

Table 1	HIV ^{1,2,3}	HBV ^{4,5}	HCV ^{6,5}
Estimated Prevalence	38.4 million	296 million	58 million
Percentage Diagnosed	85%	10.5%	21%
Percentage Treated	75%	2.3%	13%
Deaths per year	650,000	820,000	290,000
Treatment cost per person	\$47/year	\$29/year	\$60/cure

HIV, HBV and HCV have overlapping routes of transmission and therefore burden similar populations.⁷

Both the United Nations and the WHO have pledged to tackle and/or eliminate these epidemics by 2030.^{8,9} These goals are being tracked using 95-95-95 (HIV) and 90-80 (HBV, HCV) targets.^{10,11}

Table 1 shows we are far behind, particularly for HBV and HCV. More people die from viral hepatitis than HIV worldwide each year.

To combat this, the WHO recommended that people who use drugs (PWUD), prisoners and MSM receive triple testing for 3 Blood Borne Viruses (BBVs): HIV, HBV and HCV.¹² This systematic review aims to provide justification for these recommendations.

Research Questions:

1. How many more individuals would be diagnosed with a BBV with triple testing, versus isolated HIV testing?
2. Would offering triple testing be financially feasible on a global scale, compared to HIV testing and treatment alone?

Results: Table 2 shows the prevalence of HIV, HBV and HCV from 175 papers across 56 countries, which sampled over 14 million individuals. HIV positivity was defined as anti-HIV 1/2 antibody positivity, HBV as HBsAg positivity and HCV as anti-HCV antibody positivity.

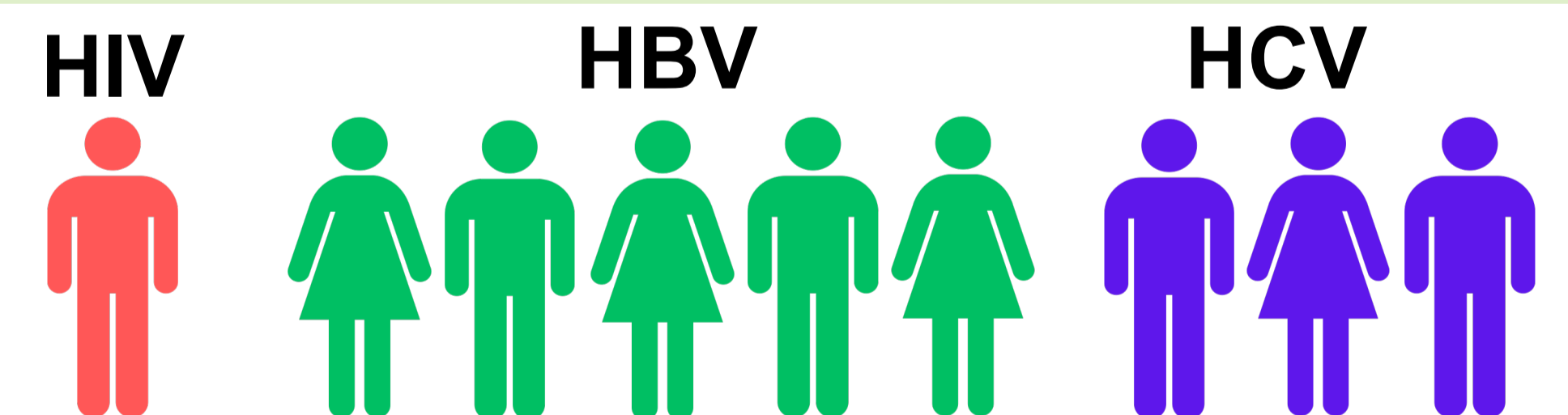
Table 2	Studies	HIV+ve (%)	HBV+ve (%)	HCV+ve (%)	BBV+ve (%)	HBV:HIV	HCV:HIV
General Population	11	0.1%	0.2%	0.6%	0.7%	2.4	6.6
Blood Donors	43	0.3%	1.1%	0.5%	1.9%	3.5	1.6
Pregnant Women	16	0.4%	1.5%	0.3%	2.2%	3.8	0.8
Healthcare Attendees	34	0.2%	7.2%	1.1%	8.5%	40.4	6.4
Refugees/Asylum Seekers	35	0.2%	1.2%	0.5%	1.8%	7.0	2.8
Prisoners	15	1.0%	1.3%	5.7%	7.8%	1.2	5.5
Homeless Individuals	4	3.4%	1.8%	21.8%	26.9%	0.5	6.4
MSM	4	18.3%	1.3%	1.4%	20.1%	0.07	0.1
PWUD	13	20.5%	9.9%	52.8%	60.6%	0.5	2.6
Total	175	0.2%	1.1%	0.7%	1.9%	4.9	3.0

Across all nine population groups, the mean prevalence of HIV, HBV and HCV was 0.2%, 1.1% and 0.7% respectively. Additionally, a mean of 1.90% of individuals tested positive for one BBV.

This means that for each individual testing HIV+ve, triple testing would identify another five individuals with HBV and three with HCV, resulting in nine BBV positive individuals.

In all categories except MSM, the combined prevalence of HBV and HCV was greater than that of HIV.

The greatest burden of disease was for PWUD, with 60.1% of individuals testing positive for either HIV, HBV or HCV.

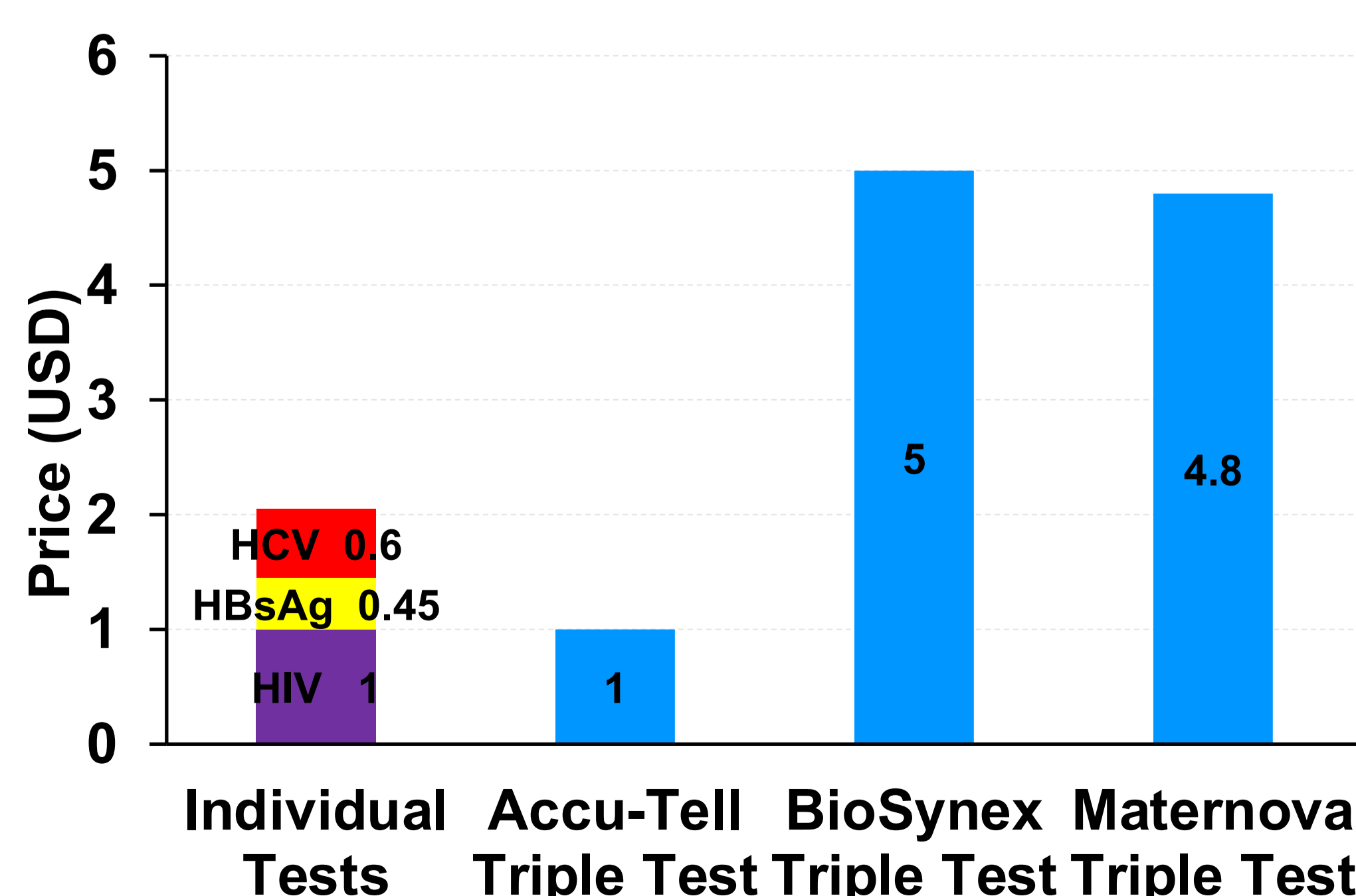


For every person testing HIV+, another 5 tested positive for HBV, and 3 for HCV.

As shown in Figure 1, there are three commercially available triple tests for HIV (anti HIV 1/2 antibody), HBV (HBsAg) and HCV (anti-HCV antibody).

Prices are \$1, \$4.8 and \$5 for these triple tests.¹³⁻¹⁵ The cost of individual tests is \$1 for HIV, \$0.70 for HBsAg and \$0.78 for HCV.^{16,17}

Figure 1: Prices of tests for HIV, HBV and HCV



Conclusions

1. Across a range of at-risk populations, testing and treating HIV, HBV and HCV would benefit 9 times as many people than testing/treating HIV alone, at minimal extra cost.

2. In 2022, there were more deaths worldwide from viral hepatitis (1.1 million) than HIV (650,000)^{1,4,6} HCV can be cured with DAAs for \$60/year with SOF/DCV. HBV can be treated with generic TDF for \$29/year.⁵

References can be found by scanning the QR Code.



Acknowledgements: I would like to thank Dr Samuel Cross and Dr Toby Pepperrell for their help in sourcing the financial information regarding the tests