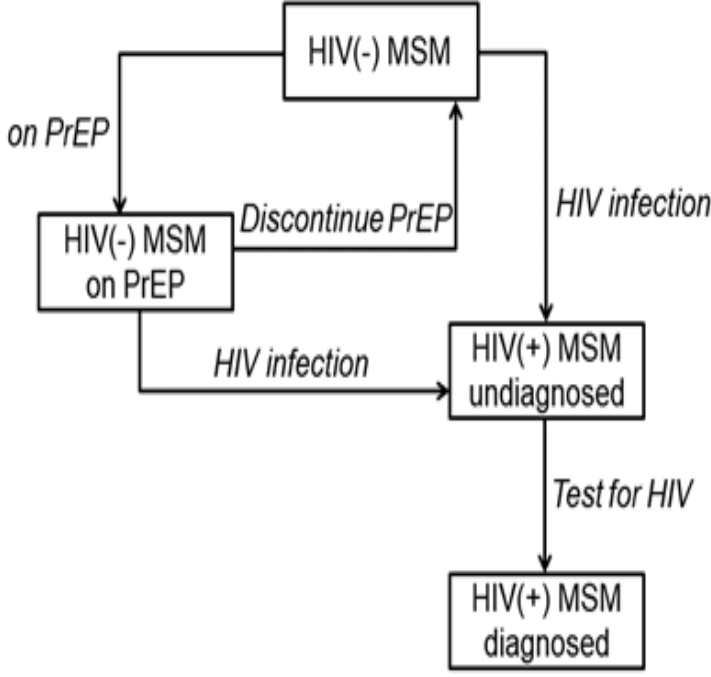


Simplified HCV testing strategies in Taiwan

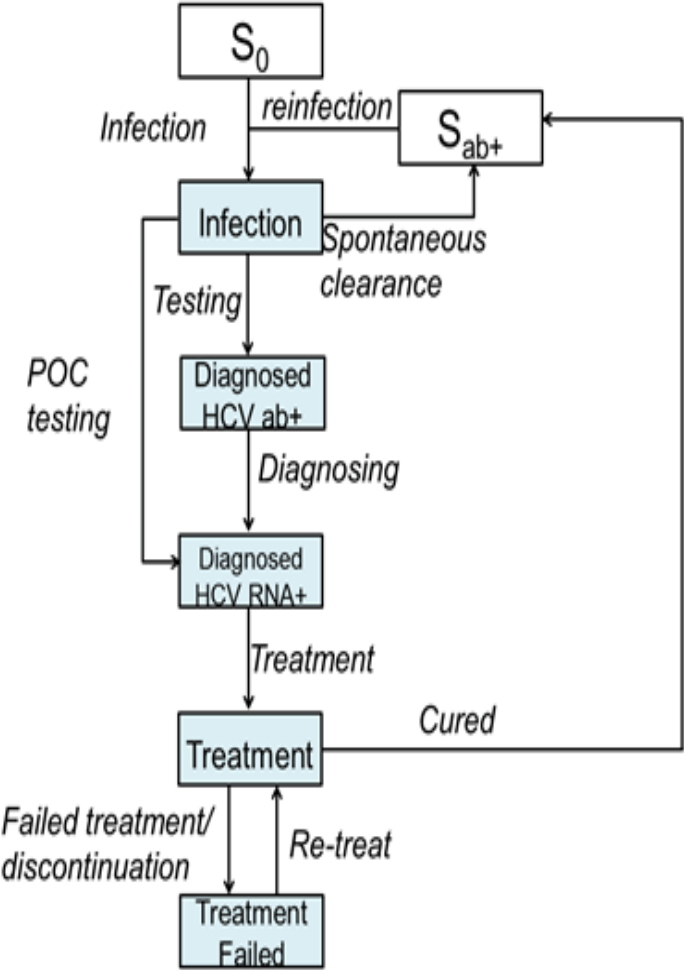
- Point-of-care antibody testing
- ⊘ One-step point-of-care RNA testing
- ⊘ Dried blood spot testing
- ⊖ Clinic-based reflex RNA testing

Model overview

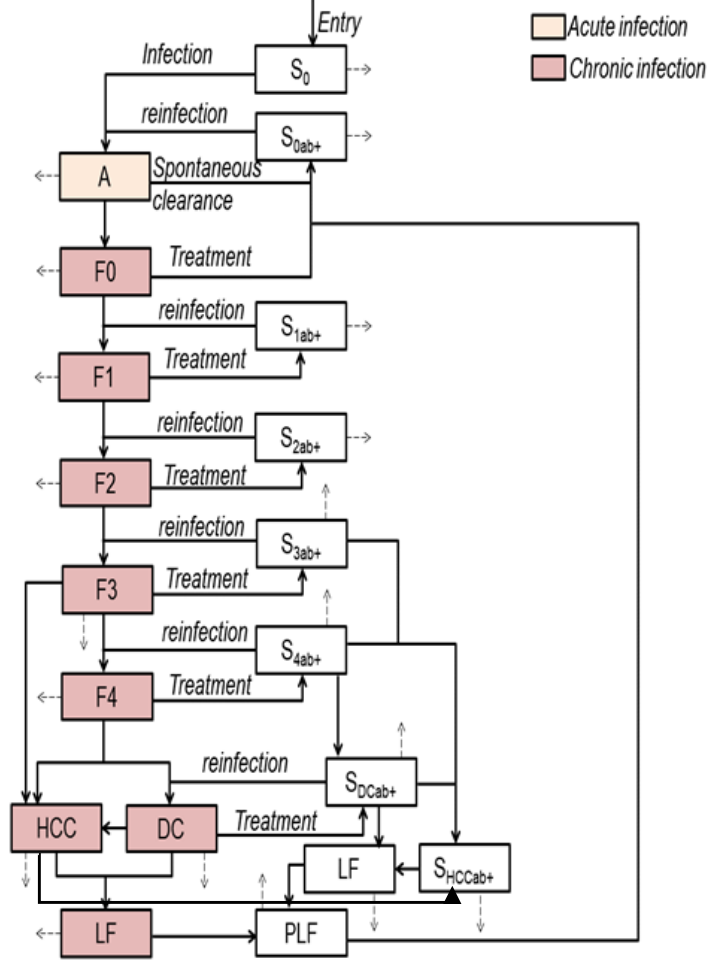
Population structure



HCV care cascade



HCV disease progress



Model scenarios

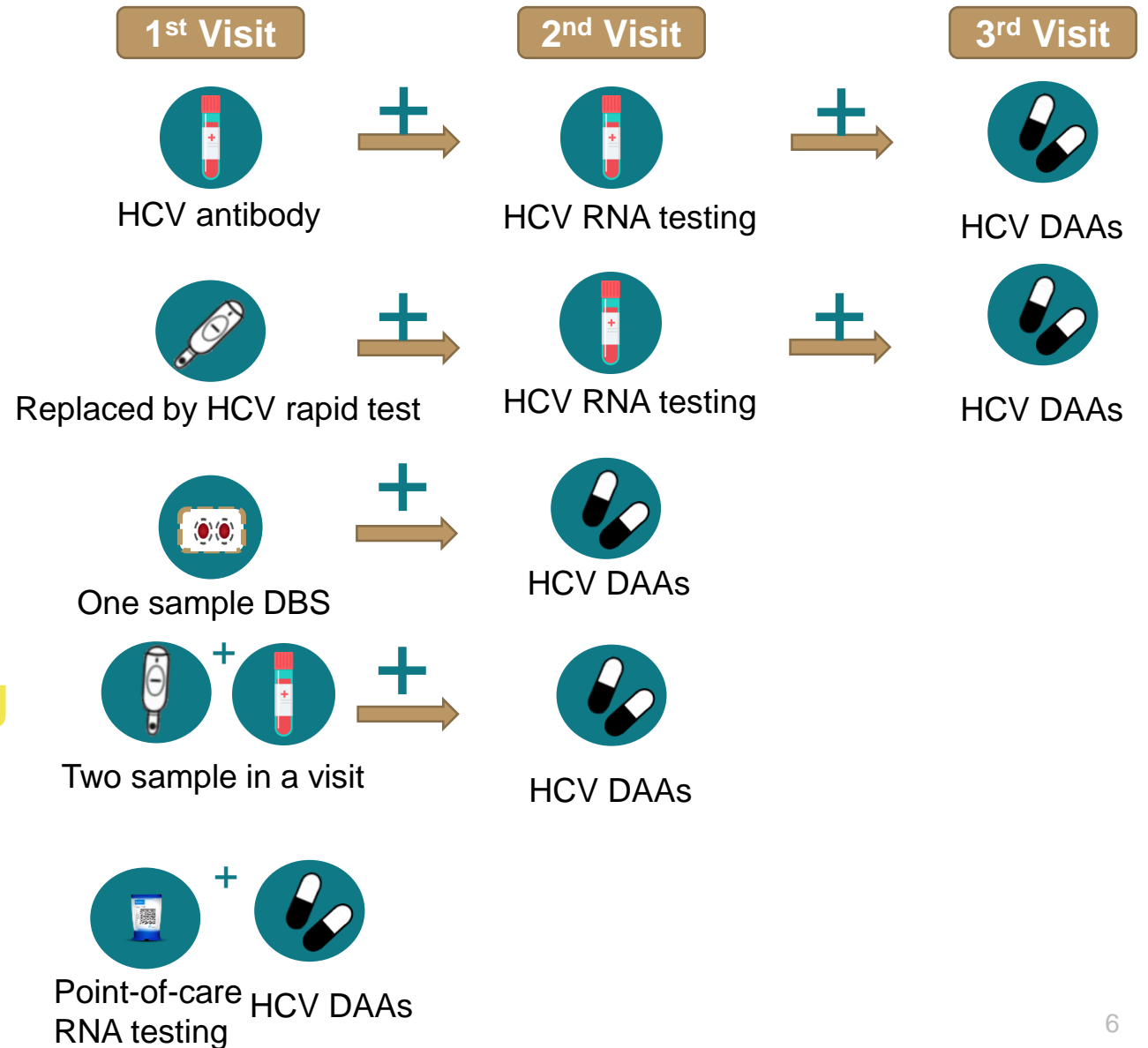
(0) Status quo

(1) Point-of-care antibody testing

(2) Dried blood spot testing

(3) clinic-based reflex RNA testing

(4) point-of-care RNA testing



Model outcomes and sensitivity analysis

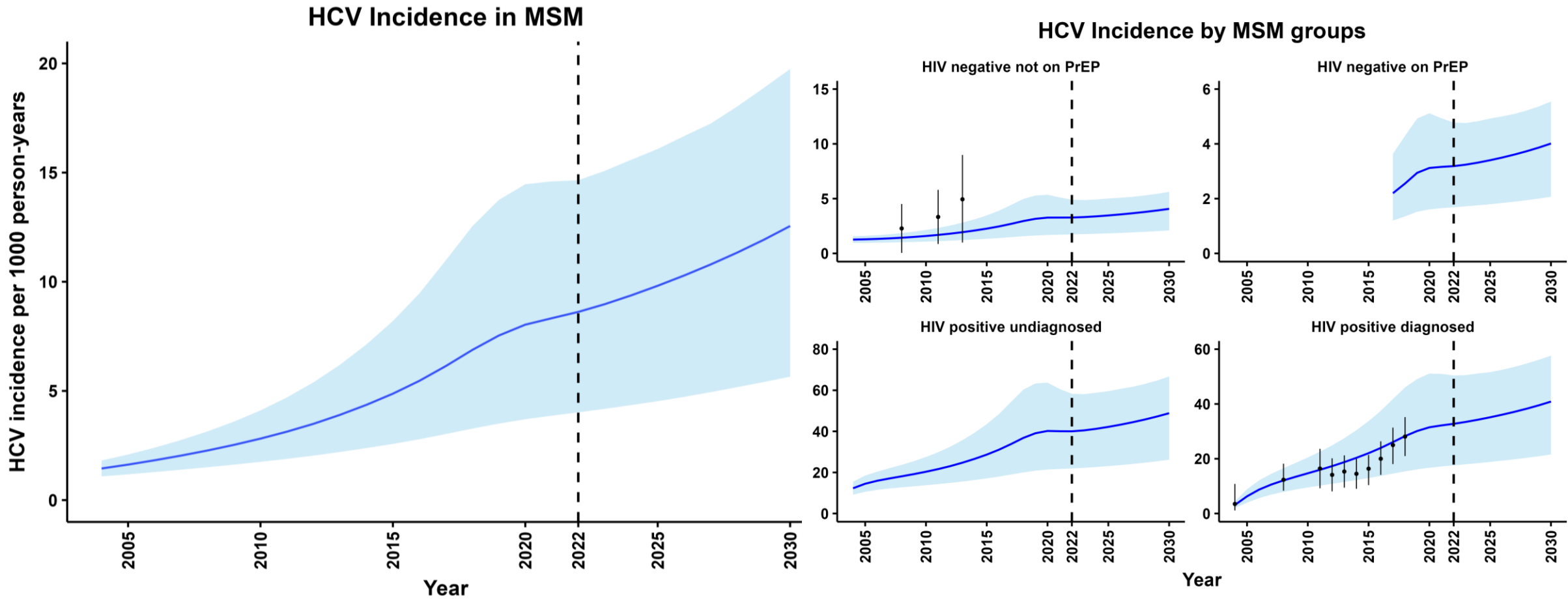
Model outcomes

- HCV incidence
- Percentage of HCV diagnosis and treatment

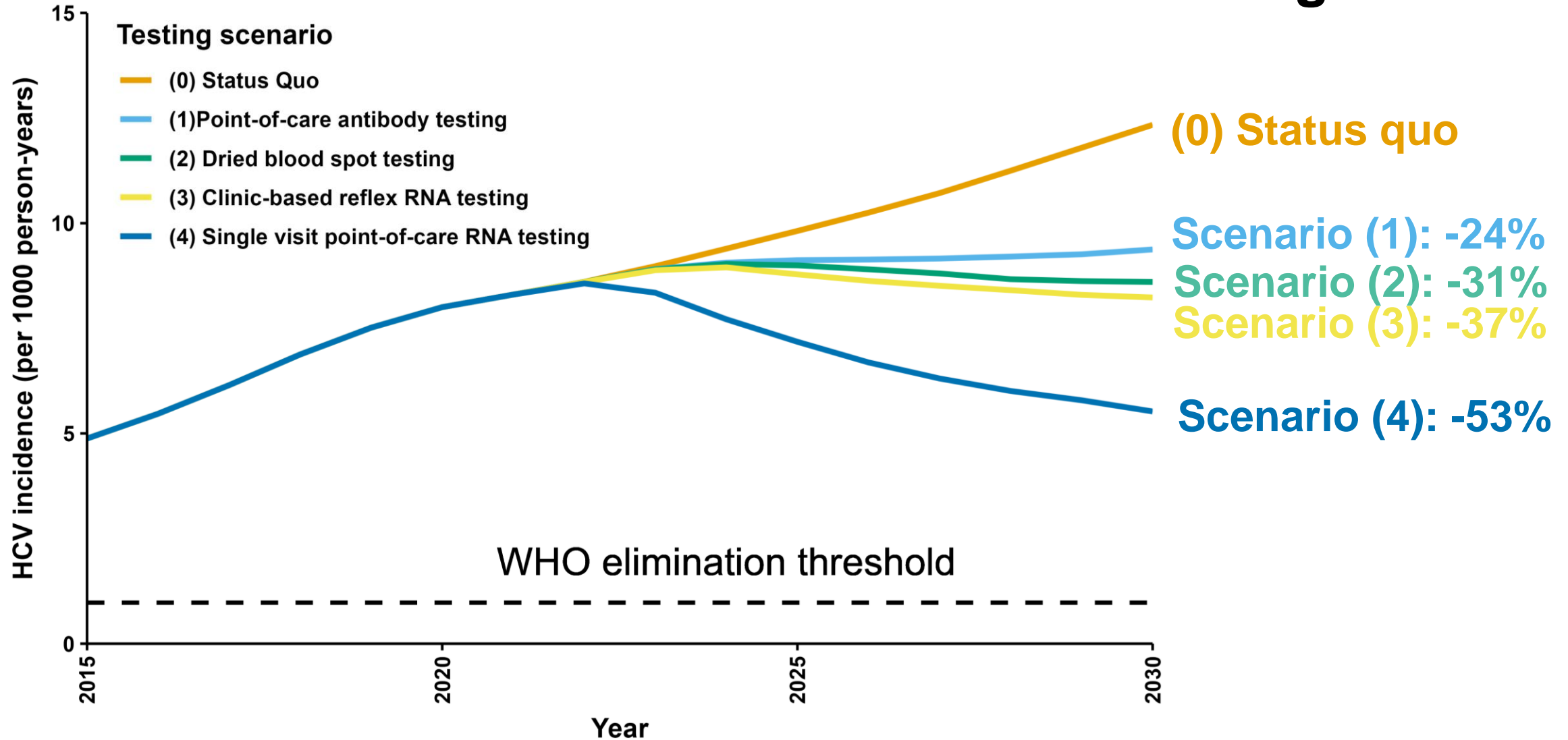
We varied the following parameters to investigate its impact on HCV epidemic

- The scale-up time frame of HCV testing scenario
- The effect of simplified HCV testing strategy
- HCV reinfection rate
- Targeted at MSM subgroups who regularly engaged with HIV prevention and care services

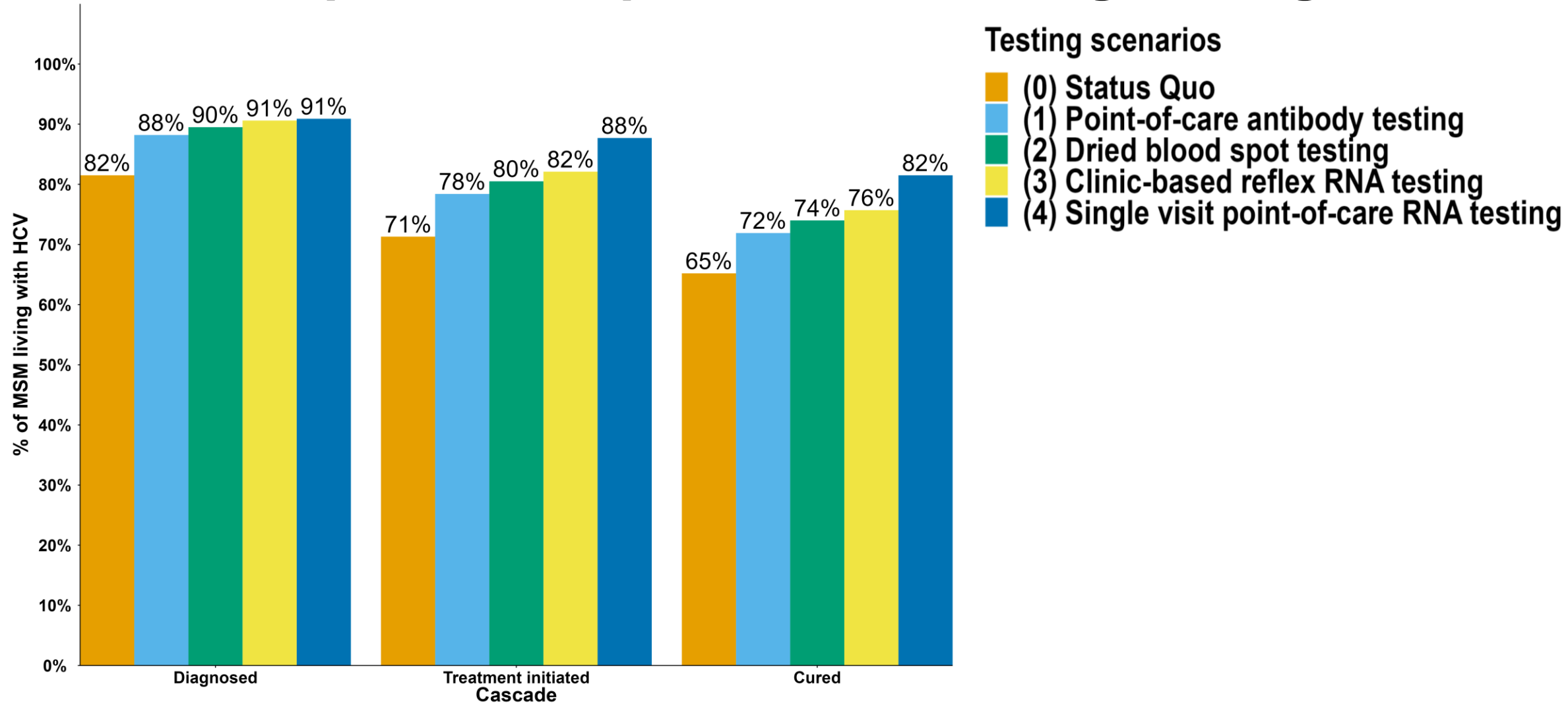
Results-baseline model projection



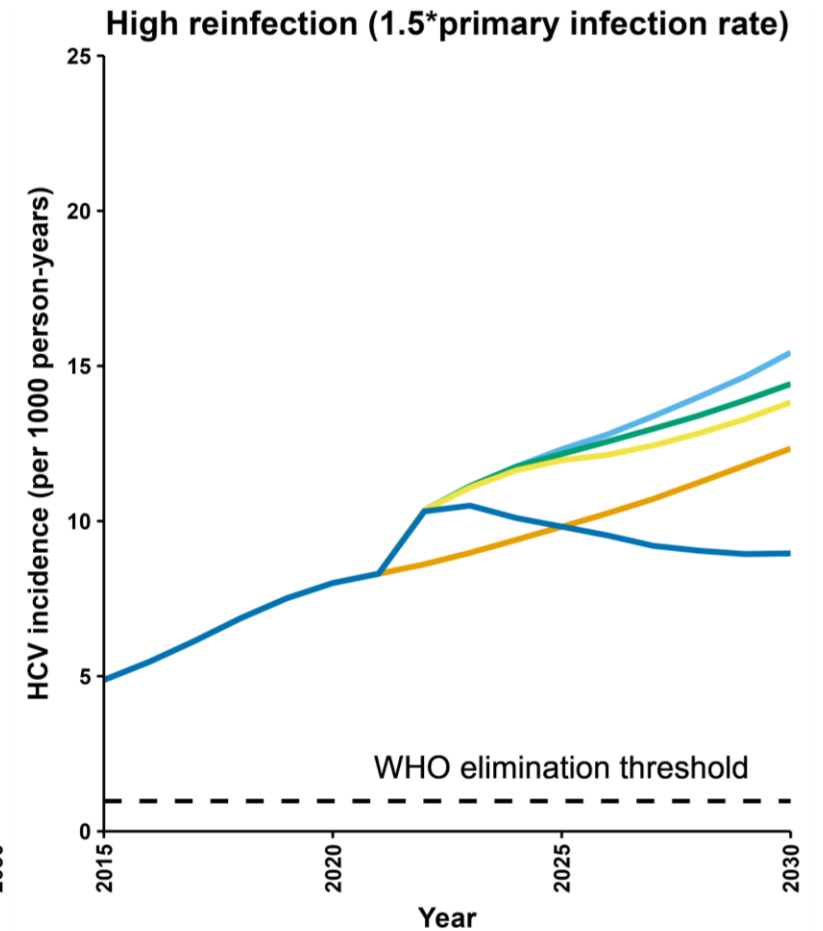
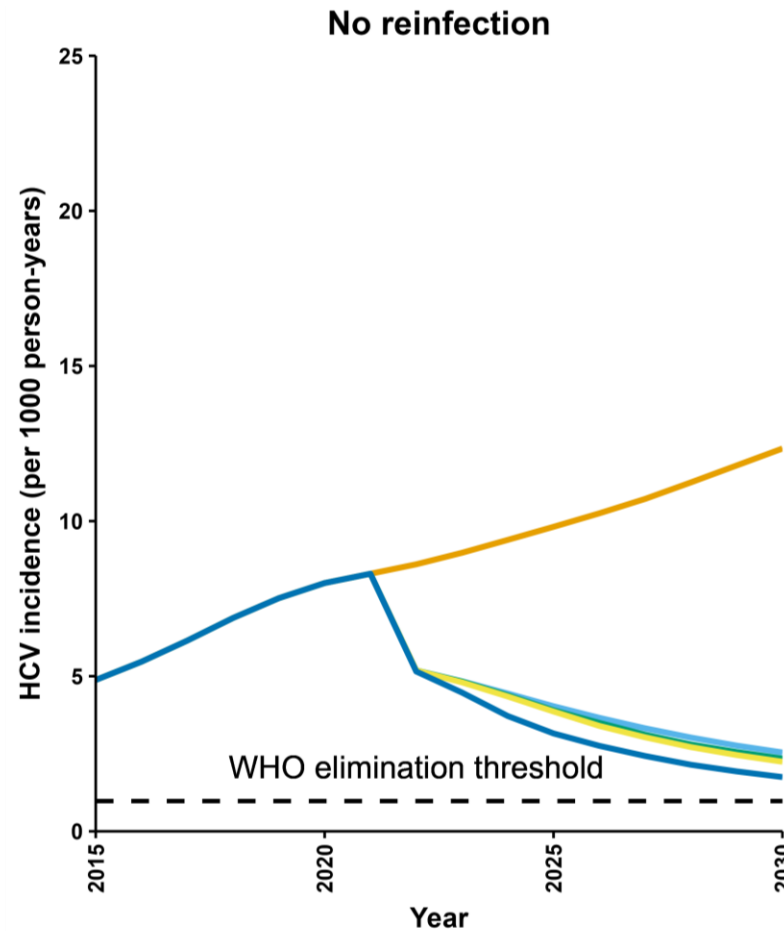
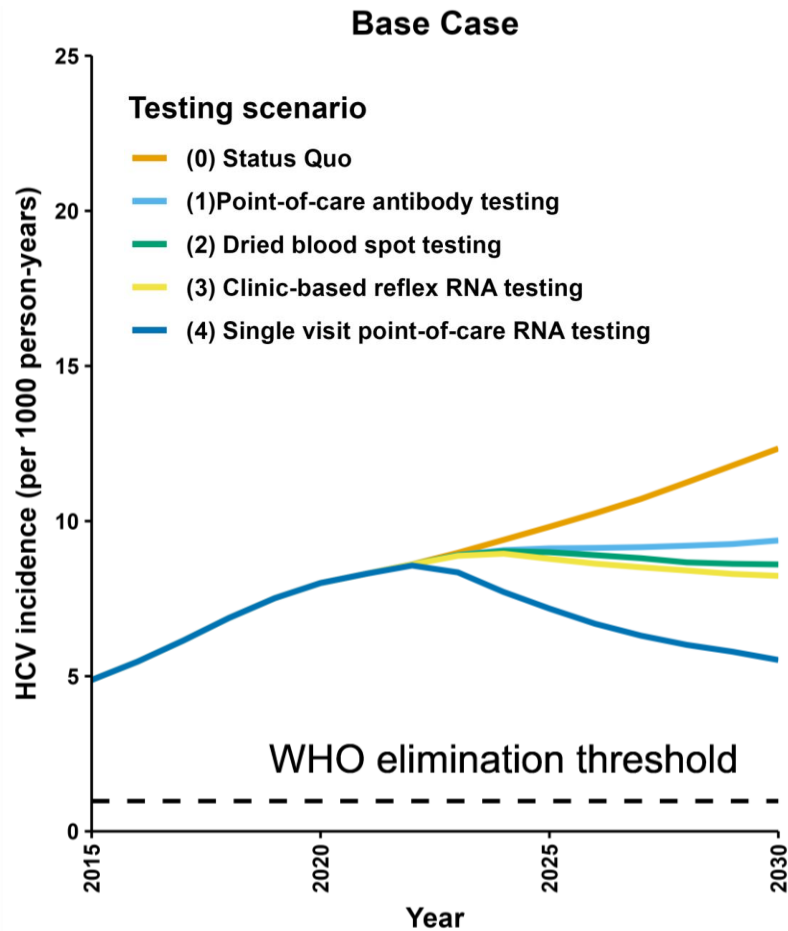
Results-impact of simplified HCV testing strategies



Results-impact of simplified HCV testing strategies



Results-sensitivity analysis



Conclusion

- All simplified HCV testing strategies reduce HCV incidence and improve the HCV diagnosis and treatment.
 - Impact: Single visit point-of-care RNA testing > Clinic-based RNA testing > Dried blood spot testing > point-of-care antibody testing
- Reinfection are crucial to the impact of simplified HCV testing strategies
- None of the simplified HCV testing strategies could achieve the WHO elimination impact target among entire population of MSM

Implications

- Inform national/regional action planning for HCV on simplified HCV testing targeted at MSM for Taiwan and the Western Pacific
- This mathematical model could also be used in other settings in the region to evaluate the impact of simplified strategies on HCV testing and treatment.

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