

# NASG INTRODUCTION



Introduction to the Non-pneumatic Anti-Shock  
Garment (NASG) for Obstetric Haemorrhage

**DISCLAIMER:** We highly recommend using the training materials as part of a hands-on training program led by an experienced trainer with NASG expertise. Neither UCSF, nor any of its employees, makes any warranty, express or implied, including warranties of merchantability and fitness for a particular purpose, or assumes any responsibility for the accuracy, completeness, or usefulness of any information from this website or from any websites referenced by this website. **Any use of this document is an agreement that you have read, understood, and accept the terms above.**

## What is the NASG?

The Non-pneumatic Anti-Shock Garment (NASG) is a unique, low-technology, life-saving first-aid device made of neoprene and Velcro, which is used on women with obstetric haemorrhage. It can be applied by anyone, even those without medical training. The NASG has a unique role in haemorrhage and shock management because it is meant to be used with, not instead of, other technologies. Currently, it is the only tool that aids in stabilizing pulse and blood pressure after a woman has gone into shock from obstetric haemorrhage.

The NASG is made of segments: 3 segment pairs (#1, #2, and #3) are placed around the patient's legs and 3 additional segments #4, #5, and #6 are placed around her pelvis and abdomen. A ball in segment #5 is placed over the woman's umbilicus (belly button, navel), adding more pressure.



The NASG folded/closed





The NASG opened



3 segment pairs (#1, #2, and #3) are placed around the patient's legs

Segments #4, #5, and #6 are placed around her pelvis and abdomen



A ball in segment #5 is placed over the woman's umbilicus (belly button, navel), adding more pressure



## Obstetric Haemorrhage and the NASG

The NASG is designed as a first-aid device to treat hypovolemic shock due to obstetric haemorrhage. **Obstetric haemorrhage (OH)** is defined as heavy bleeding during pregnancy, labor, or postpartum. Bleeding in excess of 500mL or in any amount that causes changes in pulse and blood pressure is a concern because the woman may go into hypovolemic shock. Obstetric haemorrhage may be caused by a variety of complications.

**Common causes are listed below:**

WHEN IN PREGNANCY BLEEDING OCCURS	HAEMORRHAGE DIAGNOSIS OR ETIOLOGY
<b>Antepartum Haemorrhage</b>	Placenta Previa
	Abruption
	Ruptured uterus
<b>Postpartum Haemorrhage</b>	Uterine atony
	Retained placenta/tissue
	Lacerations
	Placenta accreta
<b>Early Pregnancy Haemorrhage</b>	Ectopic pregnancy
	Molar pregnancy
	Complications of abortion
	Retained placenta/tissue
<i>Any of the above etiologies can contribute to the woman developing DIC, disseminated intravascular coagulopathy</i>	



## Signs of Shock

The NASG should be applied on a woman when she is experiencing obstetric haemorrhage and showing signs of shock. If a woman is in shock, she may show one or more of the following signs/symptoms:

1. **Increased pulse/tachycardia**
2. **Decreased blood pressure/hypotension**
3. **Pallor (pale skin)**
4. **Sweating/diaphoresis**
5. **Clamminess**
6. **Cold extremities**
7. **Confusion or agitation**
8. **Loss of consciousness**
9. **May or may not have heavy external bleeding**

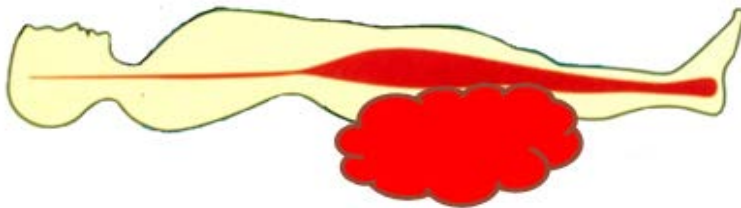


## Mechanisms of Action

The NASG can help in the management of patients with obstetric haemorrhage and hypovolemic shock.

Shock has different phases. In **compensatory shock**, the body reacts to blood loss by increasing the heart rate and respirations to send more oxygen to the heart, lungs, and brain. Blood is diverted from the extremities to the core.

If the haemorrhage continues, shock can progress to decompensatory shock. In **decompensatory shock**, the heart, lungs, and brain are deprived of oxygen as blood accumulates in the lower parts of the body. In obstetric haemorrhage, blood also leaves the body through the vagina or pools in the retroperitoneal area.



Decompensatory shock

The NASG reverses shock by decreasing blood flow to the lower extremities and abdomen and increasing blood flow to the heart, lungs, and brain. It reduces blood loss because it compresses the blood vessels in the abdomen and pelvis, decreasing the radius of those blood vessels. When the radius of a blood vessel is decreased, blood flow through the vessel is decreased.



NASG decreases blood loss and reverses shock



The NASG provides simple and safe circumferential counter-pressure and reduces haemorrhage in the lower body. It does not cut off blood like a tourniquet. Instead, it decreases arterial perfusion pressure to the uterus, which is comparable to ligation of the internal iliac arteries. The NASG also overcomes pressure in the capillary and venous systems (15-25 mmHg), reducing transmural pressure, vessel radius, and flow.

## **Contraindications**

### **The NASG should not be used on anyone with:**

- A viable fetus (unless there is no other way to save the mother's life and both mother and fetus will die)
- Bleeding above the diaphragm
- Open thoracic wounds

## **Unique Role**

Women in shock need definitive treatment for the cause of their bleeding; they may need blood transfusions, or they may need a vaginal procedure, or surgery to stop the bleeding, or all of these. The NASG is first-aid; it stabilizes the woman and buys time, both while she is being transported to emergency obstetric care and while awaiting definitive treatment in referral facilities.

The NASG is unique in that it can reverse shock and can be used at the same time with other haemorrhage and shock treatments, such as: uterine massage, uterotonics, blood transfusions, vaginal procedures, and surgery. It can even be used with balloon tamponade. The NASG can help stabilize a patient while evaluating, transporting, and preparing her for definitive surgical treatment. A woman can safely and comfortably wear the NASG for up to 48 hours. The NASG remains on the woman during treatments and until she has been hemodynamically stable for 2 hours.



## Limitations

It is important to note that the NASG also has limitations. The NASG provides first-aid only. Therefore, it is still critical to examine the patient, identify the cause(s) of bleeding and shock, and give IV fluids and blood transfusions as soon as possible. If the patient has coagulopathy she may also need fibrinogen or fresh frozen plasma (FFP).

## Part of a Health Care System

Finally, the NASG works best as part of a health care system for women with hypovolemic shock and obstetric haemorrhage. The best approach to obstetric haemorrhage is to prevent it from happening, but if it cannot be prevented or if prevention fails, the NASG can be used to stabilize the woman until definitive treatment.





## Knowledge Assessment

---

*See if you can answer these questions correctly. After you have answered all the questions, look below for the answers. If you answered any of the questions incorrectly, go back to the section about the topic and review.*

- 1) The ball in Segment #5 of the NASG is placed over the woman's umbilicus (navel, belly button).  
**(True/False)**
  
- 2) Which of the following is a cause of obstetric haemorrhage?
  - a. Postpartum haemorrhage
  - b. Placenta Abruptio
  - c. Genital lacerations
  - d. Complication of Abortion
  - e. All of the above
  
- 3) The NASG can be used to:
  - a. Stabilize women in shock until they receive definitive treatment
  - b. Substitute for definitive treatment
  
- 4) Mechanisms of Action for the NASG include:
  - a. Decreases blood flow to the lower extremities and abdomen
  - b. Increases blood flow to the heart, lungs, and brain
  - c. Reduces blood loss by compressing blood vessels in the abdomen and pelvis, decreasing the radius of those blood vessels
  - d. All of the above
  
- 5) The NASG can/cannot (circle one) be used with other haemorrhage therapies.



## Knowledge Answers

---

- 1) The ball in Segment #5 in the NASG is placed over the woman's umbilicus. **(True/False)**

**Answer: True**

- 2) Which of the following is a cause of obstetric haemorrhage?

- a. Postpartum haemorrhage
- b. Placenta Abruption
- c. Genital lacerations
- d. Complication of Abortion
- e. All of the above

**Answer: e. All of the above**

- 3) The NASG can be used to:

- a. Stabilize women in shock until they receive definitive treatment
- b. Substitute for definitive treatment

**Answer: a. Stabilize women in shock until they receive definitive care**

- 4) Mechanisms of Action for the NASG include:

- a. Decreases blood flow to the lower extremities and abdomen
- b. Increases blood flow to the heart, lungs, and brain
- c. Reduces blood loss by compressing blood vessels in the abdomen and pelvis, decreasing the radius of those blood vessels
- d. All of the above

**Answer: d. All of the above**

- 5) The NASG CAN/cannot (circle one) be used with other haemorrhage therapies.

**Answer: The NASG CAN be used with other haemorrhage therapies.**

