

## Non-Pneumatic Antishock Garment

### Health need

Postpartum hemorrhage (PPH) continues to be the single most common cause of maternal morbidity and mortality, accounting for approximately 25 percent of maternal deaths globally. Over 90 percent of these deaths occur in developing countries where the infrastructure and training at primary care facilities are not sufficient to handle obstetric emergencies. If not treated immediately, PPH can cause irreparable damage to vital organs or death from hypovolemic shock. In severe cases, when the administration of uterotonic drugs does not stop the bleeding, the need for access to an obstetric care facility with blood transfusion and surgical capabilities is critical. For women suffering from uncontrollable PPH, a method to control the bleeding, reverse the shock, and stabilize the patient for safe transport to a comprehensive obstetric care facility could be lifesaving.

### Technology solution

One method to manage PPH is the use of a non-pneumatic antishock garment (NASG). The NASG is a lightweight neoprene garment that resembles the bottom half of a wet suit. It is made up of five segments that close tightly with Velcro. The NASG applies pressure to the lower body and abdomen, thereby stabilizing vital signs and resolving hypovolemic shock. When fitted correctly, the reusable NASG forces blood to the essential organs—heart, lungs, and brain—and allows the woman to be transported to an obstetric care facility. Unfortunately, the NASG is not readily available in most low-resource settings. Despite recent reductions in price, distribution remains a challenge. Once the NASG is affordable, available, and accessible and health care workers are sufficiently trained, the NASG could play an important role in reducing mortality and morbidity among women that experience PPH.

### Current status and results

In order for the NASG to achieve widespread impact, it must be available at affordable prices and at consistently high quality. PATH has tested sample devices from multiple manufacturers to characterize their performance, quality, and durability before and after rigorous washing. We have also drafted quality performance standards and specifications. Additionally, PATH has negotiated affordable, high-quality manufacturing of the NASG in China and India. We are currently initiating global regulatory, procurement, and access strategies that will ensure available, affordable, and accessible distribution of the NASG in low-resource settings.



PATH/Jered Singleton

**Non-pneumatic antishock garment.**

**“In our research, women who appeared clinically dead, with no blood pressure and no palpable pulse, were resuscitated and kept alive for up to two days [using the NASG] while waiting for blood transfusions.”**

Suellen Miller, CNM, PhD, international maternal health expert and director of the Safe Motherhood Programs of the University of California, San Francisco Women’s Global Health Imperative.

### Availability

For more information regarding this project, contact Paul LaBarre at [plabarre@path.org](mailto:plabarre@path.org).

### Donor support

Support for this project was provided through funding from private foundations and individual donors to the **Health Innovation Portfolio** at PATH, the **United States Agency for International Development** through PATH’s HealthTech program, and from the **John D. and Catherine T. MacArthur Foundation**.