EE293

Cost-Effectiveness of Hepatitis Delta Testing in the United Kingdom

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BACKGROUND

- Chronic hepatitis delta (cHD) is the most severe form of viral hepatitis and requires the presence of underlying hepatitis B virus (HBV) infection[1,2]
- Bulevirtide is reimbursed for the treatment of patients with hepatitis delta virus (HDV) in patients with significant fibrosis (METAVIR stage F2 or above) in Scotland, England, Wales and Northern Ireland, with a final decision in Ireland from the Health Service Executive (HSE) still pending[3,4]
- Among the diagnosed HBV positive (HBV+) population, many patients are not appropriately tested for HDV, and are therefore not able to access effective treatment for HDV
- Given that healthcare systems in the United Kingdom are heavily resource-constrained, it is important to assess the economic impact of testing for HDV, while ensuring that all patients who can benefit from the treatment with Bulevirtide can access it

OBJECTIVES

- To assess the cost-effectiveness of HDV testing compared to no testing in patients with HBV in the UK

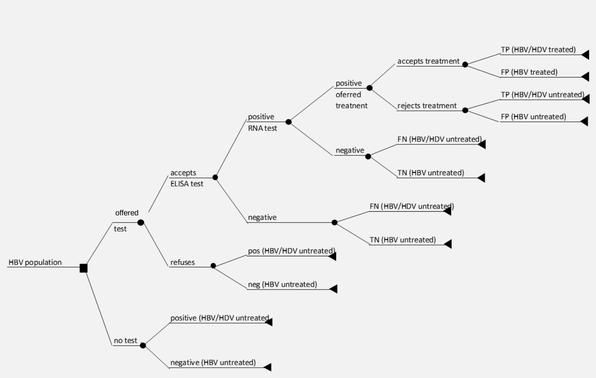
METHODS

- A cost-effectiveness model (CEM) was developed from scratch following a targeted literature search, leveraging a decision tree + Markov model approach
- The decision tree part of the model covers the initial testing for HDV in an HBV+ population, while the Markov model covers the HDV treatment
- The intervention is the ELISA test with confirmatory HDV RNA test while the comparator is no testing (referred to as standard of care (SOC) in this poster)
- The main model outcome is cost per quality-adjusted life year (QALY) gained
- Both costs and outcomes are discounted at 3.5%
- The model has a lifetime (64 years) time horizon with a mean patient baseline age of 36

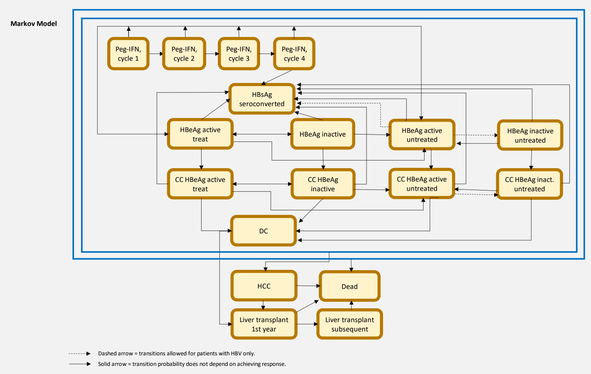
RESULTS

Model Design

Testing Model: Decision Tree Structure



Treatment Model: Markov Structure



Abbreviations: **CC**: compensated cirrhosis; **DC**: decompensated cirrhosis; **HBeAg**: hepatitis B e antigen; **HBsAg**: hepatitis B surface antigen; **HBV**: hepatitis B virus; **HCC**: hepatocellular carcinoma; **HDV**: hepatitis D virus; **Peg-IFN**: pegylated interferon-a-2a.

Base-Case Results

Base-Case Cost-Effectiveness Results

	SoC	Intervention	Incremental vs. SoC
Total costs	£24,691	£35,216	£10,525
Total QALYs	14.95	15.34	0.39
ICER	-	-	£26,984

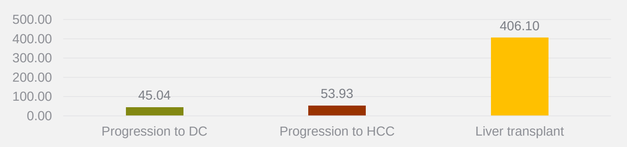
Disaggregated Costs

	SoC	Intervention	Incremental vs. SoC
Test costs	£0	£27	£27
False positive treat. costs	£0	£0	£0
Incomplete responders	£0	£597	£597
AE costs	£0	£0	£0
Drug costs	£4,943	£15,655	£10,711
Health state costs	£19,747	£18,937	-£811
Total costs	£24,691	£35,216	£10,525

Disaggregated Outcomes

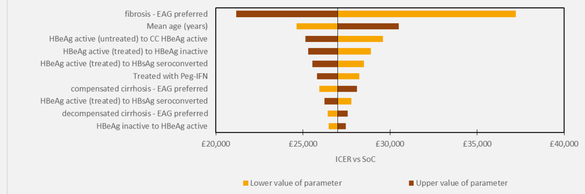
	SoC	Intervention	Incremental vs. SoC
Total LYs (undiscounted)	37.24	38.56	1.32
Total QALYs	14.95	15.34	0.39

Number of Tests Needed to Avoid Event

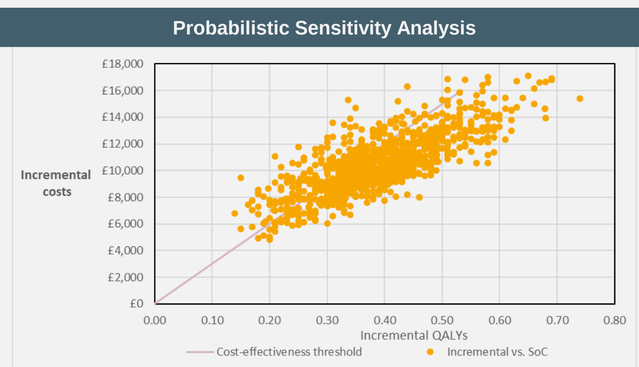


Sensitivity Analysis

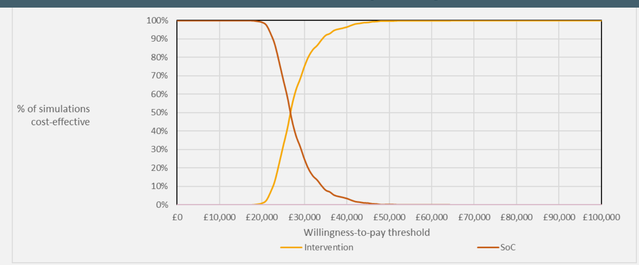
Deterministic Sensitivity Analysis



Probabilistic Sensitivity Analysis



Cost-Effectiveness Acceptability Curve



LIMITATIONS

- The model only compares HDV testing with the ELISA test with confirmatory HDV RNA test to no testing
- While HDV testing has been sporadic at best until recently, some HBV+ patients are already tested for HDV in UK clinical practice, with various testing regimens being used
- At the stage of poster preparation (August 2024), some of the model inputs are still placeholders who rely on older published materials
- In the future, these placeholders will be replaced with outcomes from a UK real-world evidence study

CONCLUSION

- The CEM shows that screening all HBV+ patients in the UK (approx. 52,000 patients)[5] using the ELISA test with confirmatory HDV RNA test is highly cost-effective, with an incremental cost-effectiveness ratio (ICER) of **£26,984**
- Implementation of routine reflex ELISA testing in the UK will also improve patient outcomes, as more patients eligible for treatment with cHDV will be identified, and will be able to benefit from timely access to effective treatment
- As a result, the following outcomes will improve, assuming a lifetime time horizon:
  - More than 1,000 HDV patients will not progress to decompensated cirrhosis (DC)
  - Almost 900 patients will not develop hepatocellular carcinoma (HCC)
  - Over 100 liver transplants will be avoided
- In the UK, routine testing for HDV, as recommended by guidelines, to ensure those with cHDV are appropriately managed, would enable thousands of HDV patients to be diagnosed with HDV in the UK[3]
- HDV diagnosis and treatment would appreciably reduce HDV burden in the UK

1 Negro F. Hepatitis D virus coinfection and superinfection. Cold Spring Harb Perspect Med 2014;4:a021550

2 Farci P, Niro GA. Current and Future Management of Chronic Hepatitis D. Gastroenterol Hepatol (N Y) 2018;14:342-351

3 NICE TA896. Bulevirtide for treating chronic hepatitis D. Technology appraisal guidance. Link: https://www.nice.org.uk/guidance/ta896

4 SMC Advice on New Medicines. SMC2520. bulevirtide 2mg powder for solution for injection. Link: https://scottishmedicines.org.uk/media/7451/bulevirtide-hepcludex-final-feb-2023-for-website.pdf

5 Gilead Sciences, Inc. Data on File (UK-UNB-2891). Country of Birth Methodology for Quantification of HDV: Analysis & Results. 2021.

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