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Innovations

innovating to save lives

Detecting Hypertension in Pregnancy:

A Low-Cost Solution for a Persistent Global Health Challenge

Global Health Need

Hypertension (high blood pressure) in pregnancy contributes significantly to maternal and infant mortality and morbidity. Unfortunately, in low-resource settings and especially in rural settings, it frequently goes undetected, misdiagnosed, and therefore untreated. Hypertension complicates approximately 5% of pregnancies worldwide, with a higher proportion in first pregnancies, and is a sign of pre-eclampsia and eclampsia. Although blood pressure measurement is an essential and cost-effective screening tool, it is underutilized in many countries, even where antenatal care coverage is relatively high.[1,2] This underutilization is due to issues with existing blood pressure measurement approaches, including: the considerable amount of skill and training required to use them, environmental and health concerns (i.e., mercury), calibration requirements, user biases, and unaffordability for low-resource settings.

Low-Cost Technology Solution

The improved blood pressure device is intended primarily for community health workers (CHWs) in rural settings, particularly mobile CHWs, and secondarily for health care facilities at the periphery of the health care system. By making a blood pressure device that is more affordable and appropriate for the community setting, Jhpiego and its partners seek to increase the coverage and quality of this critical intervention. The device is a modification of existing automatic arm-cuff devices and employs a simplified user interface with dichotomous indicators (in the presence of hypertension). The device is robust and durable to withstand harsh environmental conditions, such as extreme temperatures and excessive dust, yet is extremely affordable. In addition to expanding the coverage and quality of blood pressure screening among pregnant women, it can be used to screen hypertension disorders in the general population and will be expanded to reach additional users in the future.

Device Features:

- Simple user interface appropriate for low literacy levels
- Durable for harsh environments
- Robust power source

Collaborators:

Johns Hopkins University Center for Bioengineering Innovation and Design, and Laerdal Global Health

Contact:

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Current Status and Future of the Blood Pressure Device

Jhpiego, the John Hopkins University Center for Bioengineering Innovation and Design, and Laerdal Global Health are working with end-users to refine the device interface and gather data about user needs and preferences in preparation for more extensive field trials.

[1] Bryce J, Requejo J. *The Countdown 2008 Report: Tracking progress in maternal, newborn, and child survival*. New York: UNICEF; 2008.
[2] Adam T, Lim SS, Mehta S, et al. Cost effectiveness analysis of strategies for maternal and neonatal health in developing countries. *BMJ* 2005; 331:1107–1110.

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