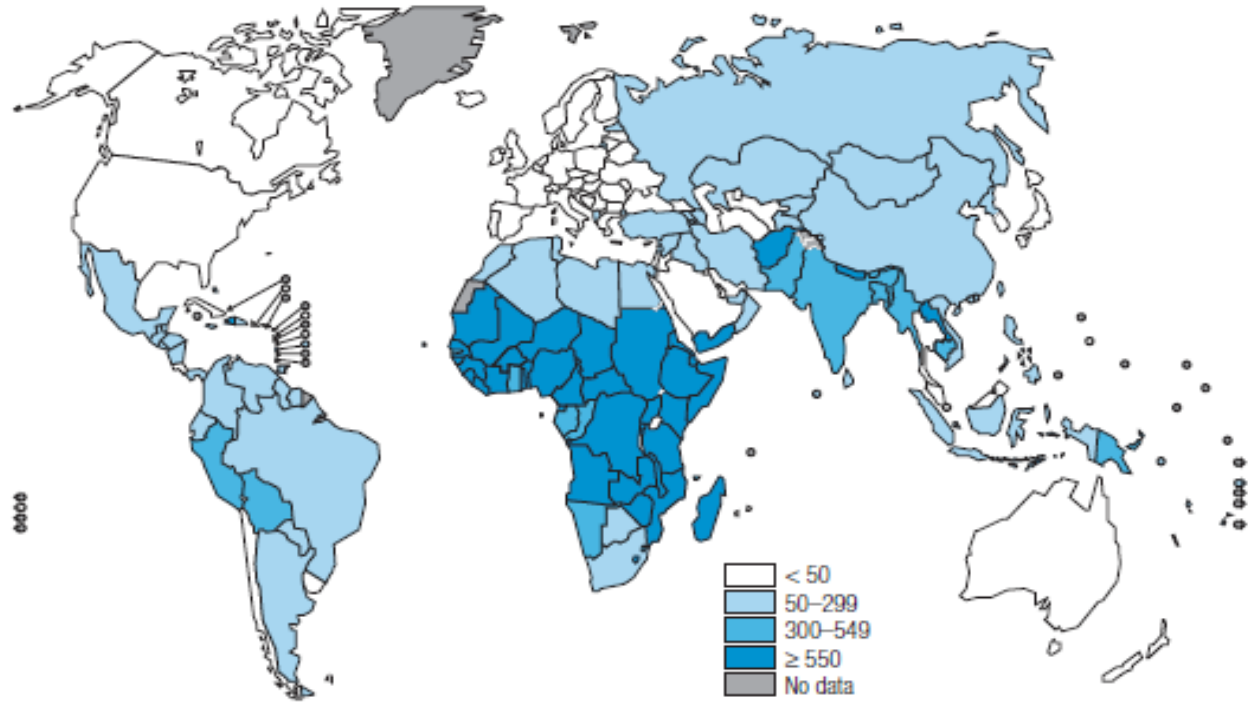


The Definition of Maternal Mortality

- The death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes.

Global Map of Maternal Mortality Ratios



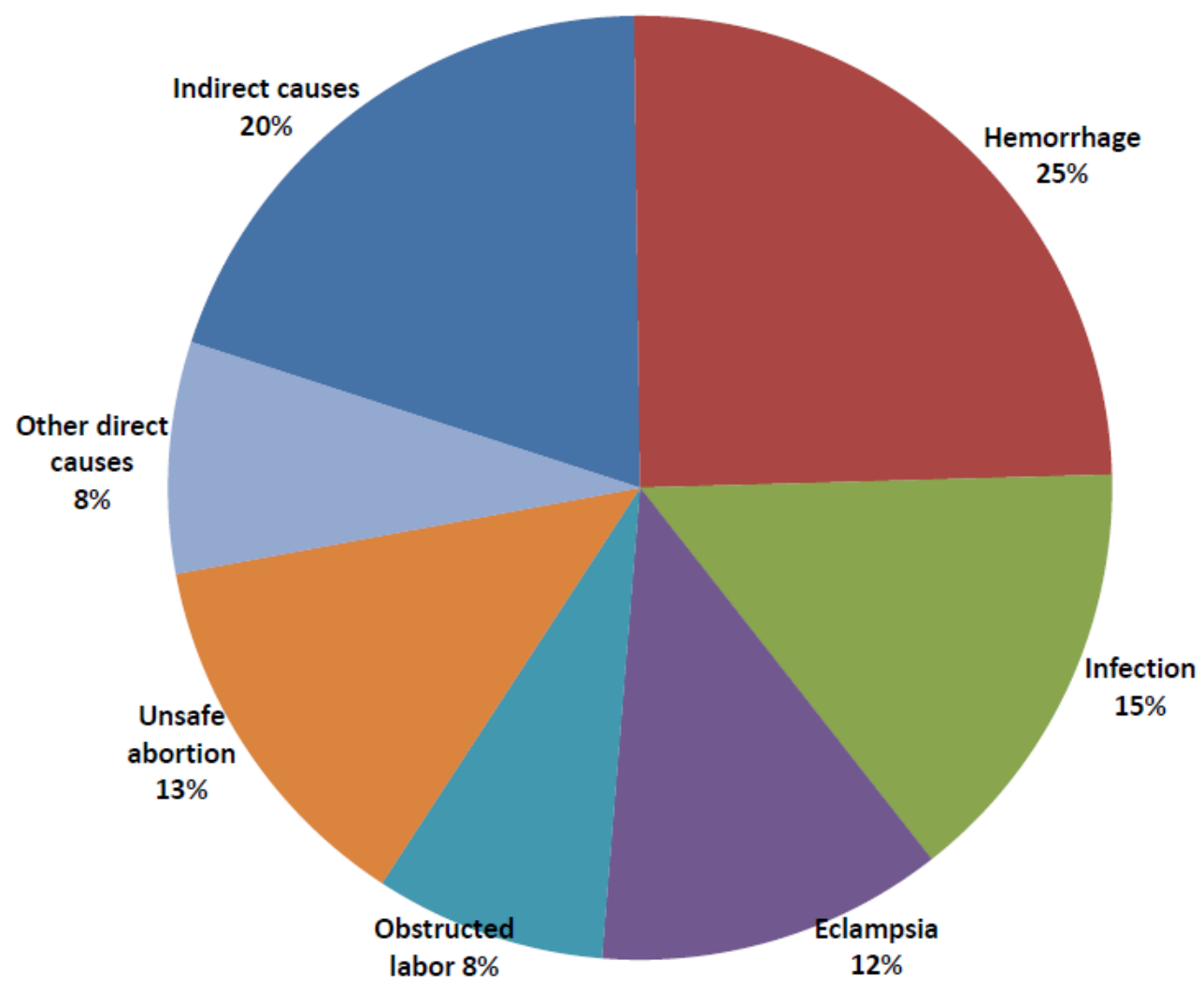
Maternal Mortality Indicators in Select Countries

Country or Region	Maternal Deaths per 100,000 live births ^[1]	Lifetime Risk of Maternal Death (1 in __) ^[2]	Country or Region	Maternal Deaths per 100,000 live births ^[1]	Lifetime Risk of Maternal Death (1 in __) ^[2]
World	400	92	Mid. East & N. Africa	210	140
Sub-Saharan Africa	920	22	Egypt	130	230
Angola	1400	12	Jordan	62	450
Botswana	380	130	Yemen	430	39
Burundi	1100	16	South Asia	500	59
Ethiopia	720	27	Bangladesh	570	51
Ghana	560	45	India	450	70
Guinea	910	19	East Asia & Pacific	150	350
Kenya	560	39	Papua New Guinea	470	55
Mozambique	520	45	Vietnam	150	280
Nigeria	1100	18	Lat. Amr. & Carib.	130	280
South Africa	400	110	Bolivia	290	89
Tanzania	950	24	Brazil	110	370
Uganda	550	25	Ecuador	210	170
Indust. Countries	8	8000	Guatemala	290	71
United Kingdom	8	8200	Peru	240	140
USA	11	4800			

^[1] WHO Maternal Mortality report, 2005

^[2] PRB Datafinder

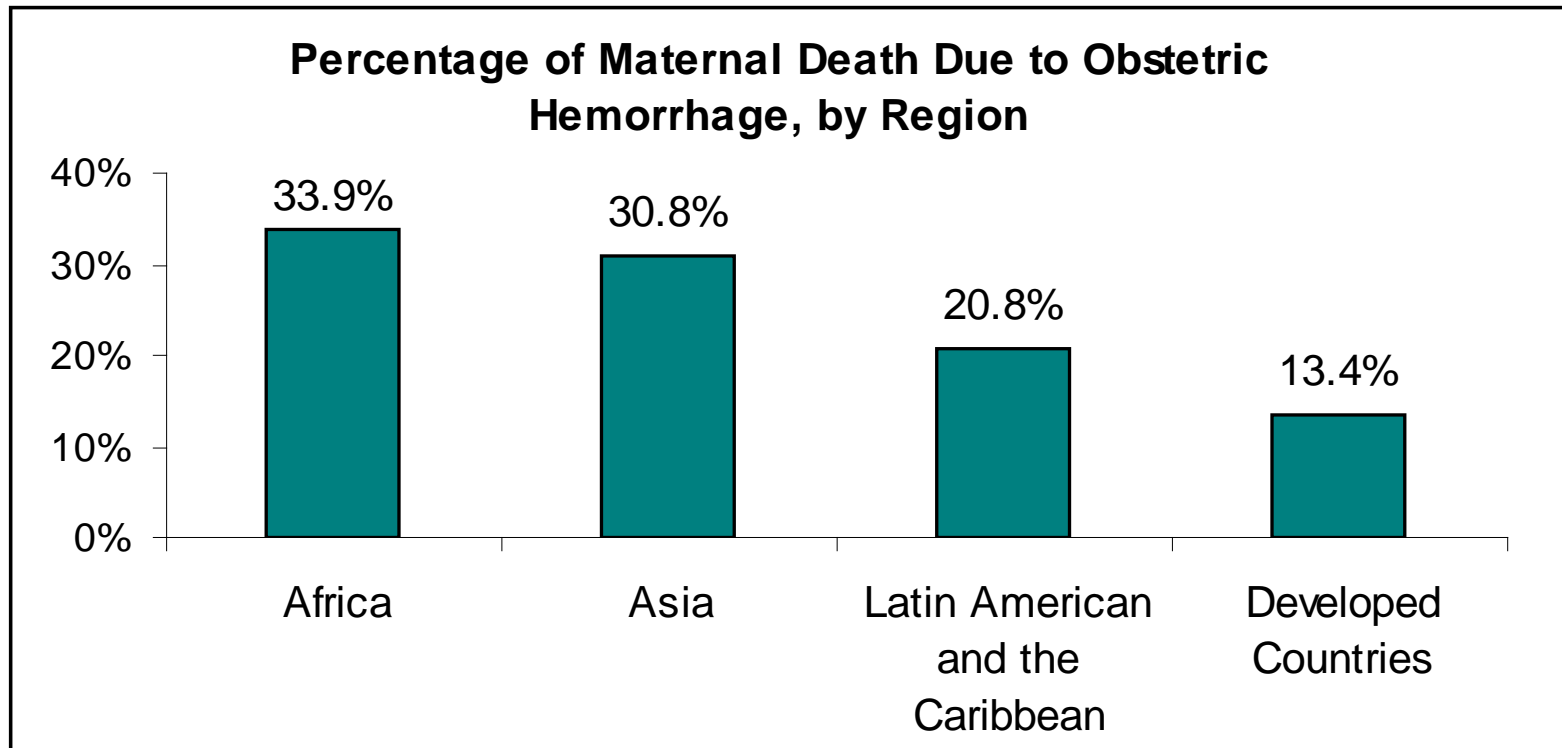
Causes of Maternal Death Worldwide



Source: WHO. The World Health Report 2005. Make Every Mother and Child Count. Geneva: World Health Organization, 2005.



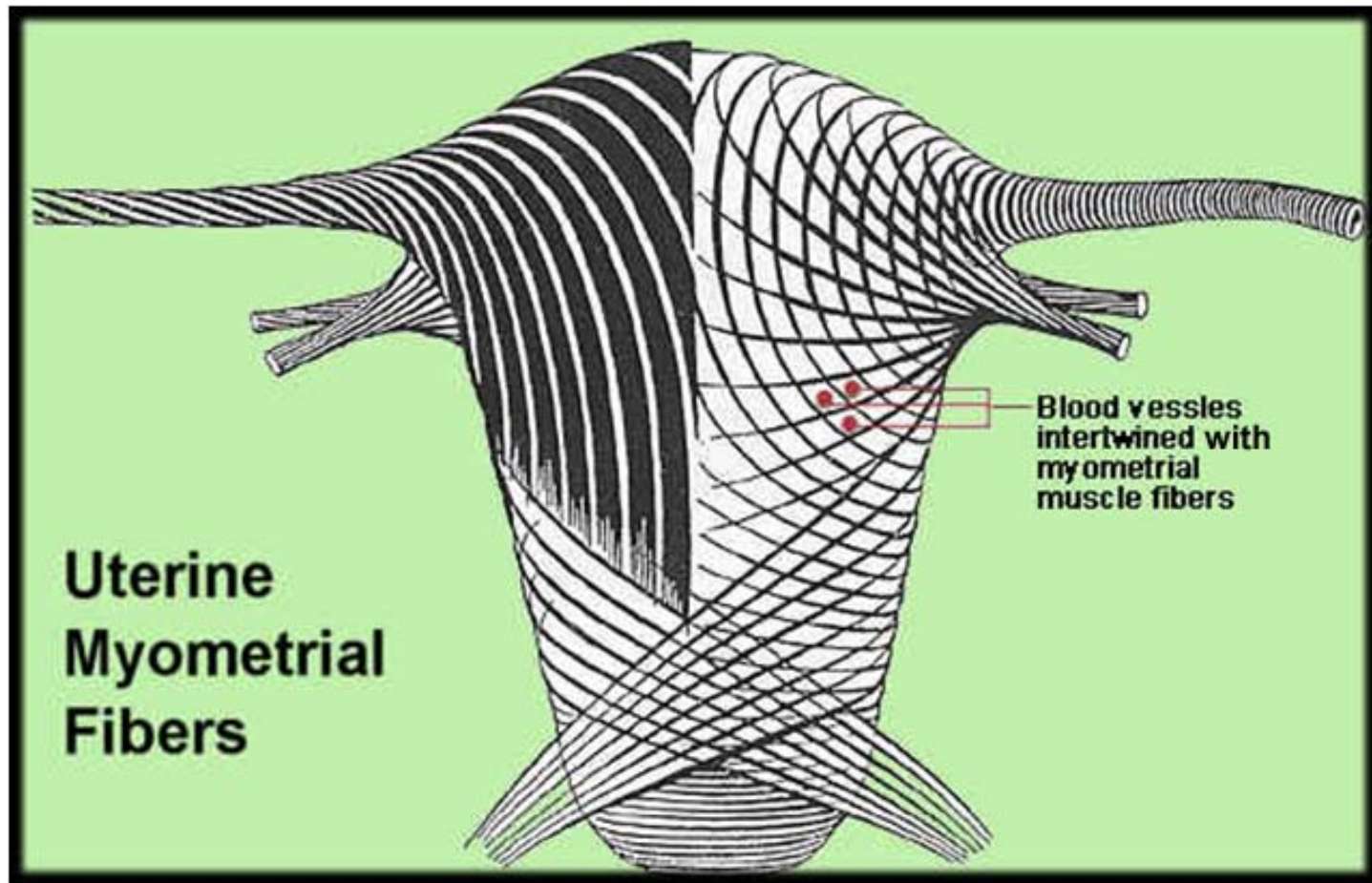
Percentage of Maternal Death Due to Obstetric Hemorrhage, by Region



The Pathfinder International Model for Clinical and Community Action to Address Postpartum Hemorrhage

1. **Advocacy:** to gain understanding and support for The Pathfinder International *Model for Clinical and Community Action to Address PPH* with: government officials, community leaders, and professional bodies or societies
2. **AMTSL:** for preventing PPH, including prophylactic use of standard oxytocics
3. **Early detection of hemorrhage:** by better estimation of blood loss
4. **Early fluid & uterotonic treatment of PPH:** to prevent hypovolemic shock
5. **Anti-shock garment:** to resuscitate and stabilize women in shock until comprehensive care for PPH and shock is available
6. **Treatment of shock:** with rapid replacement of blood volume
7. **Community organization of transport:** for rapid referral and safe transfer of obstetric emergencies to facilities that can treat PPH and shock

Anatomy and Physiology of the Uterus



The 4 T's of PPH

The 4 Ts of PPH

- **TONE** 70%
- **TRAUMA** 20%
- **TISSUE** 10%
- **THROMBIN** 1%

Source: Lynch, C.B., et al., eds. 2006. A textbook of postpartum hemorrhage: A comprehensive guide to evaluation, management, and surgical intervention. Dumfriesshire, UK: Sapiens Publishing.

Uterotonic Selection for Prevention of PPH

Uterotonic	Advantages/ Disadvantages	Doses for Prevention	Storage Requirements
<p>Oxytocin (IM injection)</p>	<ul style="list-style-type: none"> • Effective 2-3 minutes after injection. • Can only be given intramuscularly. • Can be used in all women. • Reduces length of third stage of labor. • Used ONLY after the delivery of the baby. • Minimal side effects. • Inexpensive. 	10 IU	<ul style="list-style-type: none"> • Store between 15C & 25C (59-77 F). • Delivery room stock may be kept at room temperature—30C— for up to one year with an expected loss of about 14 percent. • Light does not destabilize oxytocin.

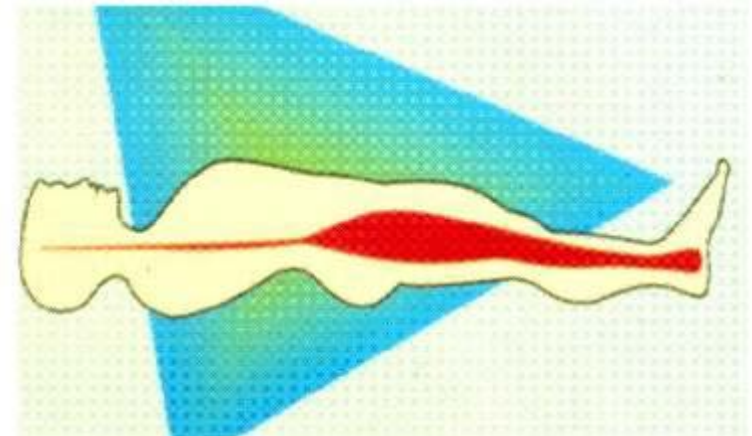
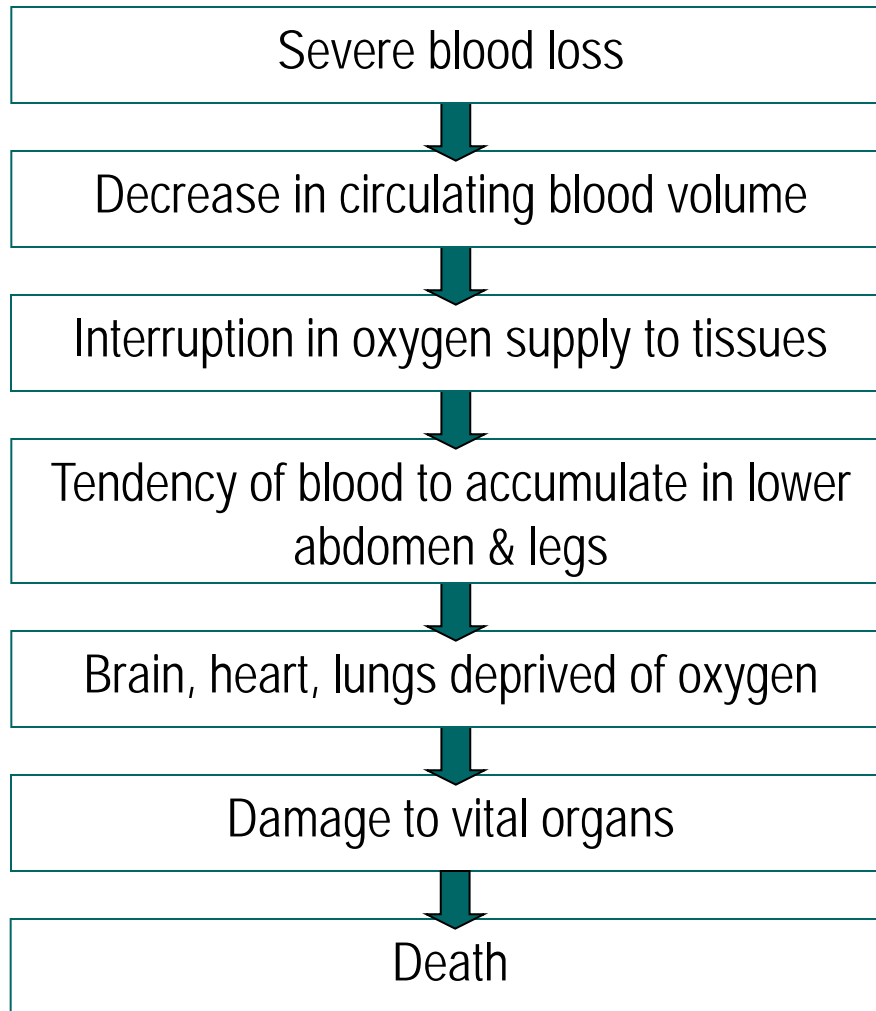
Uterotonic Selection for Prevention of PPH

Uterotonic	Advantages/ Disadvantages	Doses for Prevention	Storage Requirements
<p>Ergometrine (IM Injection)</p>	<ul style="list-style-type: none"> • Effective 6-7 minutes after injection. • Effects may last 2-4 hours. • Inexpensive. • Contraindicated in women with pre-eclampsia, eclampsia, and high blood pressure. • Can cause nausea and vomiting. • Requires stringent handling and storage conditions. 	<p>0.2mg-4mg (use local standards as dosage may range from 0.2 mg – 4 mg)</p>	<ul style="list-style-type: none"> • Store between 2 C – 8 C. • Protect from light and freezing. • Requires stringent handling and storage conditions.

Uterotonic Selection for Prevention of PPH

Uterotonic	Advantages/ Disadvantages	Doses for Prevention	Storage Requirements
Misoprostol (tablet)	<ul style="list-style-type: none"> • Effective 9-12 minutes after ingestion. • Shivering, nausea and elevated temperature. 	Oral or sublingual: 600µg Rectal: 800-1000µg	<ul style="list-style-type: none"> • Store at room temperature in a closed container.

How Hemorrhage Causes Shock, Morbidity, and Death



Slide A



Soiled Sanitary Towel

Slide B



Saturated Sanitary Towel

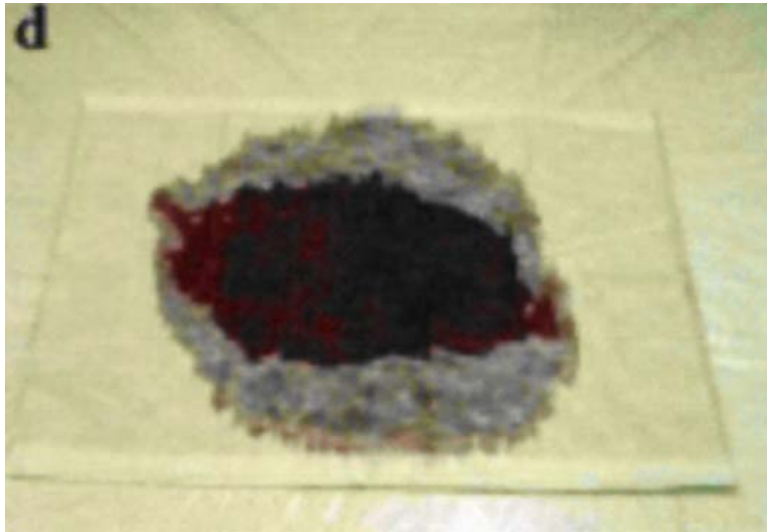
Adapted from: P. Bose, F. Regan, S. Paterson-Brown, Improving the accuracy of estimated blood loss at obstetric hemorrhage using clinical reconstructions. (London: British Maternal & Fetal Medicine Society, n.d.).

Slide C



Saturated Swab, 10cm x 10cm

Slide D



Incontinence Pad

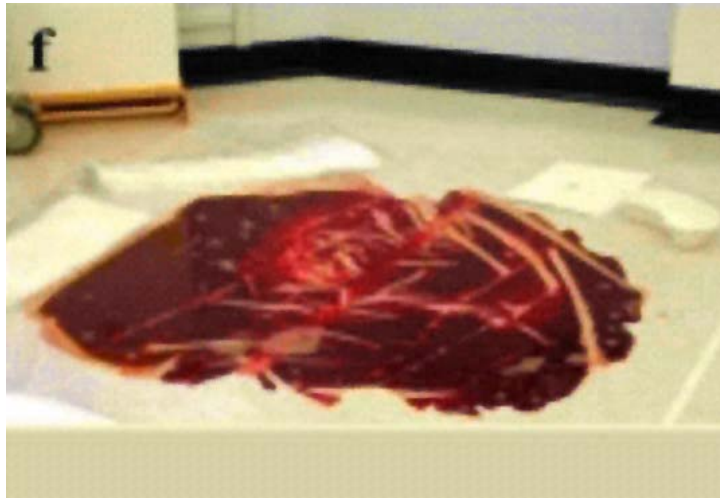
Adapted from: P. Bose, F. Regan, S. Paterson-Brown, Improving the accuracy of estimated blood loss at obstetric hemorrhage using clinical reconstructions. (London: British Maternal & Fetal Medicine Society, n.d.).

Slide E



Saturated Swab, 45cm x 45cm

Slide F



Floor Spill, 100cm Diameter

Slide G



Blood Spilling to Floor

Adapted from: P. Bose, F. Regan, S. Paterson-Brown, Improving the accuracy of estimated blood loss at obstetric hemorrhage using clinical reconstructions. (London: British Maternal & Fetal Medicine Society, n.d.).

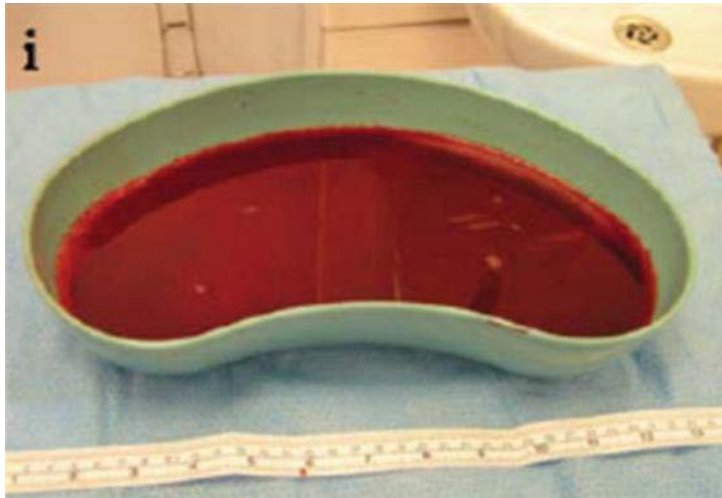
Slide H



Blood Spilling to Floor

Adapted from: P. Bose, F. Regan, S. Paterson-Brown, Improving the accuracy of estimated blood loss at obstetric hemorrhage using clinical reconstructions. (London: British Maternal & Fetal Medicine Society, n.d.).

Slide I



Full Kidney Dish

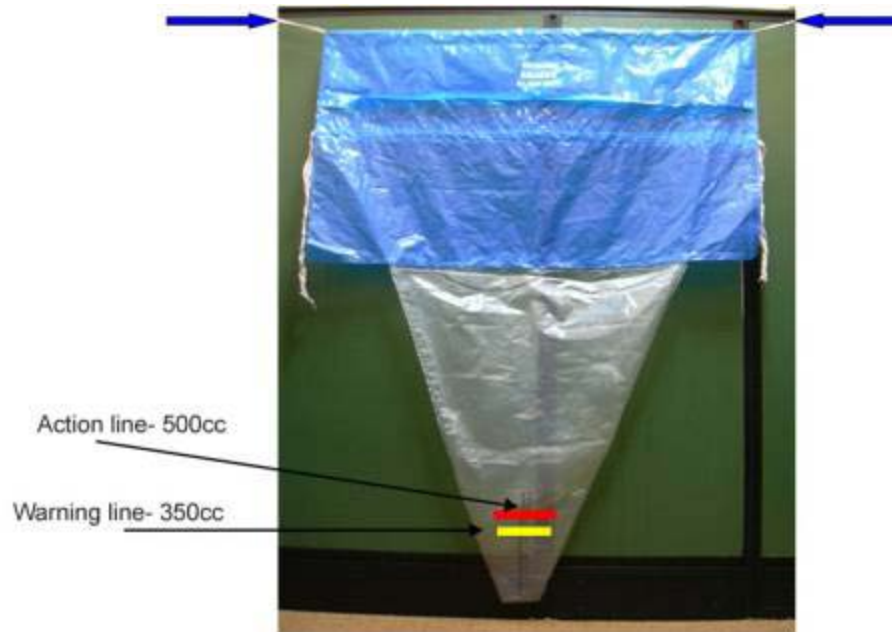
Adapted from: P. Bose, F. Regan, S. Paterson-Brown, Improving the accuracy of estimated blood loss at obstetric hemorrhage using clinical reconstructions. (London: British Maternal & Fetal Medicine Society, n.d.).

Answer Key



A	Soiled Sanitary Towel	30ml
B	Saturated Sanitary Towel	100ml
C	Swab, 10cm X 10cm	60ml
D	Incontinence Pad	250ml
E	Swab, 45cm x 45cm	350ml
F	Spill, 100cm Diameter	500ml
G	Spill to Floor (1)	1000ml
H	Spill to Floor (2)	2000ml
I	Full Kidney Dish	500ml

Blood Collection Drape



Using the Blood Collection Drape

Deliver the baby, clamp and cut the cord

Place rectangular portion of drape under buttocks with funnel portion hanging over the edge of table or lying flat on bed or floor

Tie blood drape around women at 2 places (waist & hips)

Place thick, rolled towel or cloth underneath the woman's shoulder blades to lift torso and help downward flow of blood

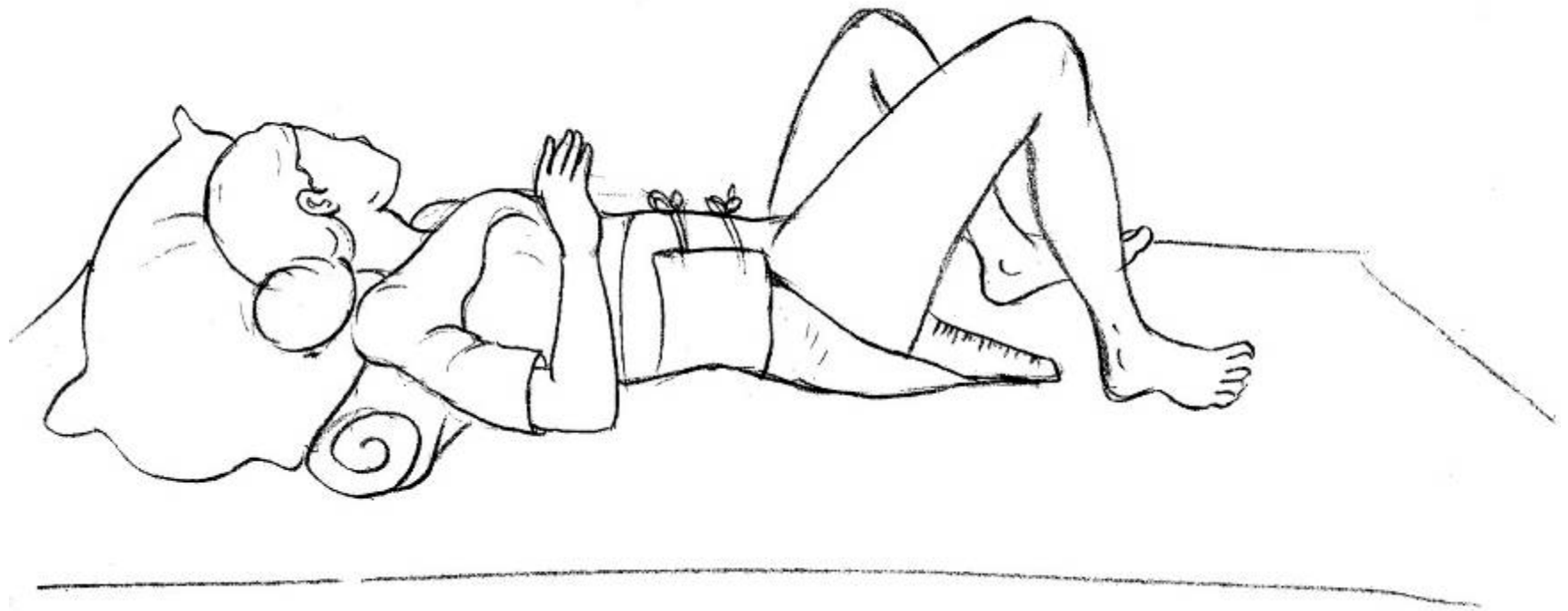
Push all blood into the bag using gloved hand

Assess blood loss by looking at amount of blood collected in funnel

Hold up the bag with both hands to see amount of blood lost

Do not remove drape to assess blood loss

Correct Placement of the Blood Collection Drape



The Blood Collection Drape in Use



Measuring Blood Collected in the Funnel



Decontaminate in 0.05% Bleach Solution for 10 Minutes



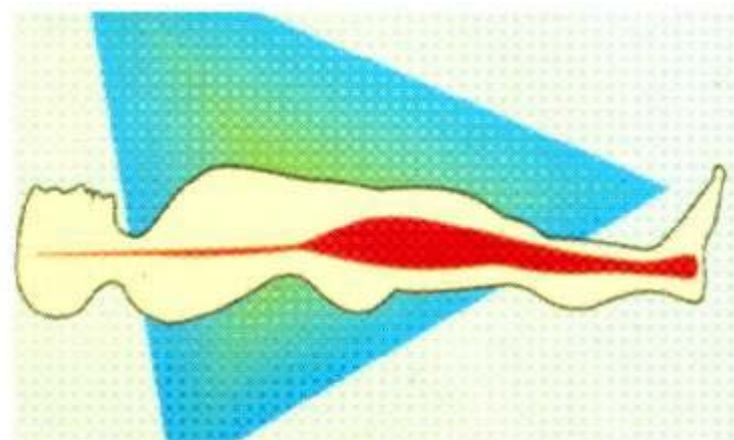
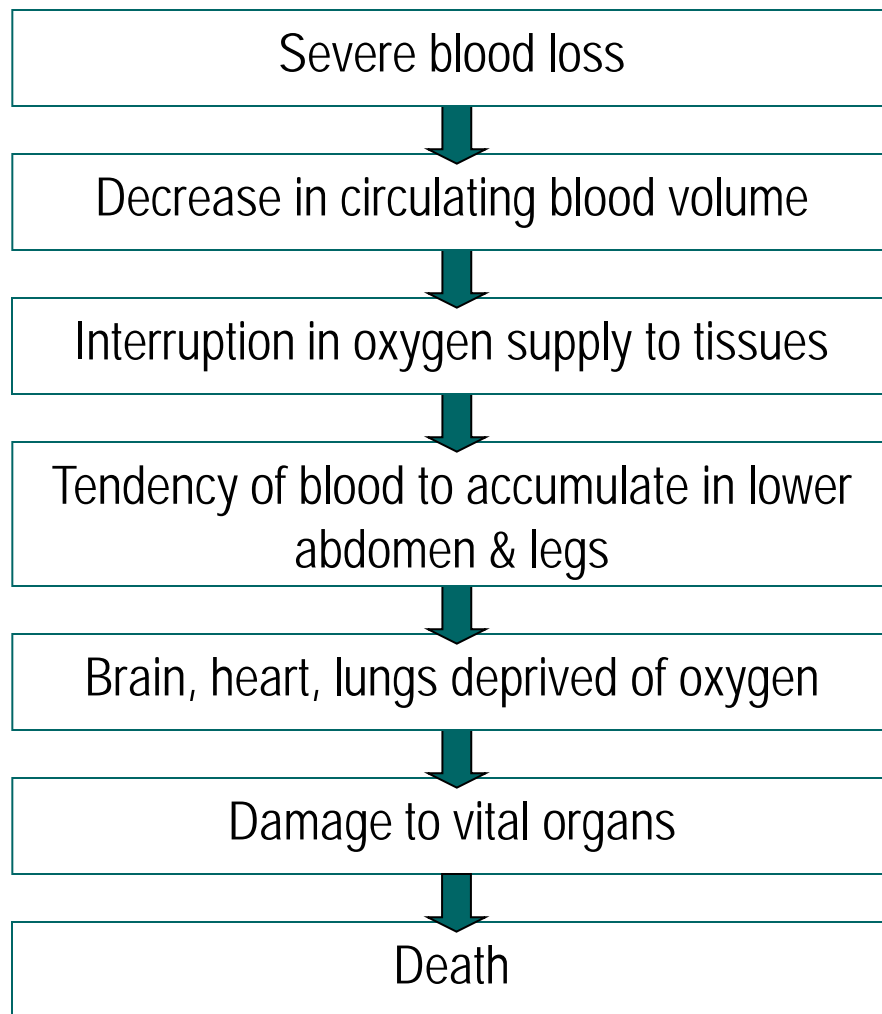
Clean with Soap and Water



Hang the Blood Drape to Dry in the Sun



How Hemorrhage Causes Shock, Morbidity, and Death



Uterotonics Used for Treatment of PPH

Uterotonic	Advantages/ Disadvantages	Doses for Treatment	Storage Requirements
<p>Oxytocin (IM injection or IV)</p>	<ul style="list-style-type: none"> • Effective 2-3 minutes after injection. • Can only be given IV or IM. • Can be used in all women. • Minimal side effects, but is an anti-diuretic so can cause fluid intoxication/ water toxicity if high does given with large volumes of fluid. • Inexpensive. • Causes physiological contractions. 	<ul style="list-style-type: none"> • 10-20 IU IM initially • If possible, start IV with 20-40 IU in 1000 ml crystalloid fluids (10-20 IU in 500 ml) • Can give subsequent IVs of crystalloid with 10-20U in 1000 ml (5-10 IU in 500 ml) • Run at 150/ml/hour 	<ul style="list-style-type: none"> • Store between 15C & 25C.(59-77 F). • Delivery room stock may be kept at room temperature—30C—for up to one year with an expected loss of about 14 percent. • Light does not destabilize oxytocin

Uterotonics Used for Treatment of PPH

Uterotonic	Advantages/ Disadvantages	Doses for Treatment	Storage Requirements
Ergometrine (IM Injection)	<ul style="list-style-type: none"> • Effective 2-5 minutes after injection. • Causes sustained contraction • Effects may last 2-4 hours. • Inexpensive. • Contraindicated in women with pre-eclampsia, eclampsia, and high blood pressure. • Can cause nausea and vomiting. • Requires stringent handling and storage conditions. 	0.2mg-4mg (use local standards)	<ul style="list-style-type: none"> • Store between 2 C – 8 C. • Protect from light and freezing. • Requires stringent handling and storage conditions.

Uterotonics Used for Treatment of PPH

Uterotonic	Advantages/ Disadvantages	Doses for Treatment	Storage Requirements
Misoprostol (Tablet)	<ul style="list-style-type: none"> • Effective 9-12 minutes after ingestion. • Shivering, nausea and elevated temperature. 	600 µg orally or sublingually 800-1000 µg rectally	<ul style="list-style-type: none"> • Store at room temperature in a closed container.

Decision Making and Action Depending on Place of Delivery

Extent of blood loss	Place of delivery		
	Where resuscitation/PPH management not available	Where only resuscitation/PPH management available	Where surgical interventions available
>350 ml in first hour after delivery	<ul style="list-style-type: none"> Continuously provide all measures at hand to stop bleeding: put baby to breast, uterine massage, bimanual compression. Continue to assess symptoms and vital signs. Preparations to transfer the woman to a higher facility if retained placenta or trauma or heavy bleeding continues. 	<ul style="list-style-type: none"> In addition, start an I/V drip with 20 units Oxytocin in 1000 ml at 40 drops/minute. Give appropriate uterotonic based on past history. Prepare to transfer the woman to a higher facility if retained placenta or trauma or heavy bleeding continues. 	<ul style="list-style-type: none"> In addition, explore cause of bleeding- atony, retained placenta/POC's, trauma, coagulopathy, etc. and take appropriate action in labor room or theatre.
>500 ml in first 2 hours after delivery	<ul style="list-style-type: none"> Refer and immediately transport the woman to a facility that can treat her for PPH. Provide details of treatment given. 	<ul style="list-style-type: none"> Start above treatment Refer and immediately transport the woman if she requires higher level intervention at a facility that can treat her for PPH. Provide details of treatment given. 	

Principles of Safe Transfer

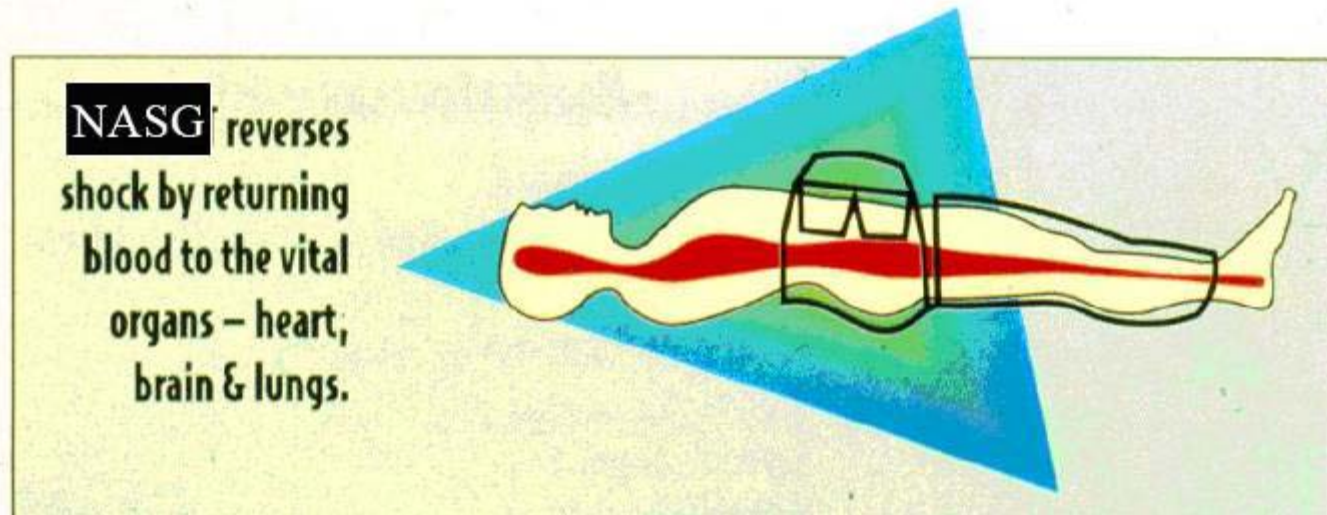
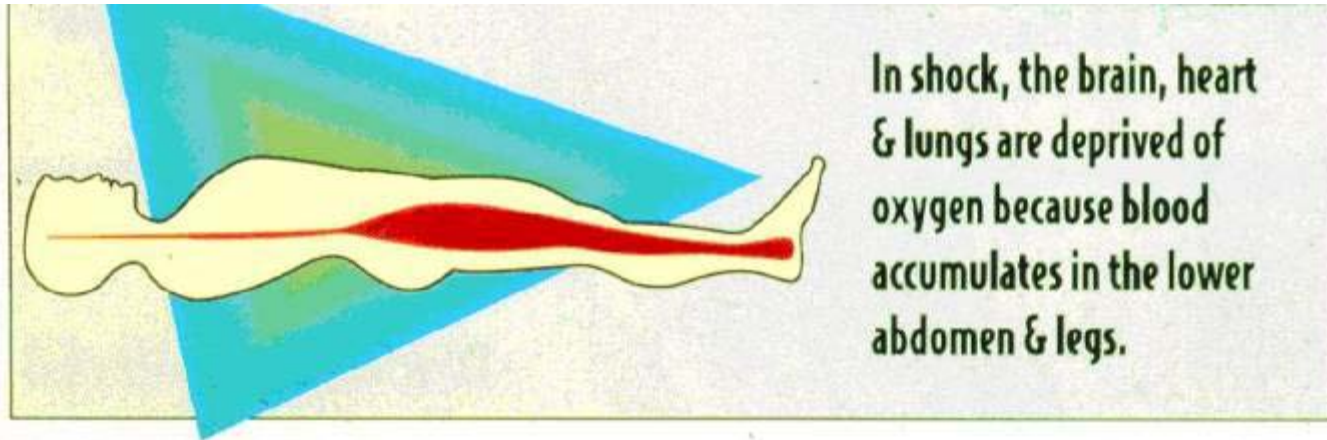
To achieve safe transfer, the patient has to be transferred:

- At the right time,
- By the right people,
- To the right place,
- With the right care throughout.

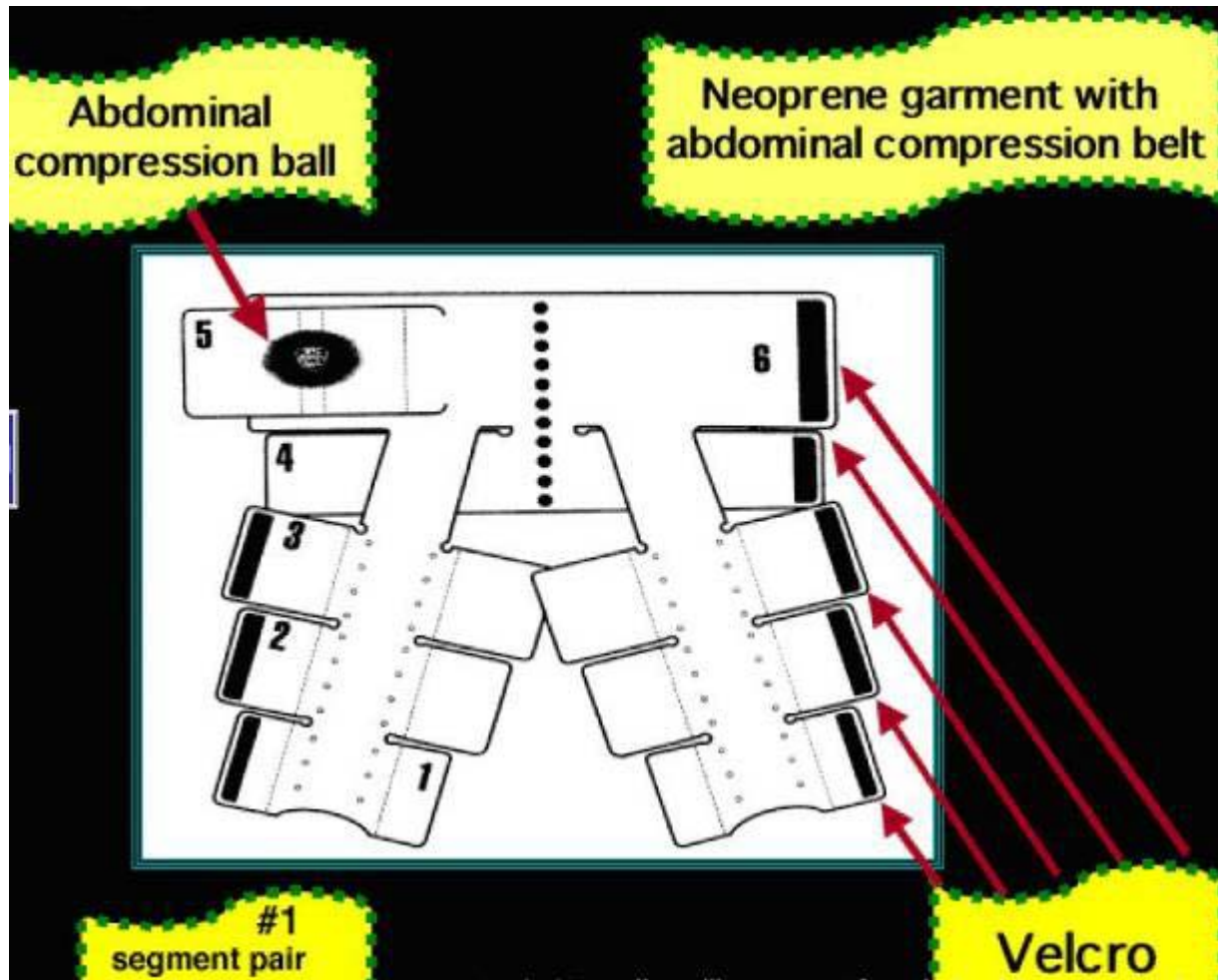
A Woman in the NASG



How the NASG Protects a Woman in Hypovolemic Shock



Components of the NASG



Applying the NASG

Place the NASG under the woman with the top edge at the level of her lowest rib (on her side)

Close segment 1 tightly around each ankle and make sure that when snapped, a sharp sound is heard

Close segment 2 tightly around calf. Check for snap sound. Leave the knee free so that the leg can be bent

Close segment 3 tightly around thigh. Check for snap sound.

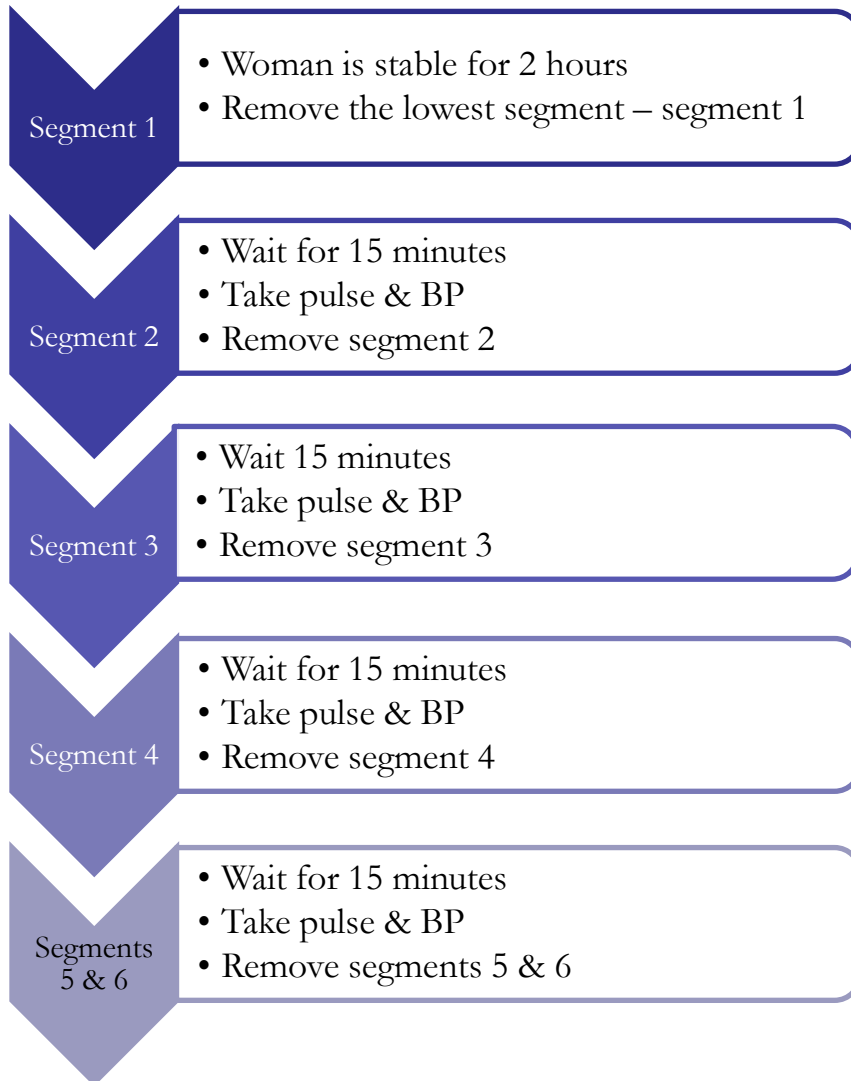
Place segment 4 so it goes around the woman with its lower edge at the level of her pubic bone

Place segment 5 with pressure ball directly over the umbilicus

Close the NASG using segment 6

Make sure the woman can breathe normally with segment 6 in place

Removing the NASG

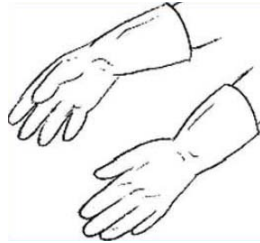


Avoiding Adverse Events When Using the NASG

- One person should apply the pelvic and abdominal sections of the NASG.
- Urine output should be monitored.
- Ensure airway protection and aspiration prevention as required.
- Ensure one-on-one nursing care.
- Ensure presence of a relative/support person with the unconscious patient, ready to explain the garment when patient returns to consciousness.
- Never open the abdominal panel first.

Cleaning the NASG

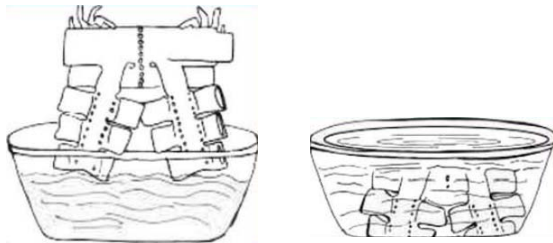
1. Put on gloves



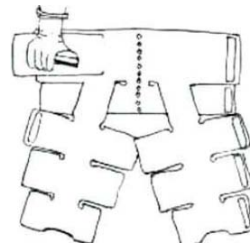
2. Mix bleach solution



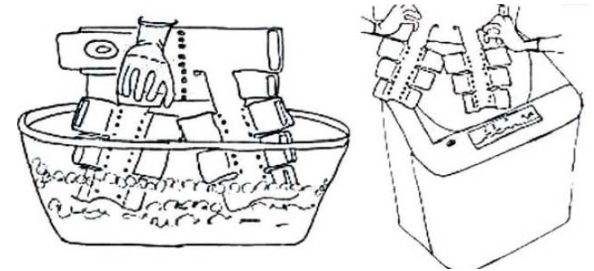
3. (a) Immerse NASG
(b) Soak in bleach 10 mins.



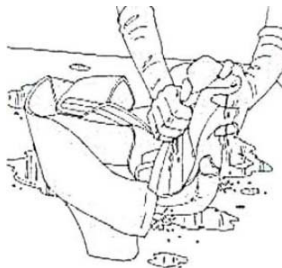
4. Scrub



5. Wash



6. Squeeze



7. Dry

