

# A threshold analysis for the cost-effectiveness of hepatitis C testing in emergency departments in the UK

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## Background

The prevalence of hepatitis C (HCV) is higher in emergency department (ED) attendees compared to the general population (0.6-2.9% in England), likely due to the higher attendance amongst marginalised communities, such as people who inject drugs (PWID).<sup>1</sup>

HCV testing for those already receiving blood tests in EDs, could provide an efficient setting to diagnose and treat those with HCV, but there is no prevalence threshold for cost-effectiveness

## Methods

A Markov model was developed to analyse the cost-effectiveness of opt-out HCV testing in EDs in the UK. The model used data from studies of ED testing in the UK to parameterise test costs and intervention effects (Table 1).

We considered what prevalence of HCV RNA would be required to make ED testing cost-effective at an incremental cost-effectiveness ratio (ICER) threshold of £20,000 willingness to pay per quality adjusted life year (QALY) gained.

We also performed threshold analyses, considering the prevalence required for the intervention to be cost-effective across various test costs and intervention effects.

Table 1: Key model parameters

| Parameter  | Value   | Source                                  |
|--|---------|---|
| Proportion of positive patients successfully contacted | 61.8%   | Parry <sup>2</sup> , Evans <sup>3</sup> |
| Proportion requiring linkage to care*                  | 49.5%   | Parry <sup>2</sup> , Evans <sup>3</sup> |
| Proportion attending referral and accepting treatment  | 85.1%   | Parry <sup>2</sup> , Evans <sup>3</sup> |
| HCV Antibody test cost                                 | £3.64   | Bradshaw <sup>5</sup>                   |
| HCV RNA test cost                                      | £68.38  | Bradshaw <sup>5</sup>                   |
| DAA treatment  | £10,000 | Assumption / Hurley <sup>6</sup>        |
| Cost to contact individual                             | £15.85  | Parry <sup>2</sup> / PSSRU <sup>4</sup> |

\* New diagnoses, or known diagnoses not engaged in care

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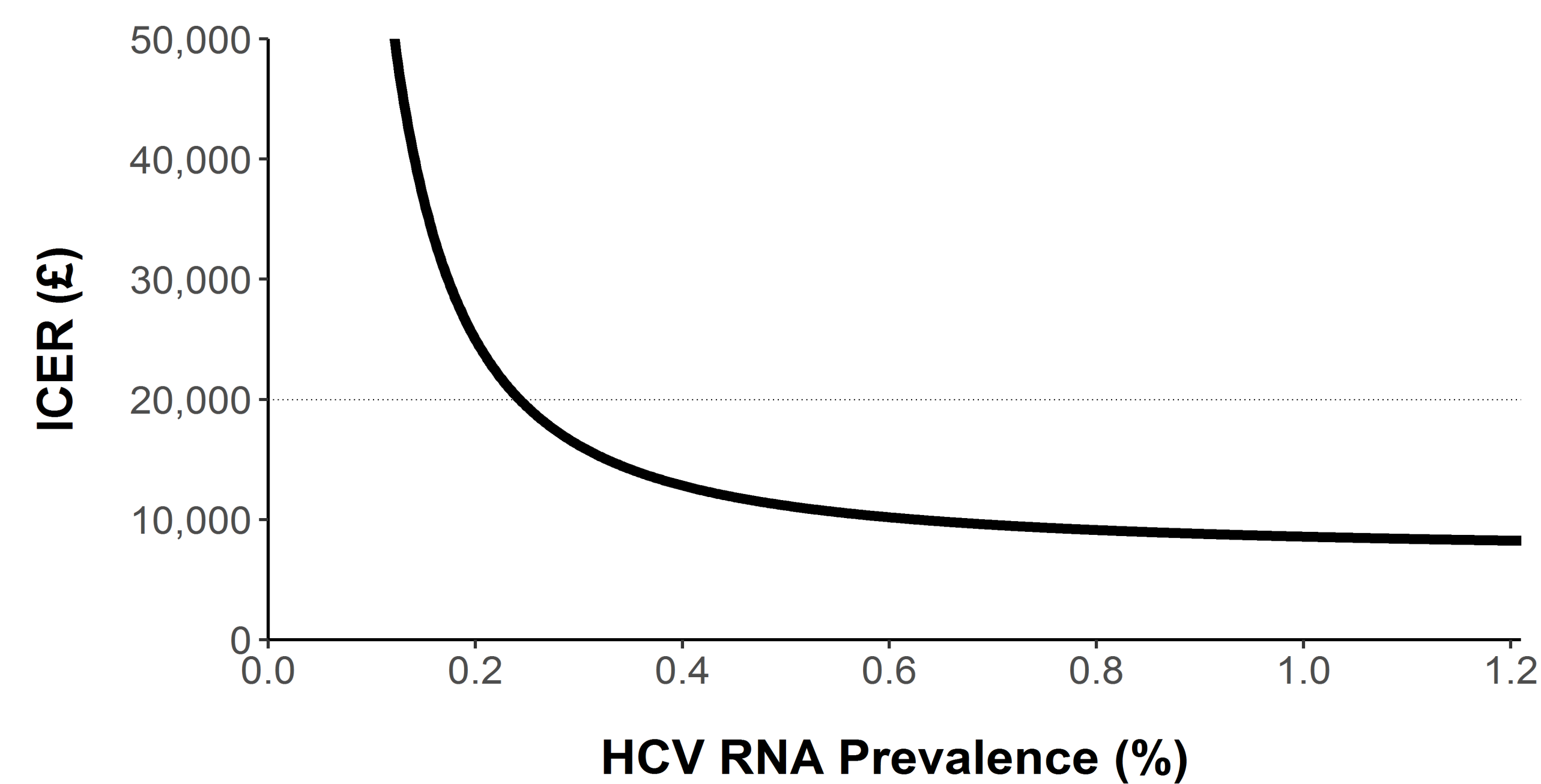
## References

1) Hopkins et al. J Hepatology 2018;68:S156 2) Parry et al. Epidemiology and Infection. 2018;146(8):1026-35. 3) Evans et al. PLOS ONE. 2018;13(7):e0198520 4) Curtis et al. Personal Social Services Research Unit, University of Kent. 2017. 5) Bradshaw et al. HIV Medicine. 2018;19(S1):52-7 6) Hurley R. Slashed cost of hepatitis C drugs spurs drive to eliminate the disease. BMJ. 2018;361

## Results

Testing was cost-effective at a HCV RNA prevalence of **0.25%** or higher (Figure 1).

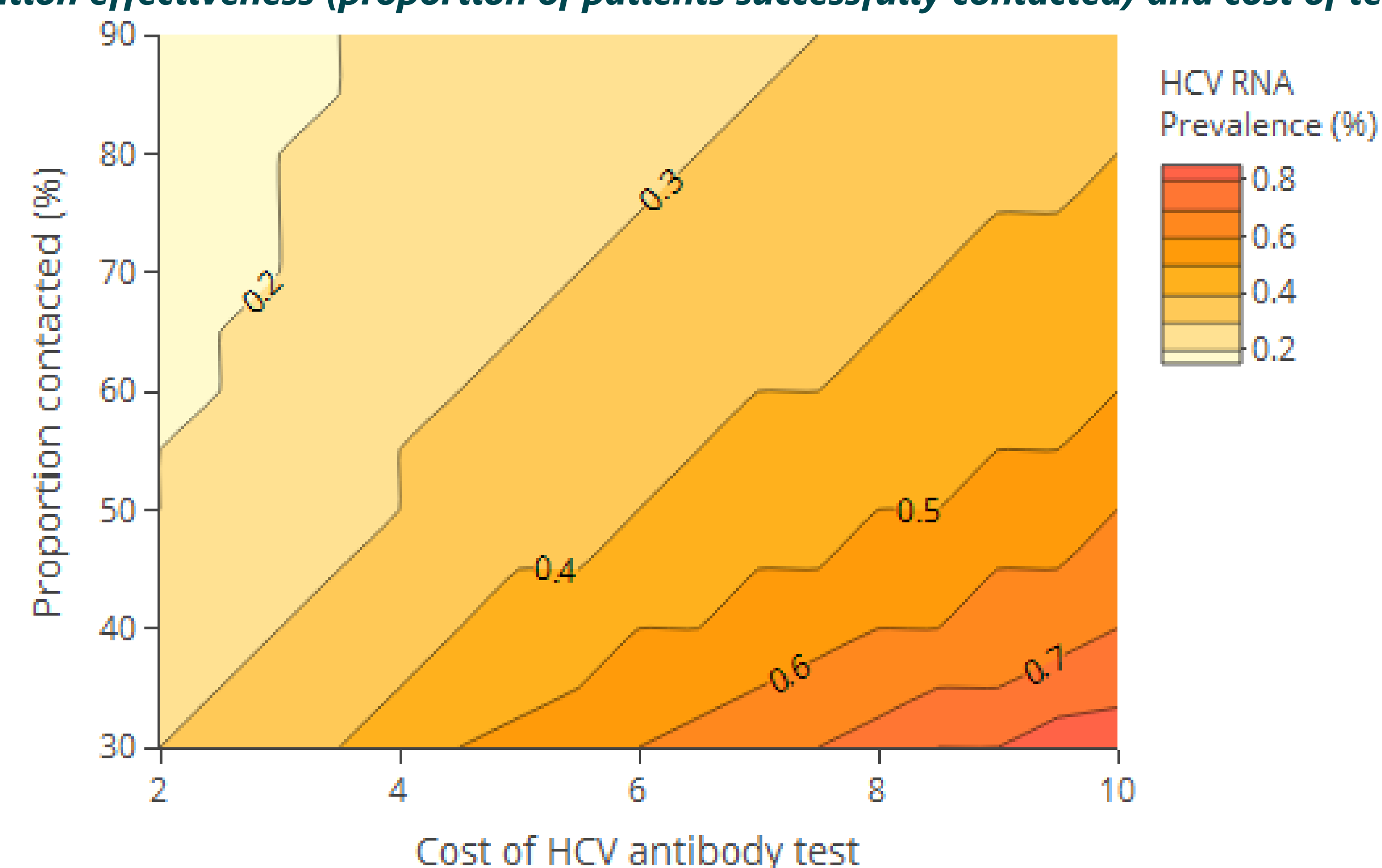
Figure 1: Incremental cost-effectiveness ratio (ICER) for testing, by prevalence



The threshold estimates are sensitive to the cost of the antibody test, and the proportion of patients successfully contacted (Figure 2).

The results were also sensitive to the cost of DAA treatment and the proportion of individuals accepting treatment (after referral).

Figure 2: Threshold analysis for HCV RNA prevalence required for cost-effectiveness by intervention effectiveness (proportion of patients successfully contacted) and cost of test



## Limitations

Intervention effects and linkage to care estimates are based on two London ED studies only, both with their own limitations.

The model did not consider HCV transmission, meaning benefits associated with reduced onward transmission are not captured.

## Conclusions

Early evidence suggests that ED HCV testing and linkage to care is likely to be cost-effective in many UK ED's, and potentially in other European and higher income ED settings.