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High Cost of Telaprevir Overshadows Clinical Benefits in Patient Subset
Results Based on Cost-Effectiveness Model

by Christina Frangou

San Francisco—For patients with hepatitis C virus (HCV) genotype 1 infection and the favorable CC interleukin-28B (IL28B) polymorphism, the clinical benefits of telaprevir do not outweigh the costs, according to the results of a cost-effectiveness model reported at The Liver Meeting 2011 (abstract 118).

"Under current cost and efficacy conditions, a telaprevir-based regimen is not cost-effective as a front-line treatment for these patients," said lead author Ziad Gellad, MD, MPH, assistant professor of medicine, Duke Clinical Research Institute, Durham, N.C.

The price of HCV therapy has risen since the introduction of direct-acting antiviral drugs (DAAs) to the market. For example, a 12-week course of telaprevir combined with 36 weeks of pegylated interferon (Peg-IFN) and ribavirin is estimated to cost $85,872, and a full 48-week course of boceprevir-based therapy costs about $71,873. In contrast, the previous standard therapy without DAAs—48 weeks of Peg-IFN alfa and ribavirin—is approximately $36,672.

"Given the significant cost and potential side effects of telaprevir and boceprevir, it is important to ask whether all patients should be offered these agents as first-line therapies," said George Makar, MD, assistant professor of clinical medicine and associate medical director of the liver transplant program, University of Pennsylvania, Philadelphia, who was not involved in the study.

Dr. Gellad and his team performed a cost-effectiveness comparison of three treatment strategies for HCV genotype 1 patients with the IL28B CC genotype, which is the strongest pretreatment predictor of sustained virologic response (SVR). The investigators included three treatment strategies in their model:

Peg-IFN alfa and ribavirin for 48 weeks, with a 12-week stopping rule for nonresponse and retreatment with telaprevir for nonresponders and relapsers;
A response-guided treatment strategy of Peg-IFN and ribavirin with treatment of 24 or 48 weeks based on rapid virologic response and retreatment with telaprevir for nonresponders and relapsers;
A response-guided treatment strategy of 12 weeks of telaprevir with 24 or 48 weeks of Peg-IFN and ribavirin.

Treatment outcomes were based on data from the IDEAL (The Individualized Dosing Efficacy vs. Flat Dosing to Assess Optimal Pegylated Interferon Therapy), REALIZE (Re-treatment of Patients with Telaprevir-based Regimen to Optimize Outcomes) and ADVANCE (A New Direction in HCV Care: A Study of Treatment-Naive Hepatitis C Patients with Telaprevir) clinical trials.

The model showed that the efficacy of all three treatment strategies was similar in this group of patients. Quality-adjusted life-years for the three treatments ranged from 19.26 to 19.34 years.

However, costs differed markedly. The total cost associated with a response-guided Peg-IFN and ribavirin regimen amounted to $46,785, by far the lowest, according to the model. The Peg-IFN/ribavirin regimen for 48 weeks with telaprevir as a retreatment strategy was $54,931. Telaprevir as a front-line therapy amounted to $68,788.

“Telaprevir was less likely than peginterferon/ribavirin to be cost-effective across all willingness-to-pay thresholds,” said Dr. Gellad.

Dr. Gellad said the analysis was not meant to guide treatment decisions at the patient level. “Rather, it was designed to address a policy question at the societal level. … Nonetheless, I hope it does raise some awareness about the judicious use of new and expensive therapies.”

One-way sensitivity analyses revealed that telaprevir became the preferred strategy in a number of scenarios: when the cost of telaprevir fell to less than $1,640 per week, when the likelihood of SVR in patients with nonextended rapid viral response rose greater than 80% and when the likelihood of SVR in relapsers retreated with telaprevir fell to less than 62%.

In Dr. Makar’s practice, he offers telaprevir and boceprevir to patients with a CC genotype who do not achieve a SVR with four weeks of Peg-IFN and ribavirin alone.

In patients with the IL28B CC genotype, the standard treatment is often successful, with SVR rates around 70% to 80% (Thompson AJ et al. Gastroenterology 2010;139:120-129). DAAs, however, are superior for patients who are nonresponsive or who relapse after dual therapy.

Dr. Makar said the cost-effectiveness analyses in the study will have to be reviewed closely.

“The potential for increased cost and side effects has to be weighted against the higher likelihood of SVR, as well as the much greater potential for shortened therapy,” he said, adding that patients also have to be actively involved in decision making.

Dr. Gellad is a consultant for Merck & Co., and has received grant/research support from Merck & Co., and PENTAX Medical.