Going Global against Cervical Cancer

Research on prevention, detection, and treatment fights disease in the developing world

The cause of most cervical cancer is known: infection with one of the high-risk types of the human papillomavirus (HPV). Vaccines prevent infection, screening allows for early detection, and treatments cure early-stage disease. In the United States, where the disease once killed more women than any other cancer, it will claim fewer than 4,000 lives this year.

Yet in the developing world, this preventable and curable disease kills 242,000 women each year, according to the World Health Organization (WHO) GLOBOCAN 2008 project. Death tolls may rise to 430,000 per year by 2030 without additional intervention.

“If you look at the amount of prevention in places that need it most, it’s very limited,” says Mark Schiffman, MD, a senior investigator at the National Cancer Institute (NCI), who specializes in cervical cancer. “You may have this sense that if you can just figure out what causes a cancer, then the rest will come automatically. But it turns out there’s this whole science of translation that doesn’t come automatically.”

Although the biggest challenges may be economic and cultural, researchers are working to transform vaccines, screening tests, and treatments that are already in place in the developed world into solutions for developing nations.

CUTTING COSTS

Current HPV vaccines, Merck’s Gardasil and GlaxoSmithKline’s Cervarix, cost hundreds of dollars. In addition, the U.S. Food and Drug Administration–approved regimen requires 3 doses over 6 months for women at a young age.

However, recent research suggests that 2 or even 1 dose may suffice, which could make the vaccine more affordable and easier to get. In an analysis of data from an ongoing NCI-sponsored HPV vaccine trial in Costa Rica, Aimee Kreimer, PhD, an NCI cancer epidemiologist, found that participants who did not receive all 3 doses showed similar levels of protection as those fully vaccinated 4 years after their last shot.

Other investigators are testing 1- and 2-dose regimens in resource-poor areas of Africa. “Studies like this are really important in places where malnourishment or infections may alter immune responses,” says Kreimer.

In parallel, work is under way to develop a plant-based vaccine grown in tobacco that could drop the vaccine cost to just a few dollars and allow some regions to grow the vaccines locally. “In the past year, the plant technology has finally advanced enough that we have a much better chance of succeeding than we did 10 years ago when we started,” says Alfred Bennet Jenson, MD, an immunobiologist at the Brown Cancer Center at the University of Louisville in Kentucky who helped develop the original HPV vaccine.

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