Supporting Information

Supplementary material

This appendix was part of the submitted manuscript and has been peer reviewed. It is posted as supplied by the authors.

Appendix to: Chen W, Howell M, Cass A, et al. Understanding modelled economic evaluations: a reader's guide for clinicians. *Med J Aust* 2024; doi: 10.5694/mja2.52409.

Table: Key information from two published modelled economic evaluations*

	Chronic hepatitis B model (1)	Coronary artery calcium (CAC) model (2)	Key terms and explanation
Scenarios modelled and main cost-effectiveness results	Usual care – 82% of people with chronic hep B are diagnosed by 2030. Scenario 2 – 90% of people with chronic hep B are diagnosed by 2030. ICER of scenario 2 compared to usual care is: $104,921 per QALY gained. Scenario 3 – 90% of people with chronic hep B are diagnosed by 2030 and an increased number receive appropriate clinical care. ICER of scenario compared to current care is: $47,341 per QALY gained.	Usual care – start statin when absolute cardiovascular 5-year risk is >10%. Scenario 2: start statin when 5-year risk is >2% and CAC score is >0. ICER of scenario 2 compared to usual care is: $53,028 per QALY. Scenario 3: start statin when 5-year risk is >2% and CAC score is >= 100. ICER of scenario 3 compared to usual care is: $33,108 per QALY. Additional scenarios were also modelled.	Economic evaluations require 2 or more scenarios in order to assess incremental costs and benefits. A lower ICER indicates that an intervention is more cost-effective. For example, in the hep B model, scenario 3 is more cost-effective than scenario 2.
Type of economic evaluation and model type	Cost-utility analysis Markov cohort	Cost-utility analysis Markov microsimulation	The type of economic evaluation is a cost-utility analysis (ICER expressed as $ per QALY). The method of analysis is modelled evaluations for both studies.
Number of people modelled	n=222,559 simulated individuals Characteristics from a previous study of 222,559 people with chronic hep B in Australia, 2020.	n=100,000 simulated individuals Characteristics from the 1,083 participants in CAUGHT-CAD, an Australian based randomised-controlled trial.	In the hep B model, 222,559 people move through the model as a cohort (Markov cohort). In the CAC model, 100,000 people individually walk through the model (Markov microsimulation), using simulated patient characteristics from 1,083 RCT participants.
Perspective	Healthcare funder	Healthcare funder	Both models only include direct healthcare costs, which is a common but narrow perspective in economic evaluations. This excludes indirect healthcare costs (e.g. out of pocket patient costs, carer costs), and productivity losses.
Time horizon and cycle length	10 years (2020 to 2030)	15 years	Both models use 1-year cycles and have time horizons beyond that of typical clinical trials.

	Chronic hepatitis B model (1)	Coronary artery calcium (CAC) model (2)	Key terms and explanation
	1-year cycles	1-year cycles	
Transition probabilities	Initial health states are based on a 2020 study of people with chronic hep B in Australia Annual transition probabilities derived from literature across various countries, with the same transition probabilities assumed for entire cohort – e.g. regardless of age	Transition probabilities use trial-based data (e.g. for % starting statins after risk assessment), use risk equations (e.g. Framingham stroke risk), and other literature across various countries Some transition probabilities differed according to demographics (e.g. age, sex)	Transition probabilities are derived from either primary data (e.g. survival analysis of time to disease) or secondary sources based on a review of the literature. When using secondary data, it is important to consider whether these reflect local context.
Costs	MBS and PBS costs e.g. for GP and specialist visits, medications. Estimates of total annual costs for advanced stages of liver disease based on previous Australian studies in literature.	MBS and PBS costs e.g. for GP and specialist visits, medications. Other cost estimates from literature e.g. annual cost of post-coronary heart disease care, and expert opinion.	Both models primarily use secondary data and expert opinion for costs. Primary data would involve collecting individual healthcare use and cost information using data linkage to administrative data sets (e.g. hospital admissions).
Outcomes	Intermediate outcome: number of people with disease outcomes (e.g. decompensated cirrhosis, hepatocellular carcinoma). Final outcome: QALY calculated from disease sates using utility weights from various sources in literature.	Intermediate outcome: number of people with disease outcomes (e.g. coronary heart disease, stroke). Final outcome: QALY calculated from disease sates using utility weights from various sources in literature.	Various methods exist to derive utility for a health state, and neither models specify which methods were used.
Sensitivity analysis	One-way sensitivity analysis conducted for various parameters – e.g. ICER varied considerably when utility weights for people with untreated chronic hep B were changed. PSA not conducted.	One-way sensitivity analysis conducted. PSA conducted – e.g. scenario 2 had an ICER of $54,055 with a wide 95% CI of $22,847 to 203,834 per QALY gained.	The one-way sensitivity analysis highlights parameters that have the most effect on changing the ICER. The probability sensitivity analysis gives an indication of confidence around the mean ICER.

*Information from main article and supplementary material, costs expressed in Australian dollars.
Abbreviations: CAC – coronary artery calcium (score); CI – confidence interval; GP – general practice; Hep B – hepatitis B; ICER – incremental cost-effectiveness analysis; MBS – Medicare Benefits Scheme; PBS – Pharmaceutical Benefits Scheme; PSA – probabilistic sensitivity analysis; QALY – quality adjusted life years; RCT – randomised controlled trial.

References

1. Xiao Y, Hellard ME, Thompson AJ, Seaman C, Howell J, Scott N. The cost-effectiveness of universal hepatitis B screening for reaching WHO diagnosis targets in Australia by 2030. *Med J Aust* 2023; 218: 168-173.

2. Venkataraman P, Neil AL, Mitchell GK, Stanton T, Nicholls S, Tonkin AM, et al. The cost-effectiveness of coronary calcium score-guided statin therapy initiation for Australians with family histories of premature coronary artery disease. *Med J Aust* 2023; 218: 216-222.