The Cost Effectiveness Of Peginterferon alfa And Ribavirin For The Treatment Of Hepatitis C In Children And Young People

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► BACKGROUND

The National Institute for Health and Care Excellence (NICE) has previously recommended the use of peginterferon alfa (peg α) and ribavirin combination therapy in adults with chronic hepatitis C virus (HCV) in the UK. Optimal therapy for children and young people is less clear but it has been suggested that they should be treated using the guidelines as for adults to minimise the chance of liver damage and social stigma some children experience.

► OBJECTIVE

To assess the cost-effectiveness of peginterferon α-2a and peginterferon α-2b in combination with ribavirin compared to best supportive care (BSC), for the treatment of HCV in children and young people aged 3 to 17 years.

► METHODS

A Markov state-transition economic model of chronic HCV in children and young people was developed that extrapolated the impact of sustained virological response (SVR) on life expectancy, quality-adjusted life expectancy and lifetime costs (Figure 1). The model was adapted from one previously developed for adults. Systematic reviews were conducted of the clinical effectiveness of the treatments, and the health related quality of life for patients with hepatitis C. The perspective of the analysis was that of the UK NHS and Personal Social Services and costs and benefits were discounted at 3.5%. Uncertainty in the model was explored through probabilistic and deterministic sensitivity analyses.

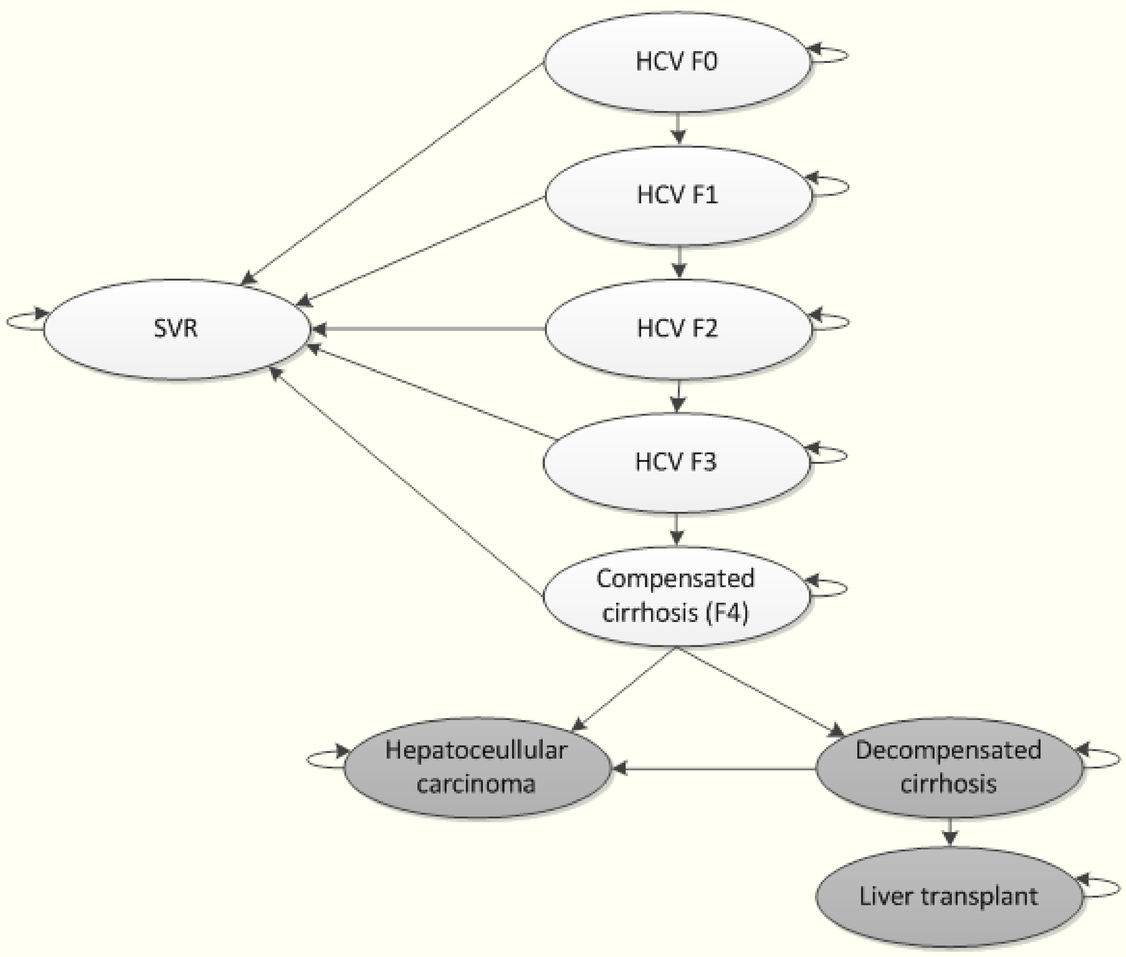

Figure 1: State transition diagram for hepatitis C economic model

Table 1: Effectiveness input parameters used in economic model

Treatment	SVR, %	95% CI	Source
PEG α-2a + Ribavirin	60.00	51.23, 68.76	Schwarz, 2011; Sokal, 2010
PEG α-2b + Ribavirin	58.37	51.69, 65.05	Al Ali, 2010;Pawlowska, 2010;Wirth, 2010; Ghaffar, 2009; Jara, 2007

Table 2: SHTAC discounted base case results versus best supportive care

			Versus BSC		
Treatment	**Costs (£)**	**QALYs**	**Incremental costs, £**	**Incremental QALYs**	**ICER (£/QALY)**
BSC	£29,245	20.53			
PEG α-2a + Ribavirin	£19,055	22.25	-£10,190	1.72	dominates[a]
PEG α-2b + Ribavirin	£20,371	22.19	-£8,874	1.66	dominates[a]

QALY – quality adjusted life year; ICER – incremental cost effectiveness ratio

[a] i.e. peginterferon alfa is cheaper and more effective than BSC

► RESULTS

Seven studies were identified for clinical effectiveness of peginterferon in children. The studies were single arm, uncontrolled cohort studies and were relatively small and of generally poor quality. The estimates of SVR were similar for peginterferon α-2a and peginterferon α-2b (Table 1), whilst the SVR for no treatment was assumed to be zero.

From this model, peginterferon alfa (α-2a or α-2b) in combination with ribavirin was more effective and cheaper than BSC (Table 2). Sensitivity analyses suggest that the results were generally robust to all changes to the structural assumptions and input parameters. The model results were most sensitive to changes to the discount rate, time horizon, SVR and baseline fibrosis of the cohort.

► CONCLUSIONS & DISCUSSION

Treatment of children and young people with peginterferon alfa (α-2a or α-2b) and ribavirin may be a clinically effective therapy. Peginterferon alfa (α-2a or α-2b) in combination with ribavirin is cost-effective compared with BSC. However, the reliability of the available evidence is questionable given the single cohort study designs, small sample sizes and poor methodological quality.

► More information

Hartwell D, Cooper K, Frampton G, Baxter L, Loveman E. The clinical and cost-effectiveness of peginterferon alfa and ribavirin for the treatment of chronic hepatitis C in children and young people, Health Technol Assess 2014; In press

ACKNOWLEDGEMENTS This work was funded by the NIHR HTA Programme (project number 10/12/01). The views expressed in this poster are those of the authors and not necessarily those of the NIHR HTA Programme, NICE, NHS or the Department of Health.

FURTHER INFORMATON Corresponding author: Dr Keith Cooper, k.cooper@soton.ac.uk