NASG
INTRODUCTION

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

TRAINER

INTRODUCTION

This unit is designed for trainees at the facility level to obtain a very basic introduction to obstetric haemorrhage, what the Non-pneumatic Anti-Shock Garment (NASG) is, and how the NASG works. As the trainer, you may want to review facility, local, or national treatment guidelines and use that information to supplement this material. We recommend you consult national or local guidelines to determine if there are specific levels used for diagnosing shock – for example, a pulse above 100 or above 120, or a systolic blood pressure below 100 or below 90. If you can find out the relevant standards and integrate them into the unit it will enhance the training.

TRAINER

OBJECTIVES:

By the end of this unit all trainees should be able to:

- Know what the NASG is and what it looks like.
- Identify at least 3 causes of obstetric haemorrhage.
- Identify at least 3 signs of shock.
- Understand the mechanisms of action of the NASG.

Note: The following material is written so that it may be given directly to trainees if the trainer wishes to give them printed materials as trainee handouts.

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
Antepartum Haemorrhage	Placenta Previa
	Abruption
	Ruptured uterus
Postpartum Haemorrhage	Uterine atony
	Retained placenta/tissue
	Lacerations
	Placenta accreta
Early Pregnancy Haemorrhage	Ectopic pregnancy
	Molar pregnancy
	Complications of abortion
	Retained placenta/tissue
Any of the above etiologies can contribute to the woman developing DIC, disseminated intravascular coagulopathy	

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:

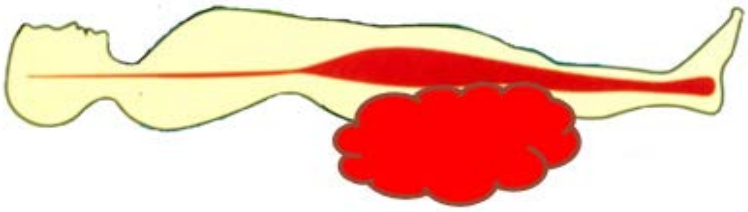
1. **Increased pulse/tachycardia**
2. **Decreased blood pressure/hypotension**
3. **Pallor (pale skin)**
4. **Sweating/diaphoresis**
5. **Clamminess**
6. **Cold extremities**
7. **Confusion or agitation**
8. **Loss of consciousness**
9. **May or may not have heavy external bleeding**

Mechanisms of Action

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

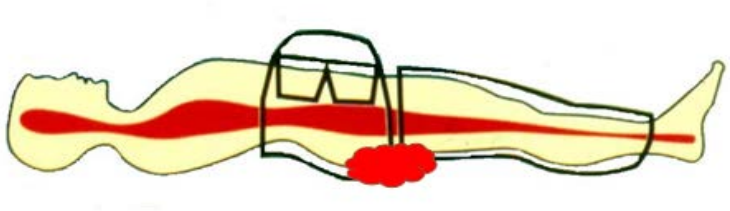
Shock has different phases. In **compensatory shock**, the body reacts to blood loss by increasing the heart rate and respirations to send more oxygen to the heart, lungs, and brain. Blood is diverted from the extremities to the core.

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 in her uterus (womb), unless there is no other way to save the mother's life and both the 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 provides 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

Trainees should be able to answer the following questions. See below for correct answers. Review any incorrect responses with trainees to ensure they have understood the material.

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 Abruption
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.