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• The new drugs for hepatitis C have the potential to take a large share of the NHS budget.

• We compared the costs and health benefits of drugs for patients with advanced hepatitis C.

• For most types of hepatitis C, the cost-effective approach was to reserve the new more costly drugs for patients who are not cured after standard interferon-based treatment.

• Using the new drugs as second line achieves similar cure rates at a lower cost as using the new drugs first.

• A price tool is available here to help choose the cost-effective treatment if drug prices are different from the public list prices.

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Improving Value for Money from Drug Treatment of Hepatitis C

Background
Around 214,000 people in the UK are chronically infected with hepatitis C (1). Hepatitis C is a major cause of cirrhosis, liver cancer and liver-related death. Until recently, peginterferon was the standard treatment, curing between 45% and 80% of patients at a cost of £5,000-£10,000 per treatment course.

Recently, various new drugs for hepatitis C have become available. These new drugs can cure around 90% of patients and have fewer side effects, but are much more costly at £25,000 to £70,000 per treatment course. Given the large number of patients with this disease, these new drugs have the potential to take a large share of the NHS budget (2).

The National Institute for Health and Care Excellence (NICE) has recommended the new drugs for use by the NHS in England and Wales in some groups of hepatitis C patients (3-8). However, for many patient groups, NICE has recommended multiple options, and the NICE guidance does not consider the re-treatment of patients. There is, therefore, a lack of guidance about which drugs to use and in which order.

The research
We compared the costs and health benefits of all drugs for hepatitis C available in June 2015 in sequential therapies of up to three treatment lines in addition to watchful waiting (no treatment) until patients develop cirrhosis. The drugs included are summarised in Box 1.

To do this, we developed an economic model to simulate the costs and health benefits over the patients’ lifetime. We focussed on patients with advanced fibrosis, who are at the most risk of progressing to cirrhosis.

We classified patients into subgroups depending on the type of hepatitis C virus, prior treatment, and whether they can have a drug combination that includes interferon.

Box 1: Drugs included in this study
• Pegylated interferon with ribavirin
• Sofosbuvir with ribavirin with or without pegylated interferon
• Simeprevir with pegylated interferon and ribavirin
• Ledipasvir-sofosbuvir with or without ribavirin
• Ombitasvir-paritaprevir-ritonavir with or without dasabuvir with or without ribavirin
• Daclatasvir with sofosbuvir with or without ribavirin
• Daclatasvir with pegylated interferon and ribavirin
**Conclusions**

For most of the subgroups considered, the new drugs should be reserved as second-line for those who are not cured with peginterferon and ribavirin, given their public list prices.

In this sequence approach, patients who are not cured are likely to be cured with the new drugs used for second or third line treatment. This achieves similar cure rates at a lower cost compared with using the new drugs first.

**Price Tool**

The NHS is not paying the public list prices for most drugs. Therefore, we have developed a price tool, available to download here, to calculate the cost-effective treatments for a set of user-defined drug prices (see screenshot in Figure 1). The price tool and accompanying publication can help the NHS select drugs to offer for hepatitis C.

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**Further project details can be found at:**


Faria, R., Woods, B., Griffin, S. Palmer, S., Ryder, S.D, Sculpher, M. Economic analysis to support NHS implementation of hepatitis C drugs: prioritisation of the treatment options for patients with chronic hepatitis C at the META VIR F3 stage. *Policy Research Unit in Economic Evaluation of Health and Social Care Interventions*

**References:**

8. NICE. Hepatitis C (chronic) - ombitasvir/paritaprevir/ritonavir (with or without dasabuvir) [ID731]: NICE; 2015 [Available from: http://www.nice.org.uk/guidance/indevelopment/gid-tag483].

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