

Estimating cost when it comes to novel therapies

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When it comes to patient care, finding the best treatment can sometimes include finding an equal, yet more economical solution. Rather than introducing a costly new medication, for some patients changing current dosages or combining other treatments have the potential for similar outcomes at a lower cost.

Researchers at Baylor College of Medicine and the Michael E. DeBakey Veterans Affairs Medical Center reviewed findings of the FOURIER trial (Sabatine et al., *N Engl J Med.* 2017) that found the use of evolocumab, a drug designed to treat hyperlipidemia, reduced the risk of major cardiovascular events in patients with [atherosclerotic cardiovascular disease](#) (ASCVD) by 15 percent at 2.2 years of follow-up. Those who were eligible for evolocumab had LDL-C levels of 70mg/dl and above and were on at least moderate-intensity statins, among other criteria. They were given the treatment and their LDL-C levels were further lowered, reducing their risk for a cardiovascular event. Evolocumab belongs to a new class of medications that lower LDL-C levels by 50 to 60 percent with an annual retail price that can be up to \$14,000.

Using that data, Baylor researchers, led by Dr. Salim S. Virani, associate professor of medicine at Baylor, evaluated the eligibility and cost implications of the FOURIER trial for the Veterans Affairs Health Care System. They evaluated how many patients with cardiovascular disease would qualify in the entire VA health care system based on FOURIER trial criteria, its cost implications and how these outcomes would change

if currently recommended evidence-based therapies were maximally utilized.

The findings were published in the current edition of *Circulation*.

By reviewing the data from a national registry of patients with cardiovascular disease receiving care throughout the VA health care system, they were able to identify that more than 150,000 patients (roughly one-quarter of patients with [cardiovascular disease](#) in the VA system) would be eligible for evolocumab based on FOURIER trial criteria. Treating all these patients with evolocumab will be associated with an estimated annual cost of more than \$2 billion.

They also found that less than half of these patients were treated with evidence-based, high-intensity statin therapy which is recommended as per the current cholesterol treatment guidelines. They noted that if all those patients were instead treated with high-intensity statins, their LDL-C levels would decrease and change their eligibility for evolocumab. Using a prediction model, they found that overall the need for evolocumab therapy would go down by approximately 20 percent if all patients were titrated to high-intensity statin therapy. The use of ezetimibe would decrease the need for evolocumab by about 50 percent. Using that same prediction model, researchers determined that combining ezetimibe (a cholesterol lowering medication) with high-intensity statin therapy also would reduce LDL-C levels to a point that approximately 60 percent of the [patients](#) would no longer be eligible for evolocumab based on FOURIER trial criteria.

The cost savings associated with these treatments was estimated to be just over \$1 billion annually for the VA health care system alone.

"There are many reason why a person might not be treated using the more cost effective methods such as patient preference, adherence or

statin intolerance," Virani said. "The achieved LDL-C levels using the [statin](#) and ezetimibe strategies are still higher than what was achieved with evolocumab in the FOURIER trial, however, our predictions show that there is an opportunity for healthcare systems to optimize treatment with currently available evidence-based therapies before initiating costly therapies."

Dr. Christie M. Ballantyne, professor of medicine and chief of the section of cardiology at Baylor, added that "as we develop powerful new approaches with biotechnology to treat lipids and other cardiovascular conditions, it is important to use large databases as done in this study to best understand the potential impact of [therapy](#) on a healthcare system, as well as the best approaches to improve patient care in the most cost effective manner."

More information: Salim S. Virani et al. Estimation of Eligibility for PCSK9 Inhibitors and Associated Costs Based on the FOURIER Trial: Insights from the Department of Veterans Affairs, *Circulation* (2017). [DOI: 10.1161/CIRCULATIONAHA.117.028503](https://doi.org/10.1161/CIRCULATIONAHA.117.028503)

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