

University of California, San Francisco Safe Motherhood Program

NASG Project

UCSF's Safe Motherhood Program introduced the Non-pneumatic Anti-shock Garment (NASG) to limited-resource settings in 2002. The NASG is a low-technology, low-cost first-aid device used to treat shock, resuscitate, stabilize, and prevent further bleeding in women with obstetric hemorrhage and subsequent hypovolemic shock. Use of the NASG as part of standard management of shock and hemorrhage has demonstrated promising outcomes for women in settings where appropriate healthcare providers and technologies may be limited. The benefit of the NASG lies in its ability to sustain life while women are transported from clinics and communities to facilities that can provide necessary surgeries, treatments and care.



HOW DOES IT WORK?



The NASG applies circumferential counter pressure to the lower body and uterus which increases circulating blood to the heart, lungs and brain and decreases the rate of blood flow in the abdomen and pelvis, thus decreasing blood loss.

“The NASG is a true life saving device for women in shock and close to death due to PPH. This is a major life saving support device, easy to administer by any health personnel and needs to be available for pregnant women everywhere and particularly in low resource countries.”

-Andre B. Lalonde, Chair, International Federation of Gynecology and Obstetrics* (FIGO)
Committee for Safe Motherhood and Newborn Health (SMNH)
Professor, Obs/Gyn, University of Ottawa and McGill University, Canada.



NASG Studies

Show Reduction in Maternal Mo

WHO WE ARE

The Safe Motherhood Program at the University of California, San Francisco (UCSF), is committed to saving the lives of women who die from pregnancy and childbirth related complications.

The Safe Motherhood Program was founded in 2003 by its director, Professor Suellen Miller, a Certified Nurse Midwife and PhD in Family Health Care Nursing. Dr. Miller is a leading expert in maternal health, with over 30 years' experience in low resource settings, co-author of the Hesperian Foundation's 'A Book for Midwives', as well as over 50 peer-reviewed journal articles. We work with distinguished colleagues in a variety of countries, all of whom can be viewed on our website. www.lifewraps.org

META ANALYSIS

UCSF and our international partners in Nigeria, Egypt, Zambia, Zimbabwe, and India have documented the use



of the NASG on over 5500 women with severe hemorrhage and shock.

We have synthesized the findings from five NASG studies conducted at tertiary care facilities into a meta-analysis, a statistical method for examining and combining data from multiple studies. These five

NASG studies were: Egypt (2006); Nigeria and Egypt combined (2010); Lusaka, Zambia and Harare, Zimbabwe combined (2012); Copperbelt, Zambia (2012); and the Pathfinder India RAKSHA implementation project (2012). (See reference list for full citations.)

Combining the data from these different studies in a meta-analysis provided a larger sample size, and thus greater statistical "power". Having adequate statistical power means that the sample is big enough to avoid missing a

real difference between the treatment (NASG) and the non-treatment groups because the sample size is too small.

In addition, by combining our results we examined how the NASG works over a range of countries, from relatively middle income settings with lower maternal mortality (Egypt) to very low resource settings with high maternal mortality (Copperbelt, Zambia), and from strictly monitored, highly trained researchers/clinicians (Egypt), to implementation



Mortality

projects with little research supervision (India). All of the studies used a quasi-experimental design, which means that women were not randomized. Four studies had a pre-intervention/intervention design, and in the India RAKSHA Project, clinicians either used the NASG or did not use it in the same facilities on similar patients.

The five studies included 3,561 women with severe obstetric hemorrhage and hypovolemic shock; 1,614 (45%) were treated with standard care PLUS the NASG and 1,947 (55%) received standard care only. Of these 3,561 women, about one-third (n=1,227) of women were in the most severe shock, with evidence of decreased oxygen to their brain, heart and lungs.

The pooled results for all women showed a 38% decrease in mortality among women who received the NASG, while the reduction in mortality was even greater for those in the worst condition, at 63%. Further, data from all studies demonstrated no safety issues from using the NASG.

META ANALYSIS CONCLUSION: At the tertiary hospital level, the NASG plus standard care significantly reduces mortality, especially for



women in more severe shock. The Odds Ratio for mortality for all participants was OR 0.62, 95% CI 0.44-0.86, and OR 0.37, 95% CI 0.25-0.56 for the most severe cases

CLUSTER RANDOMIZED TRIAL OF THE NASG AT PRIMARY HEALTH CARE CLINICS IN ZAMBIA AND ZIMBABWE

In many poor countries, women deliver at home, often without skilled attendants, or at clinics that only offer a limited range of services. If the woman bleeds heavily, she may face a long delay while a decision is made to seek care, to organize transport, to travel to the hospital, and wait in the hospital for blood or

surgery. Many women do not survive these delays.

The UCSF NASG Study in Zambia and Zimbabwe addresses the question of whether early application of the NASG at the clinic level before transport to a Referral Hospital (RH) will decrease maternal mortality. This five-year study began in 2007. Clinics were randomized to intervention or control status. Intervention clinic staff were trained to apply the NASG before transfer to the RH in addition to standard management. Control clinic staff used only standard management before transfer. We completed data collection in 2012. Results are expected in early 2013.

Key Contributors to the Cluster Randomized Trial

University Teaching Hospital, Lusaka Zambia (UTH), University of Zimbabwe UCSF Collaborative Programme of Women's Health Research (UZ-UCSF), Kitwe and Ndola Central Hospitals; District Health Management Boards and Clinics of Lusaka, Ndola, Kitwe and Kalulushi; Harare Central and Parienyatwa Hospitals; Harare City Council Clinics. World Health Organization Reproductive Health Research Unit and the Instituto de Efectividad Clínica y Sanitaria serve as data managers.

Funding provided by the National Institutes of Health (NIH), Institute for Child Health and Development (NICHD) and the Bill and Melinda Gates Foundation.

The 2012 WHO Recommendations for the Prevention and Treatment of PPH includes use of the NASG as a temporizing measure until appropriate care is available.



TRAINING

We are available for technical assistance to professional associations, NGOs, GOs and agencies wishing to incorporate the NASG into health care delivery systems, protocols and curricula. Please contact us and let us use our experience to inform your planning process. Email: jclark@globalhealth.ucsf.edu

NASG STUDIES IN THE META-ANALYSIS:

Miller, S, Hamza, S, Bray E, et al. FIRST AID FOR OBSTETRICAL HEMORRHAGE: THE PILOT STUDY OF THE NASG IN EGYPT. BJOG, 113(4): p. 424-9.

Miller, S, Fathalla, M, Ojengbede, O, et al. OBSTETRIC HEMORRHAGE AND SHOCK MANAGEMENT: USING THE LOW TECHNOLOGY NASG IN NIGERIAN AND EGYPTIAN TERTIARY CARE FACILITIES. 2010 BMC Pregnancy Childbirth 2010, 10:64

Magwali, T, Butrick, E, Mambo, V, et al. NASG FOR OBSTETRICAL HEMORRHAGE: HARARE, ZIMBABWE. Presentation, XX FIGO World Congress, Rome, Italy, 2012

El Ayadi, A, Miller, S. META-ANALYSIS OF 3,561 WOMEN WITH SEVERE OBSTETRICAL HEMORRHAGE/HYPOVOLEMIC SHOCK TREATED WITH NASG. Panel Presentation, XX FIGO World Congress, Rome, Italy, 2012

Maknikar, S., Nanda, R., Miller, S. NASG REDUCES MORTALITY IN INDIAN WOMEN WITH PPH. Abstract Presentation, XX FIGO World Congress, Rome, Italy, 2012

Please see our website for a complete list of publications:
www.lifewraps.org/scientific.htm

CONTACT US

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<http://www.lifewrap.org>

<http://www.facebook.com/ucsf.safemotherhoodprogram>

HOW TO GET AN NASG

• Blue Fuzion Group:

The NASG is available either directly from Blue Fuzion Group or its distributors depending on location and volumes ordered. Pricing is dependent on volume, beginning at ~ \$60 for orders >1000 pieces. Blue Fuzion Group at NASG@bfgroup.asia

• Maternova:

Is pooling orders to access the NASG at \$100 USD per piece. Website: <http://maternova.net/nasg> or email: orders@maternova.net

• Stork Medical:

3 sizes available at \$295 USD per piece: www.storkmedical.com