

# **COST-EFFECTIVENESS OF LEDIPASVIR/SOFOSBUVIR FOR THE TREATMENT OF CHRONIC HEPATITIS C IN THE UK: A DYNAMIC TRANSMISSION MODELLING APPROACH**

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**Background:** Several direct-acting antiviral treatments for chronic hepatitis C (CHC) have been deemed cost-effective in the UK, however economic evaluations have typically excluded reinfection or prevention benefits. This study aimed to update previous cost-effectiveness findings for ledipasvir/sofosbuvir (LDV/SOF) in the UK by considering transmission and reinfection.

**Methods:** A dynamic model of CHC transmission among people who inject drugs (PWID) and progression among PWID and ex-PWID was built. The model was similar to the manufacturer's cost-effectiveness submission for LDV/SOF, with additional states to simulate onward transmission and reinfection. A healthcare payer perspective and 60 year time horizon were used. The model was parameterized to the UK (37.5% CHC prevalence among PWID). We assumed equal risk of primary infection and reinfection. Costs (2014 GBP£) and health utilities (quality-adjusted life years; QALY) were assigned to each state and discounted at 3.5%/year. We evaluated treatment with LDV/SOF compared with no treatment, and incremental cost-effectiveness ratios (ICERs; £/QALY gained) were calculated. We assumed 3% of PWID and 7% of ex-PWID with CHC were treated annually; scenarios with increased treatment rates were examined.

**Results:** In the base case, the ICER for LDV/SOF versus no treatment was similar to the weighted average ICER from the manufacturer's cost-effectiveness submission (£9,249/QALY versus £9,518/QALY). Increased treatment rates improved cost-effectiveness; e.g., when treatment rates were quadrupled (PWID: 12%/year; ex-PWID: 28%/year) the ICER decreased to £6,096/QALY. If only PWID are treated (3% treated/year) the ICER dropped to £5,391/QALY.

**Conclusion:** If treatment rates among PWID are low, the cost-effectiveness of LDV/SOF from a dynamic model is similar to a model without reinfection or transmission effects. However, treatment scale-up for those at risk of transmitting disease (i.e., PWID) will enhance cost-effectiveness as benefits of avoiding onward transmission outweigh reinfection risk in the UK. Economic evaluations should consider both individual and population prevention benefits.

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