



OB/GYN Backpack

“Cervical cancer is easily detectable and can be treated when diagnosed early. Through regular screening of reproductive-age women, hundreds of lives can be saved...each year.”

-WINGS

BEYOND TRADITIONAL BORDERS



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Global Health Challenge

Social determinants of health, related to ethnicity, urban or rural residency, and gender, are evidenced by cervical cancer rates in Guatemala. Among women in their childbearing years, cervical cancer is the leading cause of death. While cervical cancer is diagnosed with a Pap smear in the developing world, only 67% of all Guatemalan women have received this test at any point in their lives, and in keeping with the urban/rural split, 77% of women from urban areas had a Pap smear on record versus only 58% of rural women. In neighboring Nicaragua, the Ministry of Health can provide Pap smears for less than \$3 USD, but has only covered 10% of the population, indicating that the struggle to provide women's healthcare to all segments of the citizenry is not a problem unique to Guatemala. Central American women as a whole suffer from insufficient access to prevention, care, and treatment, as shown by the mortality rates from a largely preventable and treatable disease such as cervical cancer.

Appropriate Solution

In 2007, bioengineering design students created the Lab-in-a-Backpack, which provided tools to diagnose and treat major health issues specific to rural Central America and Sub-Saharan Africa. To extend the capabilities of point-of-care diagnostics, the senior design team developed the OB/GYN Backpack, containing the necessary supplies to perform 100 well-woman exams. The set includes two types of stirrup extensions, a wooden U-shaped board model and a metal 3-rod attachment model, each suited for different circumstances and settings. The metal 3-rod attachment is more adaptable to different body types whereas the durable wooden U-shaped board can be made locally. The backpack also includes cushioning, pelvic examination supplies, a speculum illuminator, ambient lighting, prenatal examination equipment, syphilis testing equipment, glucose monitors, urine strips, a blood rocker, and a sharps container. The final prototype includes its own battery charger and multi-source power unit, chargeable by an electric outlet or a solar panel.

Current Status

During the summer of 2009, the OB/GYN Backpack was field tested in Guatemala, Nicaragua, and Ecuador. As a result of the feedback accumulated from the trials, the backpack is presently being modified to create a more effective second generation for implementation during student internships taking place the summer of 2010. Modifications include the improvement of the wooden and metal stirrup designs for comfort, additional testing supplies, and an instruction manual for constructing the stir-

An initiative for the advancement of appropriate, high-value innovations in global health biotechnology