

# HOW SHOULD HCV ANTIVIRAL TREATMENT BE PRIORITIZED IN THE DIRECT-ACTING ANTIVIRAL ERA? AN ECONOMIC EVALUATION INCLUDING INDIVIDUAL AND POPULATION PREVENTION BENEFITS

Natasha K Martin<sup>1,2</sup>, Peter Vickerman<sup>2</sup>, Gregory J Dore<sup>3</sup>, Jason Grebely<sup>3</sup>, Alec Miners<sup>4</sup>, John Cairns<sup>4</sup>, Graham R Foster<sup>5</sup>, Sharon J Hutchinson<sup>6,7</sup>, David J Goldberg<sup>6,7</sup>, Thomas CS Martin<sup>8</sup>, Mary Ramsay<sup>9</sup>, the STOP-HCV Consortium\*, Matthew Hickman<sup>1</sup>

<sup>1</sup>Division of Global Public Health, University of California San Diego, San Diego, USA. <sup>2</sup>School of Social and Community Medicine, University of Bristol. <sup>3</sup>Kirby Institute, UNSW Australia, Sydney. <sup>4</sup>Faculty of Public Health and Policy, London School of Hygiene and Tropical Medicine. <sup>5</sup>Queen Mary's University of London <sup>6</sup>Glasgow Caledonian University <sup>7</sup>Health Protection Scotland <sup>8</sup>Guy's and St Thomas's NHS Foundation Trust, London. <sup>9</sup> Public Health England UK

**Background:** New interferon-free HCV direct-acting antivirals (IFN-free DAAs) can cure >90% of patients but are associated with high costs. International guidelines recommend prioritization by disease severity. We determine the optimal HCV treatment prioritization strategy by disease stage and risk status incorporating treatment of people who inject drugs (PWID) who have a risk of HCV transmission.

**Methods:** We use a dynamic HCV transmission and progression model to compare the cost-effectiveness of treating patients early vs delaying treatment until cirrhosis for patients with mild or moderate fibrosis and by risk status (PWID and other) in settings where PWID chronic HCV prevalence is 20, 40 or 60%. Treatment is for 12 weeks at £3300/wk and 95% SVR). We estimate long-term health costs (in £UK=USD\$1.5) and outcomes as quality adjusted life-years gained (QALYs) using a £20,000 willingness-to-pay threshold. We rank strategies by calculating the Net Monetary Benefit (NMB); the highest NMB has highest rank; a negative NMB implies delay treatment until a later disease stage.

**Results:** The most cost-effective group to treat were moderate PWID (mean NMB per early treatment £60,640 and £23,968 at 20% and 40% chronic prevalence, respectively), followed by mild PWID (mean NMB £59,258 and £19,421, respectively) and then moderate ex/non-PWID (mean NMB £9,404). Treatment of mild ex/non-PWID could be delayed (mean NMB -£3,650). In populations with high (60%) chronic HCV prevalence among PWID it is only cost-effective to prioritize IFN-free DAAs to non/ex-PWID with moderate disease. For every PWID with mild or moderate disease treated, 2 new HCV infections are averted in the 20% chronic HCV setting.

**Conclusions:** In the UK and similar chronic prevalence settings treating PWID with moderate or mild HCV disease with IFN-free DAAs is cost effective compared to delay until cirrhosis. Guidance on treatment prioritisation needs to take account of disease stage and prevention benefit.