New antiviral treatment could significantly reduce global burden of hepatitis C

May 6 2013

(Medical Xpress)—Around 150 million people globally are chronically infected with the hepatitis C virus (HCV) – a major cause of liver disease and the fastest growing cause of liver transplantation and liver cancer. New prevention strategies are urgently required as people are continuing to be infected with HCV. Findings, published in *Hepatology*, reveal the impact of a new antiviral treatment that could potentially reduce HCV rates in some cities affected by chronic HCV prevalence by half over 15 years.

In Europe, the US and other developed countries the majority of HCV infections occur among people who inject drugs (PWID). Although current prevention strategies, which are based on needle and syringe programmes and opiate substitution therapy, can avert HCV infections and have reduced its prevalence in some cities from the very high levels

that occurred in the 1980s, these interventions are unlikely alone to achieve further substantial reductions.

HCV treatment as prevention has been proposed as a possible solution. However, while current HCV antiviral treatment of pegylated-interferon and ribavirin can cure approximately 60 per cent of people treated, they are poorly tolerated, long in duration (five to 11 months), and have a low take-up among PWID.

Several new interferon free direct-active antivirals (DAAs) treatment are emerging with very promising results in trials suggesting that treatment is shorter (12 weeks) with fewer complications and side effects, and around a 90 per cent cure rate.

Using a mathematical model, researchers at the University of Bristol and London School of Hygiene and Tropical Medicine in collaboration with researchers and clinicians in the UK, Australia and Canada projected the potential impact of these new DAAs treatment among PWID in three cities with similar PWID prevalence (~1 per cent among adults) but very different levels of chronic HCV prevalence among PWID. The cities were Edinburgh, UK (25 per cent chronic HCV), Melbourne, Australia (50 per cent chronic HCV) and Vancouver, Canada (65 per cent chronic HCV).

In Melbourne and Vancouver, where current annual HCV treatment take-up rates and other interventions are around one per cent of PWID with chronic HCV, the findings show that switching to the new DAA treatment is likely to have very little impact on reducing HCV prevalence over the next 15 years. But in Edinburgh where chronic HCV prevalence is lower and current treatment rates already at three per cent of PWID with chronic HCV, then once the new DAA become available HCV prevalence is projected to reduce by 25 per cent over the next 15 years.

The researchers predict that chronic HCV prevalence among PWID could be halved in 15 years by doubling HCV treatment in Edinburgh to six per cent among PWID with chronic HCV and increasing HCV treatment by 13 to 15 fold in Melbourne and Vancouver respectively.

The findings strengthen the evidence that achievable levels of HCV antiviral treatment for PWID, particularly with the new emerging DAAs treatment, can substantially reduce prevalence across a range of global settings.

Clinicians, patient groups and policy-makers will be able to plan for large-scale population reductions in HCV and chronic liver disease. However, an important consideration will be how to make HCV treatment scale-up affordable—especially for lower and middle income settings but possibly also for developed countries that require very high treatment rates to achieve population goals.

The researchers estimate that if the cost of the new DAAs are equivalent to other new HCV antiviral drugs then treatment rates would require an annual treatment budget of US $3.2 million in Edinburgh and approximately $50 million in Melbourne and Vancouver.

Matthew Hickman, Professor in Public Health and Epidemiology at the University of Bristol's School of Social and Community Medicine and lead author of the study, said: "Scaling up HCV treatment is critical to the prevention of HCV in the population to support and enhance traditional harm reduction measures—opiate substitution treatment and needle exchange. The new direct-active antivirals treatment offer many sites the opportunity to achieve substantial reductions in HCV and future liver disease in the population, and the chance to demonstrate empirically that our model projections are right."

Professor David Goldberg, lead of the team implementing Scotland's

hepatitis C Action Plan (2008-2011), said: "This study demonstrates that, in a country like Scotland which has a Government seriously committed to the improvement of hepatitis C services, increasing patient access to antiviral therapy could potentially have a major impact in the prevention of transmission of infection."

Professor Greg Dore, Head of the Viral Hepatitis Clinical Research Program, Kirby Institute for infection and immunity in society at the University of New South Wales Australia, said: "The development of highly effective simplified new HCV treatments has the potential to greatly enhance existing HCV prevention strategies. Access to affordable HCV direct acting antiviral regimens for people who inject drugs should be a major focus to harness this potential prevention capacity."

Professor Margaret Hellard from the Burnet Institute in Australia added: "This research suggests that with the advent of new direct-active antivirals treatment there is a real opportunity to achieve substantial reductions in HCV and future liver disease in the population. Although the cost of these treatments appear to be expensive, economic models by Martin et al in the UK and Burnet researchers in Australia suggests that scaling up HCV treatment in people who inject drugs is highly cost effective. It is also important that the scale up of HCV treatment occurs in combination with traditional harm reduction measures—opiate substitution treatment and needle exchange which have previously also been shown to be highly cost effective."

More information:
onlinelibrary.wiley.com/doi/10.1002/hep.26431/pdf

Provided by University of Bristol