Key Outcomes Used to Inform Decision-Making in Economic Evaluations of Diagnostic Strategies in Hepatitis C and D: A Targeted Literature Review

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KEY MESSAGE

Economic evaluations of HCV and HDV diagnostic strategies predominantly rely on ICERs. However, other meaningful outcomes such as diagnostic yield, disease-burden reduction, and system-level cost savings remain underutilized in decision-making, highlighting the need for broader outcome integration in future evaluations.

BACKGROUND

Understanding the economic impact of diagnostic strategies for hepatitis C virus (HCV) and hepatitis D virus (HDV) requires consideration of both short and long-term clinical and economic consequences. Economic evaluations of diagnostics typically rely on health economic outcomes, such as the incremental cost-effectiveness ratio (ICER). However, payer decision-making may also depend on outcomes reflecting broader implications of testing for healthcare systems.

OBJECTIVE

To review economic evaluations of diagnostic strategies in HCV/HDV and provide an overview of the outcomes used to inform decision-making.

METHODS

- A targeted literature search in PubMed (1 Jan 2023–1 Jan 2026) identified studies that were economic evaluations of HCV/HDV diagnostic or screening strategies. Detailed inclusion criteria are described in Table 1.
- Key outcome data were extracted from each included study.
- These outcomes were then compared across studies to summarize findings on the value of different screening and diagnostic approaches.
- Outcomes were classified as primary if identified as the key measure in the conclusions; those reported but not driving conclusions were considered secondary.

Table 1: PICOS Criteria for Targeted Literature Review

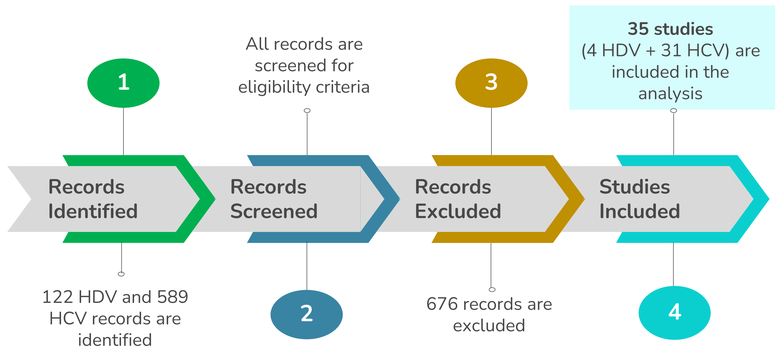
Element	Inclusion criteria
Population	Eligible subjects for testing with suspected HCV or HDV infection
Intervention	General-population or risk-based testing strategies for HCV or HDV
Comparator	General-population or risk-based testing strategies for HCV or HDV
Outcomes	Clinical and economic outcomes related to diagnostics and treatments
Study design	Full economic evaluations based on analytical decision models

RESULTS

- The search identified 122 records for HDV and 589 for HCV, out of which 4 HDV and 31 HCV economic evaluations were included in the analysis as shown in Figure 1.
- Across the 35 included studies, most were conducted in diverse geographic regions, including Europe, North America, Asia-Pacific, Africa, and Eastern Europe/Central Asia.
- Across both HCV and HDV studies, most analyses were incremental cost-effectiveness ratio (ICER)-based cost-utility evaluations (31/35; 89%), primarily relying on ICER per quality-adjusted life year (QALY) gained (28/35; 80%) and, less frequently, ICER per disability-adjusted life year (DALY) gained (3/35; 9%).
- In contrast, non-ICER approaches were relatively uncommon overall (4/35; 11%) and were reported in (2/4; 50%)[6,7] HDV studies and (2/31; 6%)[5,10] HCV studies. These approaches included return-on-investment analyses, epidemiological projections such as reduced HCV incidence, and outcomes related to disease burden or diagnostic efficiency/cost per confirmed case.

Multiple downstream clinical and system-level outcomes (outcomes that impact healthcare systems) were commonly reported in HCV and HDV studies as shown in Figure 2, including diagnostic yield, disease burden reduction, improved sustained virological response (SVR), liver-related mortality, treatment uptake, and cost savings; however, these were not incorporated into cost-effectiveness conclusions and instead remained secondary to ICER-based results in guiding overall interpretations and decision-making.

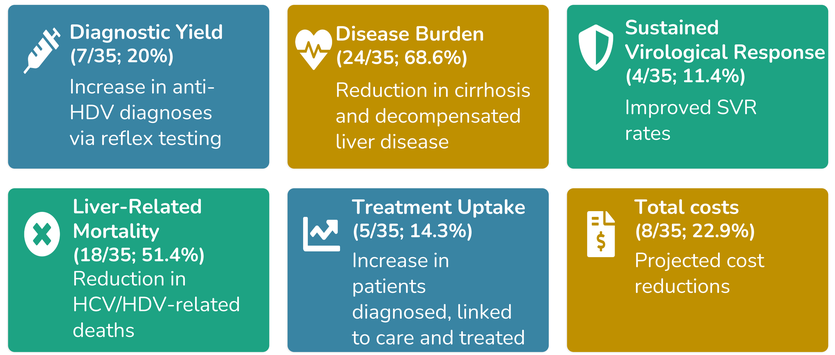
Figure 1: Study Selection Flow



CONCLUSIONS

Economic evaluations relying predominantly on ICER-based frameworks may not fully capture the value of diagnostic strategies, as non-ICER outcomes reflecting diagnostic efficiency and system-level impact (particularly noted in HDV studies) may also be relevant to payers but are less commonly reported or included in study conclusions.

Figure 2: Outcomes Linking Diagnostics to Downstream Impact



These outcomes span diagnostic, clinical, and system-level domains, collectively demonstrating meaningful downstream benefit beyond what ICER-based conclusions alone capture

RECOMMENDATIONS

Future economic models may benefit from incorporating non-ICER outcomes - clinical (e.g., SVR, mortality) and system-level (e.g., diagnostic yield, treatment uptake, cost savings), alongside ICERs, as ICER-based frameworks may not fully reflect the broader value of HCV and HDV diagnostic strategies for payers and clinicians.

References

1. Hall et al., Clin Infect Dis, 2025; **2. Epstein et al.**, J Am Soc Nephrol, 2023; **3. Epstein et al.**, Clin Infect Dis, 2025; **4. Toy et al.**, Clin Infect Dis, 2025; **5. Wu et al.**, Clin Mol Hepatol, 2025; **6. Buti et al.**, Liver Int, 2023 ; **7. Fuentes et al.**, Sci Rep, 2025 ; **8. von Hein et al.**, Value in Health, 2024 ; **9. Choi et al.**, BMC Health Services Research,2024 ; **10. Ward et al.**, The Lancet Regional Health - Europe,2025

A complete list of included studies is provided in the supplementary materials.

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