# The cost effectiveness of community pharmacy screening for Hepatitis C in people who inject drugs in a rural UK population

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## Background

To reach the objective of Hepatitis (HCV) elimination in the UK it is necessary to identify undiagnosed cases. New therapies are expensive and therefore any additional costs of screening initiatives should be considered when judging the overall cost-effectiveness of an intervention.

This study describes the cost-effectiveness a community pharmacy screening initiative for HCV in a rural population of PWID on the Isle of Wight (IOW), UK.

**Figure 1** Counseling a client for an HCV test in a community pharmacy

## Method

- Dry-blood spot testing took place between September 2014 and September 2016 in 20 community pharmacies across the IOW
- Data, including demographic information and testing outcomes, was collected routinely via PharmOutcomes™ software
- Two markov models were used to estimate health utilities and the disease associated costs of HCV for a control and intervention population
- At annual intervals individuals moved through the model according to the transition probabilities of liver disease progression (Figure 2)
- The model continued until each cohort reached the age of 90. At this point disease associated costs and health utilities were calculated per person
- A series of sensitivity analyses were conducted to test the impact of realistic variations in population demographics and costs on the incremental cost-effectiveness ratio (ICER) of the intervention

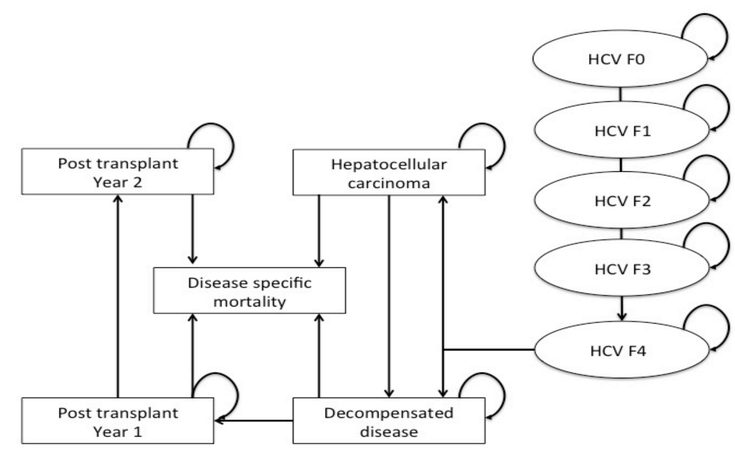


**Figure 2** Showing transition through liver disease states within the markov model

## Results

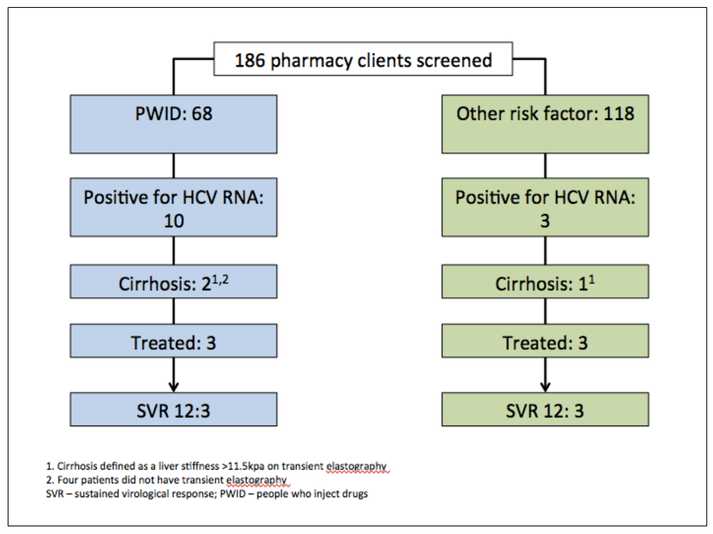


**Figure 3** Results of the HCV testing at 20 community pharmacies on the IOW. The majority of positive tests were in PWID

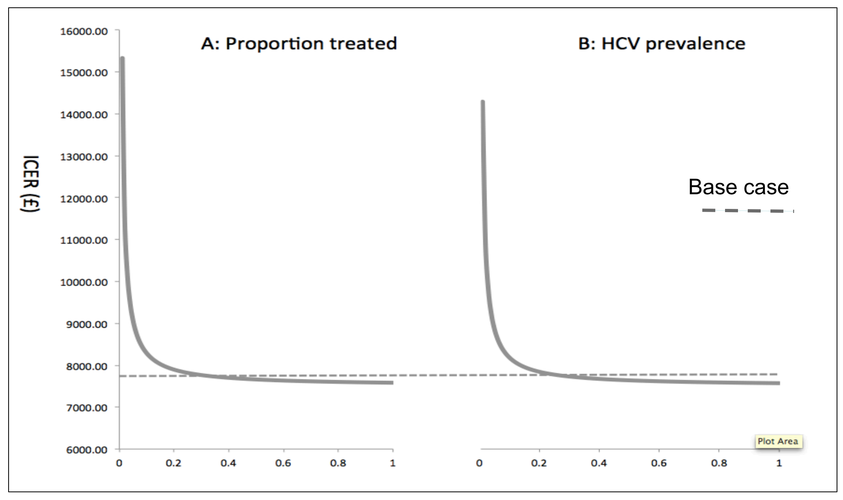


**Figure 4** The change in ICER with variations in the proportion of positive PWID treated(A) and the background prevalence of HCV(B)

| No screening and treatment | Base Case | SA1a Age 27 | SA1b Age 47 | SA2a SVR 90% | SA2b SVR 100% | SA 3 Drug cost <20% | SA4 Test cost >20% | SA 4 Treat all |
|---|---|---|---|---|---|---|---|---|
| Total cost (£) | 22061.44 | 24728.01 | 18331.59 | 22061.44 | 22061.44 | 22061.44 | 22061.44 | 22061.44 |
| Total QALY | 14.33 | 15.13 | 13.05 | 14.33 | 14.33 | 14.33 | 14.33 | 14.33 |
| Total life years | 0.33 | 0.30 | 0.35 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 |
| **Screening and treatment** | | | | | | | | |
| Total cost (£) | 30165.65 | 31800.88 | 26590.72 | 30480.65 | 29850.65 | 27536.33 | 30220.08 | 48440.51 |
| Total QALY | 15.37 | 16.39 | 13.78 | 15.31 | 15.42 | 15.37 | 15.37 | 17.80 |
| Total life years | 0.34 | 0.31 | 0.36 | 0.34 | 0.34 | 0.34 | 0.34 | 0.35 |
| **Cost effectiveness results of screening and treatment** | | | | | | | | |
| Change in cost (£) | 8104.21 | 7072.87 | 8259.13 | 8419.21 | 7789.21 | 5474.89 | 8158.64 | 26379.07 |
| Change in QALY | 1.04 | 1.26 | 0.73 | 0.99 | 1.10 | 1.04 | 1.04 | 3.48 |
| Change in life years | 0.01 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.01 | 0.02 |
| | | | | | | | | |
| **ICER (cost (£)/QALY)** | 7765.25 | 5620.58 | 11284.83 | 8515.25 | 7090.25 | 5245.90 | 7817.40 | 7582.72 |

QALY – quality adjusted life year; ICER – incremental cost effectiveness ratio
SA – sensitivity analysis in 5 scenarios
SA1 – change in age, SA2 – change in SVR rate with DAA therapy
SA3 – decrease in drug cost, SA4 - increase in testing costs, SA5 – all positive cases treated

**Table 1** Base-case and sensitivity analysis results

## Conclusion

- At £7765/QALY the ICER for the intervention is well below the cost-effectiveness threshold of £20,000/QALY in the base-case scenario and all sensitivity analyses
- The intervention is likely to be marginally more cost effective in populations of PWID with a higher background prevalence of HCV and with greater engagement in treatment

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