BIOBUSINESS BRIEFS

TRIAL WATCH

Hepatitis E vaccine confers complete protection in Phase III trial

A Phase III trial in China involving more than 100,000 healthy men and women aged 16–65 years has shown that the participants who received all three doses of the hepatitis E virus (HEV) vaccine had no occurrence of infection after 1 year of receiving the final dose.

"These results are highly promising, as hepatitis E infection [an acute hepatic disease that is spread by the fecal–oral route] causes high morbidity and many deaths in the developing world," says Scott D. Holmberg, Chief of the Epidemiology and Surveillance Branch, Division of Viral Hepatitis, Centers for Disease Control and Prevention, USA. Indeed, "In terms of the sheer numbers HEV infects — ~3 billion people according to the World Health Organization — and with a clearly identified group that is at risk of death (that is, pregnant women), a vaccine against HEV is an important goal," says Shahid Jameel, Group Leader of the Virology Research Group at the International Centre for Genetic Engineering and Biotechnology, India.

The study, published in *The Lancet* (**376**, 895–902; 2010), was carried out in the Jiangsu region of China, an area in which two out of the four currently known genotypes of HEV are endemic. The vaccine was generated against genotype 1 (a strain that affects humans only) and afforded complete protection against this genotype and for genotype 4 (a zoonotic strain), which is the predominant strain existing in the province.

This paper, however, is not the first time that a vaccine against HEV has been shown to be viable. "This is the second hepatitis E vaccine to be tested clinically," says Jameel. "The first, which was conducted in Nepal and reported in 2007 [*N. Engl. J. Med*. **356**, 895–903; 2007], showed an efficacy of ~95% over 2 years among those who completed all three doses. However, the trial in Nepal involved ~2,000 volunteers who were male and young (median age of 25 years), thus the trial in China is more comprehensive and more representative."

However, in spite of the success of the 2007 trial, a commercial vaccine is not yet available, which highlights additional barriers that need to be overcome. "It is always difficult to produce a vaccine and to progress it through Phase I to III trials, and the administrative and political hurdles can be substantial," says Holmberg. Nevertheless, "One hopes that the vaccine studied in China would overcome some of these issues," says Jameel. He highlights factors such as its development in China, which itself would be a huge market, and the lower cost of production due to the use of a bacterial expression system to create the vaccine, as opposed to cultured insect cells used to produce the vaccine that was assessed in Nepal.

Efficacy in those most at risk, such as pregnant women, those younger than 15 years or older than 65 years, as well as long-term protection afforded by the vaccine remain to be determined. But most importantly, as noted by Jameel: "The real challenge will be to get the vaccine to those who need it the most."