A Look at One Data Scientist's Efforts to Eliminate Hepatitis B by 2030

Stanford's Mehlika Toy is working with the World Health Organization to determine what it will take to stop the liver virus in its tracks.

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Last year, the World Health Organization (WHO) issued a report announcing its aim to eliminate hepatitis B virus (HBV) across the globe by 2030. One year later, a decision scientist is asking how close we are to achieving that goal, a recent press release from Stanford University reports.

According to Scope, Stanford Medical's official publishing platform, Stanford decision scientist Mehlika Toy, PhD, is teaming up with WHO this fall to develop a mathematical model that can calculate the efficacy of country-specific interventions for eliminating hepatitis B. (Decision scientists apply math and technology to determine the price of possible outcomes as they relate to specific problems, which helps interested parties make key decisions.) Toy, who works at the Asian Liver Center at the Stanford School of Medicine has spent the past 12 years researching the best ways to control infectious diseases, especially hepatitis B.

One of Toy's initial reports on the topic, published in March 2017, concluded that it was feasible to eliminate hepatitis B as a public health problem by 2030 and formed the basis of a national strategy that changed health care policy in the United States. In recent years, Toy has emerged as a leading authority on determining the cost-effectiveness of hepatitis B treatment and has also influenced global health care policy in such countries as the Netherlands, Turkey and China.

To build her models, Toy begins by determining how many lives could be saved with a particular treatment. Toy then plays with variables that affect influence costs to see under which conditions certain therapies could also be cost-efficient. After developing the models, she and other scientists create user-friendly tools for global health ministries to use free of charge.

"It also serves as an outreach tool," Toy explained about the upcoming collaboration with WHO in a recent interview with Stanford news. "By emphasizing that hepatitis B is a serious disease, this sort of outreach can impact health policy."

Hepatitis B claims an estimated 800,000 deaths per year. In the United States, about 1.3 million people are thought to have hepatitis B, but two thirds of these individuals don't know it. Fortunately, hepatitis B is highly treatable and can be prevented with a vaccine.