

TRAINER'S GUIDE

Prevention, Recognition, and Management of Postpartum Hemorrhage

Clinical and Community Action to Address Postpartum Hemorrhage

- 1** Introduction
- 2** Causes of PPH and Introduction to Pathfinder's Model for Clinical and Community Action to Address PPH
- 3** Preventing PPH through the Active Management of the Third Stage of Labor (AMTSL)
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- 5** Treating PPH and Uterine Atony
- 6** Non-Pneumatic Anti-Shock Garment (NASG)
- 7** Data Collection and Record Keeping
- 8** Community Mobilization



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Trainer's Guide

Pathfinder International

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Prevention and Management of Postpartum Hemorrhage

Introduction

This curriculum is intended to train health care professionals in the skills and techniques necessary to implement a comprehensive continuum of care approach to preventing and managing postpartum hemorrhage (PPH). This includes developing facility and community services that can be accessed quickly by a woman experiencing PPH, her family, and/or by community-level or primary health center caregivers, ensuring that a woman with PPH enters an established referral system in a timely manner and moves up rapidly through the health system to the highest level necessary.

The four components of the continuum of care for PPH are:

1. Prevention of PPH using active management of third stage of labor (AMTSL), including administration of a uterotonic (oxytocin is the uterotonic of choice, misoprostol where other, injectable uterotonics are not available or viable);
2. Early diagnosis of PPH by visual estimation of blood loss and by use of the blood drape where available and permitted;
3. Application of the non-pneumatic anti-shock garment (NASG) to women suffering hypovolemic shock from obstetric hemorrhage. The NASG reverses shock and stabilizes bleeding until the woman can reach a facility where she can be effectively managed (note: the NASG does not prevent shock and should not be placed on women who are not in shock); and
4. Improved communication and the development of systems to transport women in need of emergency obstetric care.

The continuum of care model involves coordinated efforts across different levels of the health care system to ensure that recognition of symptoms occurs and necessary action is taken in an effective and timely manner.

Although many components of this training manual are not intended to advance the skills of unskilled providers, the continuum of care model includes working closely with community stakeholders, including unskilled providers, on early identification of danger signs, prompt referral, and the establishment of transportation systems.

Notes to the Trainer

Purpose

This training manual was developed to train physicians, nurses, midwives, and community-based health care providers (including community health workers and skilled birth attendants). It is designed to actively involve the participants in the learning process. Sessions include simulation skills practice, discussions, case studies, role plays and clinical practice, using objective knowledge, attitude, and skills checklists. This manual is meant to support the strengthening of a system for prevention, recognition and management of PPH.

At the end of this course, the participant will be able to: describe the model for clinical and community action to address postpartum hemorrhage; explain basic strategies for avoiding the four delays leading to maternal mortality; demonstrate the active management of the third stage of labor (AMTSL); discuss the guidelines for the administration and storage of uterotonics to prevent and treat PPH; demonstrate the blood drape and other techniques for accurate estimation of blood loss (including visual estimation) for early diagnosis of PPH; demonstrate the application and removal of the NASG and management of hypovolemic shock patients; demonstrate proper care of the blood drape and NASG, including infection prevention, folding, and storing; review the latest guidelines for early diagnosis and management of preeclampsia and eclampsia; and compare record keeping and data collection tools appropriate for implementing a continuum of care to address PPH.

The manual includes a set of knowledge assessment questions, competency-based skills checklists, trainer resources, participant materials, training evaluation tools, and a bibliography. An enclosed CD-ROM contains PowerPoint presentation slides and video clips to be presented to participants.

This curriculum assumes participants already possess competency in essential newborn care and management of eclampsia and preeclampsia, or can gain that capacity elsewhere. Elements of newborn care and eclampsia are mentioned throughout this curriculum, however they are not discussed comprehensively and are not included among the objectives of this training program.

Guide To Symbols

References to participant handouts and PowerPoint slides occur as both text and symbols in the *Methodology* section. The symbols have number designations that refer to specific objectives and the sequence within the specific objectives. Handouts and slides are arranged in chronological order and correspond to the numbered symbols in the *Methodology* section.

Slide



Participant Handout



Suggestions for Use of the Training Manual

This manual is designed to provide flexibility in planning, conducting, and evaluating the training course. The manual is designed to allow trainers to formulate their own training schedule, based on results from training needs assessments and time constraints. The manual can be adapted for different cultures by reviewing case studies and using only the ones that are appropriate. Additional case studies can be devised based on local statistics, cultural practices, social traditions, and local health issues.

The curriculum can also be lengthened or shortened depending on the level of training and expertise of the participants. The timing of each exercise assumes that there will be no more than 20 participants. To foster changes in behavior, learning experiences must be in the areas of knowledge, attitudes, and skills. For each session, the unit training objective and specific learning objectives are presented in terms of achievable changes in these three areas. Training references and resource materials for trainers and participants are identified.

This module is divided into two volumes, a *Trainer's Guide* and *Participant's Manual*. The Trainer's Guide contains the main portion as well as a *Trainer's Tools* section, which contains options for ice breakers and pre- and post-test answer keys. The Trainer's Guide presents the information in two columns:

1. *Content*: This column contains the necessary technical information.
2. *Learning Methodology*: This column contains the training methodology (lecture, role play, discussion, etc.) by which the information should be conveyed and the time required to complete each activity.

The *Participant's Manual* contains:

- Participant handouts covering all training content
- Pre- and post-tests (participant copies)
- Participant evaluation form

The *Participant Handouts* are referred to in the *Methodology* sections of the curriculum and include a number of different materials and exercises, ranging from recapitulations of the technical information from the content of the module, to role play descriptions, skills checklists, and case studies.

The *Participant Handouts* should be photocopied for the trainees and distributed to them at appropriate moments during the training, usually after content is covered but in advance if the handouts are needed for an exercise. Participants should keep handouts in a folder or binder to ensure that handouts remain together as a technical resource after the training course has ended. The *Participant Evaluation Form* should also be copied to receive the trainees' feedback in order to improve future training courses. The *Methodology* section is a resource for trainers for the effective use of demonstration/return demonstration in training.

To ensure appropriate application of learning from the classroom setting to clinical practice, clinical practicum sessions are an important part of this training. Refer to Pathfinder's *Infection Prevention* training module for thorough information on necessary infection prevention procedures. Additional guidance on planning, conducting, and evaluating training can be found in Pathfinder's Advanced Training of Trainers module. These and other Pathfinder curricula are available for download on Pathfinder's website, www.pathfind.org.

For consistency in the philosophy of client's rights, the following should be shared with participants, in preparation for their clinical practicum experiences (see following page).

Client's Rights During Clinical Training

The rights of the client to privacy and confidentiality should be considered at all times during a clinical training course. When a client is undergoing a physical examination it should be carried out in an environment in which her right to bodily privacy is respected. When receiving counseling, undergoing a physical examination, or surgery, the client should be informed about the role of each individual inside the room (e.g., service provider, individuals undergoing training, supervisors, instructors, researchers, etc.).

The client's permission must be obtained before having a clinician-in-training observe, assist with, or perform any services. The client should understand that she has the right to refuse care from a clinician-in-training/participant. Furthermore, a client's care should not be rescheduled or denied if she does not permit a clinician-in-training to be present or provide services. In such cases, the clinical trainer or other staff member should perform the procedure. Finally, the clinical trainer should be present during any client contact in a training situation.

Clinical trainers must be discreet in how coaching and feedback are given during training with clients. Corrective feedback in a client situation should be limited to errors that could harm or cause discomfort to the client. Excessive negative feedback can create anxiety for both the client and clinician-in-training.

The confidentiality of any client information obtained during history-taking, physical examinations or procedures must be strictly observed. Clients should be reassured of this confidentiality. It can be difficult to maintain strict client confidentiality in a training situation when specific cases are used in learning exercises such as case studies and clinical conferences. Such discussions always should take place in a private area, out of hearing of other staff and clients, and be conducted without reference to the client by name.

Clients should be chosen carefully to ensure that they are appropriate to participate in clinical training. For example, until participants are proficient in performing the procedure, they should not practice with hostile clients. Clients have the right to comfort during clinical training. They have the right to feel comfortable during the time they are receiving services. It is the responsibility of clinical trainers to ensure that clinicians-in-training do not cause additional discomfort.

Demonstration Technique

The Five-Step Method of Demonstration and Return Demonstration is a training technique useful in the transfer of skills. The technique is used to ensure participants become competent in certain skills. It can be used to develop skills in cleaning soiled instruments, high-level disinfection, intrauterine device insertion, pill dispensation, performing a general physical examination, performing a breast or pelvic examination, etc. In short, it can be used for any skill which requires a demonstration. The following are the five steps:

- 1. Overall Picture:** Provide participants with an overall picture of the skill you are helping them develop and a skills checklist. The overall picture should include why the skill is necessary, who needs to develop the skill, how the skill is to be performed, etc. Explain to the participants that these necessary skills are to be performed according to the steps in the skills checklist on models in the classroom. The skills should be practiced until participants become proficient in each skill and before they perform them in a clinical situation.
- 2. Trainer Demonstration:** The trainer should demonstrate the skill while giving verbal instructions. If an anatomical model is used, a participant or co-trainer should sit at the head of the model and play the role of the client. The trainer should explain the procedure and talk to the role-playing participant as she or he would to a real client.
- 3. Trainer/Participant Talk-Through:** The trainer performs the procedure again while the participant verbally repeats the step-by-step procedure. **Note: The trainer does not demonstrate the wrong procedure at any time. The remaining participants observe the learning participant and ask questions.**
- 4. Participant Talk-Through:** The participant performs the procedure while verbalizing the step-by-step procedure. The trainer observes and listens, making corrections when necessary. Other participants in the group observe, listen, and ask questions.
- 5. Guided Practice:** In this final step, participants are asked to form pairs. Each participant practices the demonstration with her or his partner. One partner performs the demonstration and talks through the procedure while the other partner observes and critiques using the skills checklist. The partners should exchange roles until both feel competent. When both partners feel competent, they should perform the procedure and talk-through for the trainer, who will assess their performance using the skills checklist.

Overview of Training Plan

This curriculum is designed for presentation at a single location with up to 20 participants. The training is designed for easy adaptation to reach health care professionals with diverse backgrounds and responsibilities. The curriculum can accommodate community-level health workers, including community midwives, skilled birth attendants, emergency care nursing and medical staff, as well as higher-level facility-based providers. Ideally, participants in each training course should come from several cadres of health care professionals, to encourage teamwork in management across the continuum of care.

Training Objectives

The table below outlines training objectives pertinent to each cadre of participants. The trainer should review the table according to the participant profile for each class and adjust the training plan accordingly. Only objectives appropriate to each cadre of participants should be presented.

Participants	Key training objectives
Health workers at community/village level, including community midwives and skilled birth attendants	<ul style="list-style-type: none"> ➤ Early recognition of symptoms of PPH, including knowledge and skill development of visual estimation of blood loss (including use of blood drape where available/approved) ➤ Understanding use and protocols for application, removal, maintenance, and cleaning of the non-pneumatic anti-shock garment (NASG) ➤ Knowledge of and skill development for protocols for managing patient care at outreach posts and transportation of patients to the nearest equipped facility ➤ Learning approaches to developing community response to minimize delays ➤ Use of AMTSL for prevention of PPH
Facility-based nursing staff	<ul style="list-style-type: none"> ➤ Skills of AMTSL ➤ Skills to replace fluids and prevent shock ➤ Understanding use and protocols for application, maintenance, removal, and storage of the NASG ➤ Knowledge and skill development of emergency care protocols for a PPH patient, in general, and for a PPH patient arriving at facility in an NASG ➤ Knowledge for counseling family members and other care givers

Participants	Key training objectives
Facility-based medical staff	<ul style="list-style-type: none"> ➤ Knowledge of AMTSL ➤ Understanding use and protocols for application, maintenance, and removal of the NASG ➤ Knowledge and skill development of emergency care protocols for a PPH patient, in general, and for a PPH patient arriving at facility in an NASG ➤ Knowledge of managing surgical procedures with patient in an NASG
Anesthetist	<ul style="list-style-type: none"> ➤ Knowledge of AMTSL ➤ Knowledge and skill development of emergency care protocols for utilizing anesthesia for a PPH patient, in general and for a PPH patient arriving at facility in an NASG when NASG is removed for surgical intervention
Facility housekeeping staff	<ul style="list-style-type: none"> ➤ Knowledge and skills protocols to decontaminate, clean, fold and store blood drape and NASG correctly
Ambulance drivers	<ul style="list-style-type: none"> ➤ Knowledge and skill development for protocols to transport PPH patients in general and for PPH patients in an NASG. ➤ Knowledge areas to include managing shift of patient from outreach location onto ambulance, patient management en route, and transfer of patient into facility

Time Required:

Unit	Topics	Time
1	Introduction	2 hours, 30 min.
2	Causes of PPH and Introduction to the Pathfinder International Model for Clinical and Community Action to Address PPH	1 hour, 45 min.
3	Preventing PPH through the Active Management of the Third Stage of Labor (AMTSL)	4 hours, 15 min.
4	Early Detection of PPH	2 hours, 45 min.
5	Treating PPH and Uterine Atony	4 hours, 30 min.
6	The Non-Pneumatic Anti-Shock Garment (NASG)	4 hours, 45 min.
7	Data Collection and Record Keeping	1 hour, 45 min.
8	Community Mobilization	4 hours, 45 min.
	Approximate Classroom Time Required	27 hours

Theoretical training: Approximately 27 hours

Clinical practicum: Varies depending upon participants' number and experience.

Sample Training Agenda

The professional background of the providers participating will shape the final agenda for each training, as units may need to be omitted or activities prolonged in order to meet participants' needs and objectives. The sample training agenda below assumes all units and activities will be taught. In addition to this schedule, the trainer will need to schedule a short practicum in AMTSL at a local facility, and build in additional time for participants to debrief together after they complete the practicum (see page 48).

Day 1

Activity	Time
Unit 1	9:00-10:25
Tea break	10:25-10:40
Unit 1, continued	10:40-11:45
Unit 2	11:45-12:10
Lunch break	12:10-13:10
Unit 2, continued	13:10-14:30
Tea break	14:30-14:45
Unit 3	14:45-16:00
Reflections	16:00-16:15

Day 2

Activity	Time
Where are we?	9:00-9:15
Unit 3, continued	9:15-10:15
Tea break	10:15-10:30
Unit 3, continued	10:30-12:30
Lunch break	12:30-13:30
Unit 4	13:30-15:00
Tea break	15:00-15:15
Unit 4, continued	15:15-16:30
Reflections	16:30-16:45

Day 3

Activity	Time
Where are we?	9:00-9:15
Unit 5	9:15-10:45
Tea break	10:45-11:00
Unit 5, continued	11:00-12:30
Lunch break	12:30-13:30
Unit 5, continued	13:15-15:00
Reflections	15:00-15:15

Day 4

Activity	Time
Where are we?	9:00-9:15
Unit 6	9:15-11:15
Tea break	11:15-11:30
Unit 6, continued	11:30-12:45
Lunch break	12:45-13:45
Unit 6, continued	13:45-15:15
Reflections	15 min.

Day 5

Activity	Time
Where are we?	9:00-9:15
Unit 7	9:15-11:00
Tea break	11:00-11:15
Unit 8	11:15-12:30
Lunch break	12:30-13:30
Unit 8, continued	13:30-15:00
Tea break	15:00-15:15
Post-test & evaluation	15:30-16:15

Dos and Don'ts of Training

The following “dos and don'ts” should ALWAYS be kept in mind by the trainer during any learning session.

Dos

- Do maintain good eye contact.
- Do prepare in advance.
- Do involve participants.
- Do use visual aids.
- Do speak clearly.
- Do speak loud enough.
- Do encourage questions.
- Do recap at the end of each session.
- Do bridge one topic to the next.
- Do encourage participation.
- Do write clearly and boldly.
- Do summarize.
- Do use logical sequencing of topics.
- Do use good time management.
- Do K.I.S. (Keep It Simple).
- Do give feedback.
- Do position visuals so everyone can see them.
- Do avoid distracting mannerisms and distractions in the room.
- Do be aware of the participants' body language.
- Do keep the group focused on the task.
- Do provide clear instructions.
- Do check to see if your instructions are understood.
- Do evaluate as you go.
- Do be patient.

Don'ts

- Don't talk to the flipchart.
- Don't block the visual aids.
- Don't stand in one spot—move around the room.
- Don't ignore the participants' comments and feedback (verbal and non-verbal).
- Don't read from curriculum.
- Don't shout at participants.

UNIT 1: Introduction

Introduction:

Unit 1 introduces participants, trainer(s), key terms related to PPH and used in the curriculum, and establishes training norms and procedures.

Unit Training Objective:

To facilitate trainer assessment of participants' knowledge and to establish the proper setting for effective learning.

Specific Learning Objectives:

By the end of the unit, participants will be able to:

- Introduce trainers and participants to each other and define terminology related to postpartum hemorrhage;
- Discuss expectations, purpose, and agenda of training;
- Establish training norms;
- Introduce daily review exercises “Where are We?” and “Reflections;” and
- Complete the pre-test.

Training/Learning Methodology:

- Trainer presentation
- Discussion
- Brainstorming

Resource Requirements:

- Computer, LCD projector, and screen or white wall
- Flipchart or whiteboard
- Marking pens
- Name tags
- Registration form
- Sign-up sheet for housekeeping teams

Evaluation Methods:

- Continuous assessment of objectives being learned
- Question/answer during session
- Pre- and Post-Tests

Time Required:

Specific Objective	Topic	Time
1	Introduce trainers and participants to each other and define terminology related to PPH.	30 min.
2	Discuss expectations, purpose, and agenda of training.	40 min.
3	Discuss training norms.	15 min.
4	Describe daily review exercises “Where are We?” and “Reflections.”	20 min.
5	Complete the pre-test.	45 min.
	Total Time Required	2 hours, 30 min.

Materials for Trainers to Prepare in Advance

- Training agenda
- Transcribe terms related to PPH and their definitions onto slips of paper and place in grab bag for introduction exercise
- Make copies of Participant Handouts, pre-test, and training agenda for all participants

UNIT 1

Specific Objective #1: Introduce the trainers and participants to each other and define terminology related to postpartum hemorrhage.

CONTENT

METHODOLOGY

Introducing Trainers and Participants

Terms Related to PPH

These terms and others will be clarified in greater depth later on in the training.

Active management of third stage of labor (AMTSL): includes 3 components: a) administration of a uterotonic within 1 minute after birth of the newborn; b) after delayed cord clamping (once the cord stops pulsating, or within 2-3 minutes), delivery of the placenta by controlled cord traction; c) followed by uterine massage.

Uterotonic: A drug that stimulates uterine contractions. Drugs such as oxytocin, ergometrine, and misoprostol have strong uterotonic properties and have long been used to prevent and treat uterine atony and reduce the amount of blood lost during and after childbirth. The use of a uterotonic drug immediately after the delivery of the newborn (i.e., in the third stage of labor) is one of the most important interventions used to prevent PPH.

Uterotonic stability: is defined by how well the uterotonic maintains active ingredient potency and other measures, like pH, when stored over time. Because reduced potency of uterotonic drugs may have serious, life-threatening consequences, it is critically important to consider the likely storage conditions and stability of each of the uterotonic drugs when choosing a uterotonic. This is of a particular importance for tropical countries (e.g., India and

Introduction (30 min.)

The trainer should:

- Introduce him/herself to participants (Px).
- Ask Px to introduce themselves by saying their names to the group one at time. Make sure Px have made name tags.
- Distribute the registration form and pencils (this can also be done in advance, as Px gather before class).
- Collect all the forms once Px have filled them out.
- Introduction exercise: in advance, copy each key term from the list to the left one slip of paper and copy the corresponding definition on another slip of paper. Do this for all the terms. Fold the slips of paper and place them in a hat or basket.
- Ask each Px to draw a slip of paper.
- Once all Px have drawn, ask them to go around the room and identify the person who has the term or definition corresponding to theirs, who will be their introduction partner. For example, if one person has “uterotonic,” s/he should find the person who has the definition describing “uterotonic.”
- Ask Px to introduce themselves to their partner (e.g., say who they are, where they work, and what their position is).

CONTENT: CONTINUED


Nigeria) and where refrigeration and protection from light are not always available and reliable. The stability of oxytocin is mainly affected by temperature; the stability of ergometrine is mainly affected by temperature and light.

Controlled Cord Traction: A two-handed delivery of the placenta, involving gentle, firm, and steady-tension downward cord traction with one hand and upwards and backwards uterine counter-pressure with the other hand supporting the uterus above the pubis, performed only on a contracted uterus.

Uterine Massage: Immediately after the delivery of the placenta, the skilled birth attendant (SBA) massages the uterine fundus until the uterus is firmly contracted.

Blood Drape (BD): The blood drape is a funneled-shaped, plastic bag-like device that is placed under the woman's buttocks and tied around her at 2 places (at the waist and at the hips) immediately after the delivery of the baby (once separated from the mother). The funneled portion collects blood, and has two markings at 350 ml (warning sign) and 500ml (take action sign) that alert the provider to the amount of blood lost. Tying the drape properly around the woman is important because it ensures that the blood is being collected only in the lower, funneled part of the drape. The blood drape will enable the attendant to assess blood loss and facilitate early diagnosis of PPH and transfer the woman for appropriate treatment.

METHODOLOGY: CONTINUED

- ➔ Reconvene the large group. Ask each pair to read aloud their term and corresponding definition, and introduce each other with the information they exchanged.
- ➔ Ask other Px if they agree that the match is correct.
- ➔ Use the content to correct/supplement answers.
- ➔ Distribute *Px Handout 1.1: Terms Related to Postpartum Hemorrhage*. 
- ➔ Review the purpose of training, including discussion of the different types of providers that will be trained and what they should know by the end.

Postpartum Hemorrhage (PPH): Vaginal bleeding after delivery that exceeds 500 ml, or that is less than 500 ml and causes symptoms. Severe PPH is vaginal bleeding greater than 1,000 ml. Bleeding immediately after delivery, within the first 24 hours, is called **primary PPH** and bleeding after 24 hours is called **secondary PPH**.

Crystalloid Fluids: Ringers Lactate, Normal Saline, or Hartmann's Solution, used for fluid replacement for PPH.

Non-Pneumatic Anti-Shock Garment (NASG): A garment that can be placed around the hips, lower abdomen and legs of a woman who has an obstetric hemorrhage and/or is in hypovolemic shock, which creates pressure (to her lower extremities and directly to the uterus) that will stabilize her (shunt blood to her vital organs) until she can be treated at an appropriate higher-level facility. (Note: the NASG is never to be removed unless under skilled medical supervision.)

Emergency Hysterectomy: Surgical removal of the uterus to stop intractable obstetrical hemorrhage that is often caused by an adherent placenta. Emergency hysterectomy is a life saving procedure.

Hypovolemic Shock: Clinical signs of decompensation of the circulatory system, due to excessive blood loss. The blood loss may be revealed/apparent (as in PPH from uterine atony) or partially concealed (as in placental abruption or ruptured uterus). The vital signs change so the pulse is fast and weak > 110 BPM, low diastolic blood pressure < 90 mmHG, and the patient may be pale, diaphoretic (excessive sweating), confused, agitated, or unconscious.

Specific Objective #2: Discuss expectations, purpose, and agenda of training.

CONTENT:

▶ Participants and Venue for Training

All Px who are higher-level facility staff will be trained in AMTSL (including the appropriate use of uterotonics), how to estimate blood loss using the blood drape and other methods including visual estimation, and how to place the NASG and transfer a woman in the NASG.

All SBAs should be trained in prevention and management of PPH, and in use of misoprostol if oxytocin is not available.

The use of the most effective uterotonic available should be encouraged. For example, if oxytocin is not available and/or not stored in appropriate conditions, misoprostol may be used for prophylaxis of PPH.

Only staff at facilities that can provide surgery and blood transfusions will be trained to manage patients in the NASG and to remove the NASG once the woman is stable. Staff who are trained to use these intervention techniques will be encouraged and provided techniques to transfer skills to others within their facility with the assistance of this program.

Training venues

Trainings will be conducted as close as possible to where the trainees live and work. Trainers will, for the most part, continue as supervisors and, along with project staff, will provide ongoing technical assistance and supportive supervision to

METHODOLOGY:

▶ Group Discussion and Trainer Presentation (40 min.)

The trainer should:

- Ask Px the following questions, noting responses on flipchart:
 - What do you hope to learn during the training?
 - What are you missing at home or at work while you are attending the training?
 - How do you think the training will help you in your work?
- Using a prepared flipchart or PowerPoint presentation, review the purpose of the training and course objectives.
- Compare the expectations of the Px to objectives/topics of the training in order to determine which expectations can be met and which cannot.
- If there are unexpected topics mentioned in Px's expectations, discuss whether it is possible to include these in the course or clarify that they do not fall within the scope of the training.
- Review course logistics, including lodging, meals, hours of attendance, practicum expectations, and any other necessary information.
- Distribute training agenda and review with Px.
- Distribute *Px Handout 1.2: Participants and Venue for Training*.
- Ask if there are any questions.



CONTENT: CONTINUED

METHODOLOGY: CONTINUED

ensure that trained staff retain their skills and transfer them to others, continue to use the project technologies, document the number of women treated, and effectively transfer women to higher-level facilities if necessary.



Specific Objective #3: Discuss training norms.

CONTENT:

▶ Establishing Norms and Housekeeping

Some simple Dos and Don'ts for effective participation:

Do:

- Ask a question when you have one
- Feel free to share an example
- Request an example if a point is not clear
- Search for ways in which you can apply a general principle or idea to your work
- Try to evaluate how well you are performing a skill based on new techniques you are learning
- Think of ways you can share the knowledge gained during this training with your subordinates and co-workers
- Be skeptical—don't automatically accept everything you hear
- Participate in the discussion
- Respect the ideas of other Px

Don't:

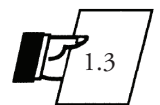
- Try to develop an extreme problem just to prove the trainer doesn't have all the answers (the trainer doesn't)
- Close your mind by saying, "This is all fine in theory, but..."
- Assume that all topics covered will be equally relevant to your needs
- Take extensive notes; the handouts will satisfy most of your needs
- Try to show how much you know by monopolizing class time

METHODOLOGY:

▶ Norms and Housekeeping (15 min.)

The trainer should:

- Ask Px to brainstorm norms for the course. These should include times for breaks and lunch, and starting and ending times. Write a list of norms like respecting others' opinions, active participation, etc.
- Divide Px into 5 small groups. Assign each group to be responsible for one day of the training. Explain that on the day they are responsible, they will be expected to get Px back from breaks and lunch on time, collect feedback from Px and meet with trainers at the end of the day to review progress and make suggestions for improvement, prepare energizers for after lunch, conduct the "Where are We" exercise at the beginning of the day, conduct the "Reflections" exercise at the end of the day (explained in Specific Objective 1.4), and other responsibilities the group suggests.
- Distribute *Px Handout 1.3: Some Simple Dos and Don'ts for Effective Participation*.



CONTENT: CONTINUED

METHODOLOGY: CONTINUED

- Engage in side talk
- Interrupt others
- Let your mobile phone ring during class



Specific Objective #4: Describe daily review exercises “Where are We?” and “Reflections.”

CONTENT:

▶ Housekeeping Procedures

We will review what went well or didn't go well at the end of each day in an exercise called “Reflections.” Also, to make sure we are “on track,” we use an exercise called “Where Are We?”

There is a sign-up sheet for “Housekeeping Teams” for each day (2-3 Px each, depending on the number of Px and number of days). Taking turns, each morning, one Px from the Housekeeping Team will review the highlights from the day before. Housekeeping Team responsibilities include: 1) conduct “Where Are We” and “Reflection” exercises, 2) help the group keep to time and task, and 3) be a sounding board for compliments and suggestions which the team will bring to daily feedback with the trainers at the end of the day.

Where Are We?

Starting each day with “Where are We?” is our opportunity to share insights, answer questions, clarify issues, resolve problems, and review particularly important material we need to remember so that each of us (Px and trainers alike) can get the most out of the course and each day's experiences.

Starting on the second day of training, Housekeeping Team members will provide each Px with two pieces of different colored paper at the beginning of each day. On one piece of paper, Px should write which

METHODOLOGY:

▶ Trainer Presentation (20 min.)

The trainer should:

- Explain that the training should be as interactive as possible and responsive to the needs of the group.
- Explain that the housekeeping procedures help ensure this.
- Explain the “Where Are We” exercise.
- Explain the “Reflections” activity.
- Explain that in addition to the “Reflections” exercise, Px should bring any problems or concerns to the attention of the Housekeeping Team for discussion with the training team at the end of the day.
- Make a note of the Px and trainers' feedback and attempt to address those ideas and concerns during the discussion and during the following days' lesson plans.
- Distribute *Px Handout 1.4: “Where Are We?” and “Reflections.”*



CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

topic from the previous day's training they found most useful and how they will apply that information to their work. On the other piece of paper, they should write a question or concept from the previous day's training that needs clarification. The Px conducting the exercise can help group the second pieces of paper by topic.

Problems identified during the "Where Are We?" session should be resolved, either by the team or the trainers, before continuing (when possible), since unresolved issues may hinder the learning process for Px.

The exercise is not a review of the previous day, but is used to identify the highlights and main points in each day's experiences. The Px conducting the review should prepare and use it as an opportunity to share his/her insights, clarify issues, resolve problems, or review important material. Problems identified during the exercise are to be resolved before continuing with training.

Reflections

At the end of each day, we take time to look over what we have done to:

- Examine what it means to us individually, and
- Explore how what we have learned can be applied in our place of work or a broader setting.

We close each day's activities with a session of "Reflections" on the day. As in "Where Are We?" each Px will be given two different colored cards to complete anonymously.

On one card, Px should write what they liked about the day and what went well. On the

CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

other card, Px should write the things that they hope will improve. These comments should primarily address the training content, not the food or breaks.

The Housekeeping Team and the training team will review the results at the end of the day. The next day, one of the trainers will announce the results and will explain how the training team responded to the suggestions.

At the end of each day, that day's Housekeeping Team will meet briefly (<15 min.) with the trainers to evaluate Px inputs and suggestions for improvement. This helps trainers evaluate the training with the guidance of px feedback, including the perspectives of the housekeeping team.

Specific Objective 1.5: Complete the pre-test.

CONTENT:

▶ **Pre-Test**

The Pre-/Post-Test Answer Key is found in the *Trainer's Tools*, page 147.

METHODOLOGY:

▶ **Conduct the Pre-Test** (45 min.)

The trainer should:

- Explain to Px that they will be tested on course content before the course begins, so that we have a baseline to compare with at the end of the course. The tests are done to test the success of the training. Each test is anonymous.
- Distribute copies of *Px Handout: 1.5: Pre-Test*.
- Explain that the Px will have 45 minutes to take the test. The questions are a combination of fill-in-the-blanks, multiple choice, true and false and matching. Read the instructions carefully.



UNIT 2: Causes of Postpartum Hemorrhage and Introduction to the Pathfinder International Model for Clinical and Community Action to Address Postpartum Hemorrhage

Introduction:

The Pathfinder International Model for Clinical and Community Action to Address Postpartum Hemorrhage (PPH) integrates essential clinical interventions with equally crucial government-level advocacy and community engagement. This unit introduces the global problem of maternal mortality and PPH and provides an overview of the Pathfinder model to address these problems.

Unit Training Objective:

Participants will learn about the issues surrounding maternal mortality and Pathfinder's model for addressing these issues.

Specific Learning Objectives:

By the end of the unit, participants will be able to:

- Provide an overview of the global problem of maternal mortality;
- Explain the social, cultural, economic, and medical causes of maternal mortality;
- Discuss the etiology of maternal death; and
- Summarize the *Pathfinder International Model for Clinical and Community Action to Address Postpartum Hemorrhage*.

Training/Learning Methodology:

- Brainstorming
- Trainer presentation
- Group discussion
- Group work
- Group presentations

Major References and Training Materials:

- Kinzie B, Gomez P. *Basic Maternal and Newborn Care: A Guide for Skilled Providers (BMNC)*. Baltimore: Jhpiego, 2004. Available online: <http://www.jhpiego.org/resources/pubs/mnh/BMNCrevmanEN.pdf>
- International Confederation of Midwives and International Federation of Gynaecology and Obstetrics. *Prevention and Treatment of Post-partum Haemorrhage: New Advances for Low Resource Settings*. 2006. Available online: http://www.pphprevention.org/files/FIGO-ICM_Statement_November2006_Final.pdf

- ➔ Lynch, C.B., et al., eds. *Vital Statistics: An Overview. A Textbook of Postpartum Hemorrhage: A Comprehensive Guide to Evaluation, Management, and Surgical Intervention*. Dumfriesshire, UK: Sapiens Publishing, 2006. 17-34. Available online: http://www.sapienspublishing.com/pph_pdf/PPH.pdf
- ➔ Path. Preventing Postpartum Hemorrhage: Managing the Third Stage of Labor. *Outlook 19:3*, September 2001. Available online: <http://www.reproline.jhu.edu/english/2mnh/2articles/otlkpph.pdf>
- ➔ Population Reference Bureau. *Datafinder*. Available online: <http://www.prb.org/DataFinder.aspx>
- ➔ WHO. *The World Health Report 2005: Make Every Mother and Child Count*. Geneva: World Health Organization, 2005. Available online: <http://www.who.int/whr/2005/en/index.html>
- ➔ WHO Department of Making Pregnancy Safer. Reducing the Global Burden: Postpartum Haemorrhage. *Making Pregnancy Safer: A Newsletter of Worldwide Activity*, issue 4, April 2007. Available online: http://www.who.int/making_pregnancy_safer/publications/newsletter/mps_newsletter_issue4.pdf

Resource Requirements:

- ➔ Computer, LCD projector, CD-ROM with slides, and screen or white wall
- ➔ Flipcharts and markers

Evaluation Methods:

- ➔ Verbal feedback
- ➔ Evaluation forms

Time Required:

Specific Objective	Topic	Time Required
1	Provide an overview of the global problem of maternal mortality.	25 min.
2	Explain the social, cultural, economic, and systemic causes of maternal mortality.	35 min.
3	Discuss the etiology of maternal death.	15 min.
4	Summarize the Pathfinder International Model for Clinical and Community Action to Address Postpartum Hemorrhage.	30 min.
Total Time Required		1 hour, 45 min.

Materials for Trainers to Prepare in Advance

For the group exercises in Specific Objective 2, prepare the following written assignments for each group:

- Group 1: List and discuss the reasons why women who have home births die. Identify measures that could save these women's lives.
- Group 2: List and discuss the reasons why women who deliver in primary health care facilities die. Identify measures that could save these women's lives.
- Group 3: List and discuss the reasons why women who deliver in tertiary care facilities die. Identify measures that could save these women's lives.
- Copies of Participant Handouts

UNIT 2

Specific Objective #1: Provide an overview of the global problem of maternal mortality.

CONTENT

Definition of Maternal Mortality

Maternal mortality is defined as:

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.

Maternal death is described in terms of a maternal mortality ratio (MMR). More than half of all deaths among women are due to pregnancy-related causes. Worldwide, maternal deaths occur at a rate of 400 per 100,000 live births. Maternal mortality is distributed disparately among regions and among countries: for example, in sub-Saharan Africa, maternal death occurs in 900 of every 100,000 live births. The table below shows a selection of countries with high and low maternal mortality indicators, relative to their regions.

METHODOLOGY

Group Discussion, Brainstorming and Trainer Presentation (25 min.)

The trainer should:

- Ask Px to define the term “maternal mortality.” *Show Slide 2.1: The Definition of Maternal Mortality.*
- Elicit each aspect of the definition from the Px. For instance, Px should identify “irrespective of site and duration of pregnancy,” as part of the definition of maternal mortality.



- Ask Px the following questions:

Q: What does “irrespective of site and duration of pregnancy” mean?

Answer: The pregnancy may be extra-uterine. Death from pregnancies ending in early miscarriage or abortion are included along with those ending with premature or term births.

Q: Why does the definition contain this clause?

Answer: So that public health responses to high maternal mortality will include women experiencing death from all pregnancy-related causes, as well as those who deliver at term.

Q: Why does the definition say “within 42 days?”

Answer: 6 weeks is considered the postpartum period, after which the woman’s body should have returned to

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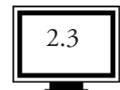
METHODOLOGY: CONTINUED

Maternal Mortality in Select Countries

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

normal.

- Show *Slide 2.2: Global Map of Maternal Mortality Ratios*.
- Remind Px that the exact statistics are not what is important, but rather the fact that the MMR is unacceptably high, since in the majority of cases, maternal mortality can be prevented.
- Discuss the MMRs in various developing countries using the content in the left-hand column.
- Show *Slide 2.3: Maternal Mortality Indicators in Select Countries*.
- Ask Px what they think the causes of maternal mortality are in their country or setting.
- Ask Px what barriers exist to preventing these causes/deaths.
- Ask Px how important postpartum hemorrhage (PPH) is to the overall MMR.
- Use a PowerPoint presentation to introduce Pathfinder's Model for Clinical and Community Action to Address Postpartum Hemorrhage.
- Ask for any questions or comments.
- Distribute *Px Handout 2.1: The Definition of Maternal Mortality*.



These numbers listed may be much lower than the actual incidence of maternal death. If a woman gives birth at home or if she dies after leaving the facility at which she gave birth, it is likely that her death will not be recorded as due to maternal causes.

While maternal mortality indicators do vary dramatically within regions, 99% of all maternal deaths occur in developing countries and are more likely to happen where an SBA is not at the delivery. Among deliveries with no SBA, maternal mortality is between 1,000 to 1,500 per 100,000 live births. More than half of maternal deaths occur during the postpartum period. Effective prevention and management of postpartum complications can significantly reduce overall maternal mortality.

MDG 5: Reduce Maternal Mortality

Millennium Development Goal (MDG) 5 aims to reduce global maternal mortality by 75% by 2015. Individual countries and, in some countries, individual districts, have MDG 5 targets based on the local MMR.

Specific Objective #2: Explain the social, cultural, economic, and systemic causes of maternal mortality.

CONTENT:

▶ **The 4 Delays Contributing to Maternal Mortality**

The importance of the community's role in emergency obstetric care can not be underestimated. Programmers, providers, and communities need to understand, appreciate, and commit to avoiding the 4 delays that prevent women from accessing the care they need to prevent maternal mortality. The role of different providers at different levels of health services to work with the community to avoid those delays must be defined and carried out.

The 4 delays are:

1. Delay in recognizing that there is a problem: When an emergency occurs, it may take the woman, her family, or a traditional birth attendant (TBA) some time to recognize that there is a problem and/or its severity. Most people who are not clinically trained do not know how to recognize the signs of obstetric complications. A certain amount of bleeding is common during labor and delivery, but it is difficult for untrained people to differentiate between a normal amount of bleeding and PPH.
2. Delay in the decision to seek care: Once the problem is recognized, there may be further delay in seeking care. Making the decision to seek obstetric care is a complex process and requires many individuals (e.g., a woman, her husband, and key relatives) in decision-making. Women's status and level of education,

METHODOLOGY:

▶ **Group Work** (35 min.)

The trainer should:

- ➔ Explain to Px that during the group work they will be discussing the variety of causes of maternal death in their own country.
- ➔ Divide Px into 3 groups and assign each group the following tasks, written on a separate sheet or paper:
 - Group 1:* List and discuss the reasons why women who have home births die. Identify measures that could save these women's lives.
 - Group 2:* List and discuss the reasons why women who deliver in primary health care facilities die. Identify measures that could save these women's lives.
 - Group 3:* List and discuss the reasons why women who deliver in tertiary care facilities die. Identify measures that could save these women's lives.
- ➔ Explain that each group has 15 minutes to complete the task. Each group should choose a rapporteur to record the answers on a flipchart and present the group's work after their discussion.
- ➔ Allow 15 minutes for the group work and then ask each group to present their discussion.
- ➔ Summarize the group discussion by explaining the 4 delays found in the left-hand column.
- ➔ Distribute *Px Handout 2.2: The Four Delays Contributing to Maternal Mortality*.



CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

the distance to a health facility, cost, perceived quality of care, and the perceived benefit of care all play major roles in reaching this decision. A family that is unprepared wastes valuable time deciding what to do, who to call for help, where to go, who should accompany the woman, and organizing transportation.

3. Delay in reaching the facility that can provide life-saving treatment: Time is often lost going to health practitioners or facilities that are unable to manage the emergency. This delay depends on the type and conditions of the road and weather, the seasons, and the availability and location of health care facilities. Other factors include distance to an appropriate facility, access to transportation, and ability to pay for transportation and/or care.

4. Delay at the facility, once reached, in providing the quality emergency treatment the woman requires: Poorly equipped health facilities, shortages of essential drugs and supplies, scarce human resources, and limited technical capacity of health personnel contribute to a delay in the provision of emergency obstetric treatment. Families are often unsure of where to go once they arrive at the facility. The family may not agree to the treatment the medical staff recommend, may not agree to donate blood, or may be unable to pay for the medical supplies needed.

Blood shortages play a critical role in the 4th delay. Working with communities, we must increase awareness of the critical need for emergency blood supply and ease cultural barriers that deter willingness to donate. Creating a base of community members

CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

willing to donate at least to family members and, ideally, toward a sufficient supply of blood for all who need it, is an important aspect of addressing the 4th delay.

Women die from maternal causes as a direct result of the low social, cultural, and economic status of women as well as of inadequacies in existing health systems. Delays play a big role in maternal mortality. All these sociocultural and systemic factors pose very great challenges that must be dealt with if we are to overcome the problem of maternal death.

Specific Objective #3: Discuss the etiology of maternal death.

CONTENT:

► Etiology of Maternal Death

Severe bleeding is the largest single cause of maternal death, causing approximately 25% of maternal deaths globally. PPH occurs in approximately 10.5% of live births. Studies reveal that causes of maternal death vary dramatically from country to country, depending on the age of women giving birth and access to care. In all studies however, hemorrhage is among the top causes, if not the greatest cause, of maternal mortality. Any attempt to reduce maternal mortality must address the major causes.

Additionally, systemic barriers to adequate blood supply also factor heavily in maternal death. One review concluded that more than 25% of deaths from PPH in Sub-Saharan Africa can be attributed to lack of access to blood supply due to inability of the patient/family to pay for blood, lack of donors, unwillingness of relatives to donate blood, or inadequate blood storage or transport. Globally, less than 40% of the world's blood supply is donated in developing countries, which account for more than 80% of the world's population. Bates et al. conducted a literature review finding that lack of blood supply was reported as a significant factor in almost half of studies of mortality from PPH.

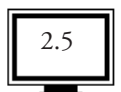
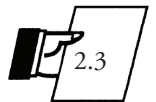
METHODOLOGY:

► Trainer Presentation/Discussion

(15 min.)

The trainer should:

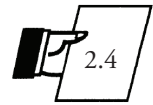
- Explain that during the next exercise, Px will review the medical causes (etiology) of maternal mortality.
- Distribute a copy of *Px Handout 2.3: The Five Most Common Causes of Maternal Death* to each Px. Ask each Px to spend 5 minutes filling in the table. Each Px must list the 5 most common causes of maternal death and write down what percentage of maternal death they think can be attributed to each of the 5 causes, starting with the most common causes of maternal death and moving to the less common, but serious, causes.
- At the end of 5 minutes, when Px have completed their task, show *Slide 2.4: Causes of Maternal Death Worldwide*.
- Review the major causes of maternal death and what percentage of overall maternal death is attributed to each cause.
- Show *Slide 2.5: Percentage of Maternal Death Due to Obstetric Hemorrhage, by Region*. Ask Px: Is this your experience with causes of maternal death? Do you find something different in your area?
- Describe the role of poor blood supply in mortality from PPH.
- Ask Px: what is the availability of



CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

blood in your facility? Are storage facilities adequate? Can you provide blood to a woman whose relatives cannot or will not donate blood? How can family members in your community be encouraged to donate blood? Why is blood so expensive and what can be done to reduce the cost of screening blood?

- Distribute *Px Handout 2.4: Etiology of Maternal Death*.



Specific Objective #4: Summarize the Pathfinder International Model for Clinical and Community Action to Address Postpartum Hemorrhage.

CONTENT:

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

The Pathfinder model to address high maternal mortality in developing countries due to PPH integrates essential clinical interventions with equally crucial government-level advocacy and community engagement. The 6 elements of the Pathfinder model include:

1. Advocacy with government officials to promote enabling policies;
2. Prevention of PPH through the routine application of AMTSL;
3. Identification of hemorrhage through accurate estimation of blood loss;

Use of key procedures and technologies for management of PPH through:

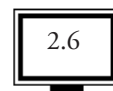
- Identification of the cause of hemorrhage,
 - Fluid replacement to prevent shock,
 - Use of uterotonics as appropriate,
 - Application of the NASG when shock occurs for resuscitation and stabilization for transfer, and
 - Blood replacement and surgery;
4. Community mobilization to increase awareness of PPH and practical, preventative actions; and
 5. Organization of emergency transportation systems in the community.

METHODOLOGY:

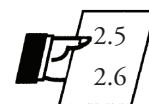
▶ **Presentation** (30 min.)

The trainer should:

- Present the model using *Slide 2.6: The Pathfinder International Model for Clinical and Community Action to Address Postpartum Hemorrhage*.
- Present the information in the left-hand column.
- Reiterate that these approaches have been individually tried, tested, and proven for use in the model being implemented.
- Explain that the project intervenes at the community level as well as at the facility level, addressing the 4 delays.
- Explain to Px that during this training they will learn about these new technologies and acquire the skills needed to use the new technologies and approaches.
- Ask Px if they have any questions about the model.



Distribute *Px Handouts 2.5: The Pathfinder International Model for Clinical and Community Action to Address Postpartum Hemorrhage* and *2.6: The Pathfinder Model at Each Level*.



CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

Pathfinder's Model for Clinical and Community Action to Address PPH combines multiple approaches for preventing, recognizing, and managing PPH to prevent long-term morbidity and death: AMTSL, accurate estimation of blood loss, and management of shock.

Literature indicates that AMTSL, using standard uterotonics, can prevent PPH by as much as 40% - 50%. Even though oxytocin is the first choice uterotonic and ergometrine the second choice, misoprostol is more stable in heat than injectable uterotonics. Thus, integrating misoprostol in AMTSL where other uterotonics are not available or viable increases the number of women who can benefit from AMTSL.

Simple technologies for more accurate visual estimation of blood loss, such as the blood collection drape, collecting blood from the delivery table into a calibrated jug or pail, using cholera beds for measuring blood loss, and a standard absorptive cloth (adapting the Kanga Method) have been devised for early and more accurate estimation of blood loss. Using these measures means dangerous blood loss is promptly identified, reducing life-threatening delays in treatment (including fluid replacement and uterotonic administration to prevent shock), referral, and/or transport of women who are bleeding to a higher-level facility for care.

For those women who do develop shock, treatment with rapid replacement of lost blood volume and the use of a simple first aid device—the NASG—has made it possible to revive women in shock and keep them alive and stable for up to 56 hours, which helps mitigate delays in access to care

due to low transportation or service delivery resources.

Each of these approaches have been individually tried, tested, and proven. Through the *Model for Clinical and Community Action to Address PPH*, Pathfinder is introducing these innovations into the health system together as a continuum of care.

The Pathfinder Model at Each Level

1. At the home/community level: Avoid the delay in seeking care for obstetric emergencies by:

- Sensitizing women and their families to the importance of giving birth with a skilled provider and developing birth preparedness and complication readiness plans;
- Increasing community awareness, the ability to identify PPH, and understanding of the importance of donating blood;
- Increasing timely decisions to seek care; and
- Organizing communication and transportation systems with communities.

2. At the facility level:

- Incorporate 3 new technologies into existing protocols for prevention and treatment of PPH:
 1. Prevent PPH by adopting enhanced AMTSL.
 2. Accurately estimate blood loss to detect hemorrhage early, and take action, including fluid replacement to prevent shock and administration of uterotonics to manage PPH.
 3. Improve prevention of shock and management of PPH by using the NASG to

CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

stabilize women in shock until they can be treated comprehensively.

- Use organized transport systems and community emergency funds for timely referral and transportation to higher-level facilities; and
- Establish blood transfusion committees and blood donation and screening procedures to ensure effective and cost-effective management of blood supply.

3. At the policy level:

- Advocate for and ensure incorporation of AMTSL and the new technologies into national policies, protocols, and PPH management guidelines;
- Engage professional societies such as those for nurses, midwives, and obstetricians/gynecologists;
- Institutionalize the new technologies in the pre-service curricula of midwifery, nursing, and medical schools and other training for SBAs;
- Update practicing providers in the new technologies and skills; and
- Advocate for sustainable blood supply policies, including provisions or financing schemes for families who cannot pay for blood.

The model ensures that where ever a woman develops PPH—whether in the village, at a lower-level facility, or at a higher-level facility—she can receive the skilled, organized services she needs. It also means that every effort will be made at each stage for prevention and early detection of PPH, prevention of

CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

shock, and management of shock from PPH. Providing a woman the best preventative care and management possible at each stage reduces the chances her condition will deteriorate. The model also requires that all levels of care and facilities are coordinated for smooth flow upward, as needed, and that feedback is returned downward, for continuous improvement.

Development of comprehensive emergency obstetric services is already underway in many countries. Many countries are also improving emergency transportation systems, for obstetric and other health emergencies. The model will contribute to these efforts through sustained advocacy and support at the community, district, and state levels to establish community transportation and communication schemes for women in need of emergency care and to strengthen effective, comprehensive facility services to meet any obstetric emergency.

UNIT 3: Preventing PPH through the Active Management of the Third Stage of Labor (AMTSL)

Introduction:

Active management of the third stage of labor (AMTSL) is a proven technique that, when applied during childbirth, reduces the amount of blood loss and incidence of PPH. Pathfinder has successfully introduced AMTSL as an integral component of its *Model for Clinical and Community Action to Address Postpartum Hemorrhage*.

Unit Training Objective:

To develop the capacity of participants to actively manage the third stage of labor when conducting deliveries.

Specific Learning Objectives:

By the end of this session Px will be able to:

- Discuss the causes of continued postpartum bleeding,
- Describe AMTSL and how it prevents PPH,
- Analyze the advantages and disadvantages of uterotonics appropriate for AMTSL,
- Explain the uses and limitations of misoprostol for the prevention of PPH, and
- Demonstrate AMTSL with proficiency.

Training/Learning Methodology:

- Trainer presentations
- Group discussion
- Brainstorming
- Reading of participant handouts
- Demonstration/return demonstration
- Role-play
- Case studies
- Hands-on training and practice on anatomical models for skills building
- Practicum

Major References and Training Materials:

- ➔ Lynch, C.B., et al., eds. Vital Statistics: An Overview. *A Textbook of Postpartum Hemorrhage: A Comprehensive Guide to Evaluation, Management, and Surgical Intervention*. Dumfriesshire, UK: Sapiens Publishing, 2006. 17-34. Available online: http://www.sapienspublishing.com/pph_pdf/PPH.pdf
- ➔ Management Sciences for Health, World Health Organization. Uterotonics for the Active Management of the Third Stage of Labor. *Managing Drug Supply*, 2nd ed. West Hartford, CT: Kumarian Press, 1997.
- ➔ Path. *Preventing Postpartum Hemorrhage: Managing the Third Stage of Labor*. *Outlook 19:3*, September 2001. Available online: <http://www.reproline.jhu.edu/english/2mnh/2articles/otlkpph.pdf>
- ➔ POPPHI. *Prevention of Postpartum Hemorrhage: Implementing Active Management of the Third Stage of Labor (AMTSL): A Reference Manual for Health Care Providers*. Seattle: PATH; 2007. Available online: http://www.pphprevention.org/files/AMTSL_ReferenceManual_English_001.pdf
- ➔ WHO. *WHO Recommendations for the Prevention of Postpartum Haemorrhage*. Geneva: World Health Organization, 2007. Available online: http://www.who.int/reproductive-health/publications/pph/recommendations_pph.pdf
- ➔ WHO Department of Making Pregnancy Safer. Reducing the Global Burden: Postpartum Haemorrhage. *Making Pregnancy Safer: A Newsletter of Worldwide Activity*, no. 4, April 2007. Available online: http://www.who.int/making_pregnancy_safer/publications/newsletter/mps_newsletter_issue4.pdf
- ➔ WHO Department of Reproductive Health and Research. *Managing Complications in Pregnancy and Childbirth: A Guide for Midwives and Doctors*. Geneva: WHO, 2007. Available online: http://whqlibdoc.who.int/publications/2007/9241545879_eng.pdf

Resource Requirements:

- ➔ Computer, LCD projector, CD-ROM with slides, and screen or white wall
- ➔ Blank flipcharts
- ➔ Marking pens
- ➔ Masking tape

Clinical equipment and supplies needed: one practice station should be set up for each group of 4-5 Px. Practice stations should be set up with clinical equipment and supplies as indicated on the following page.

AMTSL Practice Station Supplies		
For each station serving 4-5 Px	Total needed for a class of 20-22 Px	
1	5	Anatomical pelvic models
1	5	Anatomical models of baby and attached placenta
1	5	Emergency tray
3	15	Pairs sterile gloves
2	10	Clamps
1	5	Scissors
1	5	Forceps
1	5	Ambu-bag and mask
2	10	10 drip (IV) sets
1	5	5 or 10 cc syringes
2	10	IV fluids : Ringers Lactate (10 bottles; normal saline, 5% dextrose solution, etc.)
1+	5+	Of each: oxytocin and ergometrine ampoules/misoprostol
1	5	Local anesthetic (1% plain lignocaine)
1	5	Laboratory bottles and test tubes for bedside clotting test
1	5	Pelvic examination tray
1	5	Foley catheter and urine bag
1	5	Oxygen cylinder with mask or cannula
1	5	Stethoscope
1	5	Sphygmomanometer
1+	5+	Other emergency drugs (adrenaline, atropine, naloxone, etc.)
1	5	Episiotomy/cervical repair kit
1	5	Each: blankets, baby blankets, bed sheets
varies		Blocks to raise foot of bed/or table

Materials for Trainers to Prepare in Advance

- ➔ Copies of Participant Handouts
- ➔ Set up clinical practicum in the hospital or clinic

Evaluation Methods:

- ➔ Observation and assessment of participants' case studies
- ➔ Observation and assessment of participants during clinical practicum
- ➔ Utilization of competency-based checklists in class and in the labor ward
- ➔ Verbal feedback

Specific Objective	Topic	Time Required
1	Discuss the causes of continued postpartum bleeding.	45 min.
2	Describe active management of the third stage of labor (AMTSL) and how it prevents PPH.	30 min.
3	Analyze the advantages and disadvantages of different uterotonics appropriate for AMTSL.	30 min.
4	Explain the uses and limitations of misoprostol for the prevention of PPH.	30 min.
5	Demonstrate AMTSL with proficiency.	2 hours
	Total Time Required	4 hours 15 min. <i>plus practicum</i>

Practicum:

If possible, arrange for all Px to experience providing AMTSL in the labor ward for 2-3 hours (3 to 5 cases, if possible), 4 Px per facilitator, during the course of the training, either in the evenings or on the weekend. Using the checklist, Px should observe the facilitator perform and explain a delivery with AMTSL and then perform AMTSL themselves, with feedback from other Px using the checklist and discussion from the group. After Px have participated in the AMTSL practicum, they should have an opportunity to talk about the experience and present cases in the classroom with the whole group. The trainer will need to build this time into the training agenda, based on practicum scheduling and logistics.

Notes: The practicum experience is a necessity for quality skills to be attained and retained.

Specific Objective #1: Discuss the causes of continued postpartum bleeding.

CONTENT

METHODOLOGY



How PPH causes Death and Morbidity

The uterus is a hollow, pear-shaped, muscular organ located in the woman's pelvis. The urinary bladder is situated in front of the uterus and the rectum is situated behind it. The myometrium, (the layer outside of the endometrium), is the muscle layer of the uterus that expands during pregnancy to hold the growing fetus. The blood vessels in the uterus are intertwined with the muscle fibers of the myometrium.

Causes of Continued Postpartum Bleeding

The causes of PPH can be classified into 4 categories, or "4 Ts:"

Tone

- ➔ Failure of the uterus to contract after the delivery of the baby and placenta (uterine atony)

Tissue

- ➔ Retained placenta and/or products of conception (POCs)

Trauma

- ➔ Ruptured uterus
- ➔ Lacerations or tears of the cervix, vagina, or perineum

Thrombin

- ➔ Bleeding disorders



Discussion, Q & A (45 min.)

The trainer should:

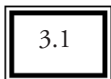
- ➔ Ask Px:

Q. What does the uterus normally do after delivery?
 Answer: After delivery, if the uterus is empty, the uterus will normally contract.

Q. What if the uterus is not empty?
 Answer: If the uterus is not empty the muscles are prevented from contracting effectively. If the muscles do not contract normally (for any reason), hemorrhage will ensue.

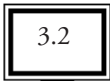
Q. How do the contractions stop the bleeding?
 Answer: When the muscle fibers begin to contract strongly, they constrict the blood vessels that lie between them, thus controlling the bleeding. The muscle contractions also aid involution of the uterus.

- ➔ Show *Slide 3.1: Anatomy and Physiology of the Uterus.*



- ➔ Explain how the "cross-hatch" pattern surrounds maternal blood vessels and what happens when the uterus contracts and relaxes.

- ➔ Show *Slide 3.2: The 4 Ts of PPH.* Explain that the key causes of PPH can be remembered under categories of causes called the 4 Ts: tone, trauma, tissue, and thrombin.



CONTENT: CONTINUED**METHODOLOGY: CONTINUED****Tone**

Uterine atony is the most common cause of continued postpartum bleeding. It often progresses quickly and can be addressed rapidly and effectively.

Factors contributing to uterine atony:

1. Uterine fatigue due to prolonged labor or overuse of oxytocin for induction;
2. Precipitous labor—labor progressing very rapidly (less than 3 hours in duration);
3. Over distension of the uterus due to polyhydramnios/excess amniotic fluid, multiple gestation (twins, triplets), macrosomia/large fetus, as in gestational diabetes;
4. Retained placenta (when the placenta is not expelled within 30 minutes following the birth of the baby);
5. Retained placental fragments and/or clots (when pieces of the placenta are left in the uterus);
6. High parity/many children;
7. Chorioamnionitis/infection of the gestational sac and membranes;
8. Full bladder; or
9. Need to augment labor with oxytocin.

The contribution of uterine atony to PPH is so well known that there is a universal reflex action: firmly massaging the uterus to stimulate contractions. Once sure that the uterus has contracted effectively, the practitioner should search for other causes of persistent bleeding and manage any causes found, e.g., retained placental fragments or clots, genital tract trauma, and bleeding disorders.

- ➔ Write the words Tone, Tissue, Trauma, and Thrombin in a vertical list on a flipchart and ask Px to define and explain the specific causes for each.
- ➔ Write responses on the flipchart.
- ➔ Ask Px if they know the predisposing/risk factors for PPH. If participants are unable to come up with the answers listed, the trainer might want to give some hints.
- ➔ Ask Px about the patho-physiology of the predisposing factors.
- ➔ Ask Px if there are ways of preventing PPH. Write responses on a flipchart and supplement as necessary. (Answers: In pregnancy, prevent or treat anemia; during delivery controlled delivery to avoid tears, AMTSL to ensure early, complete delivery of the placenta, post delivery immediate breastfeeding, massage and monitoring, etc.)
- ➔ Explain that although women with predisposing factors should be watched for PPH, all women can develop PPH, with or without predisposing risk factors. This means that providers must be equipped and alert to recognize and manage PPH. Ask Px what needs to be done to protect women from morbidity and mortality from PPH.
- ➔ Ask Px whether they ever discuss with pregnant women what they should do in case of an obstetric emergency at home.
- ➔ Ask Px to describe plans a woman and her family might make in advance that would enable them to get help during an emergency.
Answers can include: choose a safe place to give birth, choose a skilled provider,

CONTENT: CONTINUED**Preparing for PPH at Every Birth**

Because two-thirds of women who develop PPH have no known risk factors, providers should assume that all women are potentially at risk of PPH. One of the reasons all women should be offered AMTSL is because risk factors predict so few PPH cases.

Reliance on risk factors to classify women at increased risk has not decreased morbidity and mortality associated with PPH. Moreover, relying on risk assessment can lead to unnecessary over-management of women classified as “high risk,” which can be detrimental both to women, (because of added anxiety and the cost of more frequent care and invasive procedures) and to health systems (because of the higher cost of high risk care).

Factors Predisposing Women to PPH due to Atony

Some conditions are known to increase the likelihood of PPH. Those conditions are:

- ➔ Previous PPH
- ➔ Multiple gestation
- ➔ Preeclampsia
- ➔ Obesity

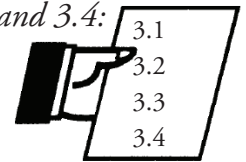
But it is important to remember that most PPH cases occur in women with no identifiable risk.

70% of PPH is caused by uterine atony. Fortunately, we have the technology and strategies to prevent and treat this life-threatening condition. But although 70% of PPH is caused by uterine atony, recognition and management of the other 3 causes are necessary skills for providers. Since trauma (lacerations, uterine rupture, etc.) causes

METHODOLOGY: CONTINUED

have an emergency transport plan, prepare payment for transport, have a decision maker always at hand, etc.

- ➔ Explain that the family and community should be aware of the major danger signs, including any bleeding during pregnancy. Immediately following childbirth, all women should be closely monitored for signs of abnormal bleeding and caregivers must be able to ensure access to lifesaving interventions, (either on the spot, or via rapid transfer to an appropriate facility) including the application of the NASG.
- ➔ Ask Px how to prevent PPH. What steps should be taken or considered?
- ➔ What are some of the most common harmful practices that contribute to PPH?
- ➔ Distribute *Px Handouts 3.1: How Postpartum Hemorrhage Causes Death and Morbidity, 3.2: Causes of Continued Postpartum Bleeding, 3.3: Preparing for PPH at Every Birth, and 3.4: Preventing PPH.*
- ➔ Explain that although 70% of PPH is caused by uterine atony, providers need the skills to recognize and manage the other causes, in order of importance: trauma, tissue and thrombin.
- ➔ Ask: What types of trauma can cause PPH, how would you assess the client for trauma, and how would you manage the different types of trauma on different levels of health facilities?
- ➔ Ask: How would you explain “tissue” as a cause of PPH, how would you assess for it, and how would you manage on different levels of facilities?



CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

PPH twice as much as tissue (retained POC's), trauma should be investigated and managed first, and then tissue. Finally, if all else fails, clotting disorder should be investigated.

Tissue

Retained placenta, fragments or clots keep the uterus from contracting completely and bleeding continues. Tissue must be expelled or removed by use of forceps if tissue at cervical os, or manual removal.

Trauma

Lacerations of the perineum, vagina, cervix, and rupture of the uterus must be recognized rapidly, and either repaired or the woman transported urgently to a facility where the repair can be done (providing pressure to the laceration as possible during transport). Providers should always do a careful examination for tears, but especially if there is bleeding even though the uterus is well contracted.

Thrombin

Only 1% of women will bleed right after birth from clotting disorders, but women who have bled a lot may develop clotting problems called DIC (disseminated intravascular coagulopathy) which must be treated urgently at a higher-level facility.

Preventing PPH

Established methods to prevent and manage PPH include:

- Early detection and management of anemia;
- Developing birth preparedness/complication readiness plans;
- Preventing prolonged labor by monitoring labor using the partogram, if available;
- Avoiding harmful traditional practices to speed up labor (e.g. pushing on the uterus to

- Ask: What types of “thrombin” problems are there, how would you assess for them, and how would you manage on different levels of facilities? Be sure to include DIC as a result of severe bleeding and not just pre-existing coagulaopathy.
- Explain that providers must have the skills to recognize and manage these other 3 “T’s” and not just “tone.”

CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

- expel the baby);
- Preventing dehydration;
 - Encouraging the woman to pass urine frequently to avoid having a full bladder;
 - Reducing cervical, vaginal, and perineal trauma by avoiding routine use of forceps and restricting use of episiotomy;
 - Avoid pushing when the cervix is not completely dilated;
 - Early detection and rapid treatment of hemorrhage; and
 - AMTSL.
1. Anemia: For severely anemic women, a blood loss of 200-250 ml can be fatal, and anemia can pre-dispose women to PPH. Treatment of anemia with iron and nutrition supplementation during pregnancy may help women survive PPH. Providers should address major causes of anemia such as malaria and hookworm.
 2. All women must be encouraged to develop a birth preparedness and complication readiness plan, and, if possible, to deliver with an SBA who can provide PPH prevention and care (examples: choose a safe place of birth, a skilled provider, and have a transport access plan). Complication readiness includes a realistic plan for a life-threatening complication (examples: have transport ready, have payment for transport ready, keep a designated decision maker at hand, identify blood donors who would be available to donate blood immediately, etc.). The family and community should be aware of the major danger signs of complications, including any bleeding during pregnancy. All women should be closely monitored

CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

following childbirth for signs of abnormal bleeding, and caregivers must be able to ensure access to lifesaving interventions, including application of the NASG.

3. Prolonged labor can be the result of a baby that is too large or in the wrong position to fit through the birth canal. If active labor lasts for more than 12 hours, the woman should be moved to a facility that can provide a Cesarean section if needed.
4. Harmful traditional practices such as providing herbal remedies to increase contractions, unskilled practitioners giving oxytocin by intramuscular injection, or using fundal pressure to assist in the delivery of the baby can increase the likelihood of PPH.
5. Dehydration may slow contractions and prolong labor.
6. The use of instruments (such as forceps) to assist the birth is associated with increased risk of cervical and perineal trauma.
7. Delivering in a position of the mother's choosing will help avoid trauma (e.g., not flat on her back).
8. Maternal pushing should be avoided until the cervix is completely dilated to avoid lacerations of the cervix.
9. Early detection and management of excessive bleeding reduces the likelihood of PPH.
10. AMTSL consists of interventions designed to:
 - Shorten the third stage of labor and reduce blood loss by facilitating delivery of the placenta, leading to effective uterine contractions, and
 - Prevent PPH by avoiding uterine atony.

CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

Literature indicates that the best predictor of PPH is a third stage of labor that lasts 18 minutes or more. This is why early delivery of the placenta is important.

Specific Objective #2: Describe the active management of the third stage of labor (AMTSL) and how it prevents PPH.

CONTENT:

▶ **Active Management of the Third Stage of Labor**

Review of available evidence shows that practicing AMTSL is proven to reduce the incidence of PPH, the quantity of blood loss, and the use of blood transfusion.

Remember: 40-50% of PPH can be prevented using AMTSL.

The three main components of AMTSL are:

1. Administration of a uterotonic agent within one minute after the baby is born after ruling out the presence of another baby (oxytocin is the uterotonic of choice),
2. Controlled cord traction (CCT) with counter-traction to the uterus during a uterine contraction, and
3. Uterine massage immediately after delivery of the placenta to help the uterus contract as well as to assess uterine contraction.

Procedures for Each Component

Administer a uterotonic

1. Prepare the uterotonic during the second stage of labor and have it ready at the bedside.
2. Deliver the baby.
3. Gently palpate the abdomen to rule out presence of additional babies.
4. Tell the woman that she will feel strong cramping when the uterotonic is delivered.

METHODOLOGY:

▶ **Discussion, Q&A** (30 min.)

The trainer should:

- Ask Px how they manage the third stage of labor when they conduct a delivery.
- Ask if anyone has practiced AMTSL.
- Ask for a volunteer to describe the 3 components of AMTSL. Ask other Px to make corrections if necessary.
- Describe each of the 3 components using the content in the left column.
- Ask Px the following questions:

Q: When should you give the oxytocin?

What do you do if you are attending the birth alone?

Answer: The provider should inject within 1 minute.

Q: If other uterotonics contract the uterus well, why is oxytocin preferred?

Answer: Oxytocin is more effective if it has been stored properly and can be used in women with elevated blood pressure or heart disease.

Q: Are there disadvantages/dangers of late cord clamping?

Answer: There is no danger unless the mother is HIV-infected, Rh negative, or the baby is premature or needs immediate resuscitation. Additionally, the baby benefits from the extra perfusion of maternal blood and

CONTENT: CONTINUED

5. Within 1 minute of delivery, give oxytocin 10 IU IM. If not available, and no elevation of blood pressure (BP) or heart disease, give ergometrine, Methergine, or Syntrometrine. Give misoprostol if an injectable is not possible.
6. After delivery, immediately dry the infant and assess the baby's breathing. Then place the reactive infant, prone, on the mother's abdomen. Remove the cloth used to dry the baby and keep the infant covered with a dry cloth or towel to prevent heat loss.
7. Before performing AMTSL, gently palpate the woman's abdomen to rule out the presence of another baby. At this point, do not massage the uterus.
8. If there is not another baby, begin the procedure by giving the woman a uterotonic drug. This should be done within one minute of childbirth.
9. Put the baby to the breast if this is the mother's choice for infant feeding and the baby and mother are ready.

Perform controlled cord traction

1. Wait for cord pulsations to cease or approximately 2-3 minutes after birth of the baby, whichever comes first.
2. Clamp and cut the cord following strict hygienic techniques: Clamp the cord 4 cm from the baby, place second clamp right next to it, and cut between the clamps with sterile razor or scissors.
3. Re-clamp the cord close to the mother's perineum and hold the cord in one hand.
4. Place the other hand just above the

METHODOLOGY: CONTINUED

oxygen to guard against anemia.

- Q.** Who can explain why immediate cord clamping is necessary for the 4 cases mentioned?

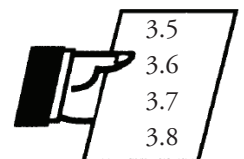
Answer: HIV infected – minimize mixing of blood between mother and baby; Rh negative – minimize mixing to avoid antibody development that could affect mother's future Rh positive babies; premature baby – avoid additional blood that can exacerbate jaundice; needs immediate resuscitation – need to resuscitate baby away from the mother and near the necessary equipment.

- Q.** What are the dangers of exerting traction on the cord to deliver the placenta?
Answer: The cord may tear if not done with care and make delivery of the placenta more difficult, and, if done too forcefully and without counter pressure, traction may cause inversion of the uterus.

- Q.** Should AMTSL be used even if an uterotonic is not given?
Answer: No, expectant management (waiting) is indicated if there is no uterotonic available.

- Q.** What uterotonic should be given if neither oxytocin nor Methergine is available?
Answer: Misoprostol is effective and very stable without refrigeration.

- ➔ Summarize discussion and supplement with any missing content.
- ➔ Distribute *Px Handouts 3.5: The Main Components of Active Management of the Third Stage of Labor (AMTSL), 3.6: Administering the Uterotonic, 3.7: Controlled Cord Traction, and 3.8: Uterine Massage.*



CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

woman's pubic bone to stabilize the uterus by applying counter pressure (upward and backward) during controlled cord traction.

5. Keep slight tension on the cord and await a strong uterine contraction (usually within 2-3 minutes after delivery).
6. With the first strong uterine contraction, encourage the mother to push. Gently pull downward on/apply controlled traction to the cord to deliver the placenta. Do not pull too hard (to avoid tearing/snapping the cord, uterine prolapse, and/or inversion of the uterus).
7. Continue to apply counter-pressure to the uterus. If the placenta does not descend during 30-40 seconds of controlled cord traction (and there is no hemorrhage and the uterus is not filling with blood), do not continue to pull on the cord, instead:
 - Immediately massage the fundus of the uterus until the uterus is contracted. Gently hold the cord and wait until the uterus is strongly contracted. Then, with the next contraction, repeat controlled cord traction with counter pressure.
8. As the placenta delivers, hold the placenta in two hands and gently turn it in one direction, causing the membranes to twist on themselves until they slowly deliver.
9. Make sure mother's bladder is empty.
10. After cutting the cord, place the infant directly on the mother's chest, prone, with the newborn's skin touching the mother's skin.
11. If at anytime the woman begins to bleed profusely, the placenta must be delivered rapidly. It may be necessary, in an emergency only, to manually remove the placenta.

CONTENT: CONTINUED**METHODOLOGY: CONTINUED****Gently massage the uterus**

1. Once the placenta is delivered, immediately massage the fundus of the uterus until it contracts. This should be done firmly, with enough strength to make the uterus contract and clots to be expelled, but not so strongly that it causes extreme pain or damage, e.g. prolapsed uterus.
2. Examine the placenta carefully to be sure none of it is missing. If a portion of the maternal surface is missing or there are torn membranes with open vessels, suspect retained placenta fragments and take appropriate action.
3. If the membranes are not complete, gently examine the upper vagina and cervix (wearing sterile or disinfected gloves) and use a sponge forceps to remove any pieces of membrane that are visible.
4. Palpate for a contracted uterus every 15 minutes and repeat uterine massage as needed during the first 2 hours. Teach the woman how to check to see if her own uterus is contracted and to massage it herself until it contracts, especially if she feels herself starting to bleed.
5. Gently separate the labia and inspect the lower vagina and perineum for lacerations that may need to be repaired.
6. Ensure that the uterus does not become relaxed (soft) after you stop uterine massage by continuing to check in with the woman.

Throughout the procedure, the provider continues to provide support and reassurance to the woman. Remember to tell her that she will feel strong cramping when the uterotonics are given.

Specific Objective #3: Analyze the advantages and disadvantages of uterotonics appropriate for AMTSL.

CONTENT:

▶ Uterotonics

Uterotonic drugs are medicines that cause the uterus to contract. Three commonly used uterotonics for preventing and managing PPH are, in order of preference:

1. Oxytocin: the synthetic form (Pitocin/Syntocinon)
2. Ergot-based compounds: methylergonovine maleate (Methergine), ergometrine, and Syntometrine.
3. Prostaglandins: misoprostol (Cytotec) and carboprost tromethamine.

The WHO recommends oxytocin as the most effective uterotonic, and that a dose of 10 IU IM for prevention be offered to all women immediately after delivery. If oxytocin is not available, then ergometrine, Methergine, or Syntrometrine should be offered to women without hypertension or heart disease. Misoprostol is a good alternative when the others are not available or appropriate.

Storage of uterotonics

The stability of a uterotonic is defined as how well it remains potent, when stored over a period of time. Ergometrine and Syntometrine are sensitive to heat and light and oxytocin is sensitive to heat. Following the storage guidelines given by the manufacturer is essential to keeping the uterotonic effective.

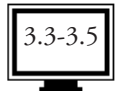
METHODOLOGY:

▶ Discussion, Q&A (30 min.)

The trainer should:

- ➔ Ask Px to explain the purpose of uterotonics and give examples of the different drugs.
- ➔ Explain that WHO strongly recommends that if all of the components of AMTSL cannot be performed, that at least an appropriate uterotonic should be given by an SBA, trained in its use.
- ➔ Show *Slides 3.3-3.5: Uterotonic Selection for Prevention of PPH.*
- ➔ Review the different types of uterotonics, the order of use based on availability (preferably oxytocin) and viability (oxytocin, ergometrine, and lastly misoprostol), the advantages and disadvantages of each, their dosage, and proper storage.
- ➔ Ask Px which uterotonics they use in their own facility and how they are stored.
- ➔ Ask Px, why is oxytocin the preferred uterotonic?

Answer: Oxytocin is the preferred uterotonic because it is effective 2 to 3 minutes after it is injected, has minimal side effects, and can be used on all women. If oxytocin is not available, give ergometrine 0.2 mg IM, or Syntometrine 1 ml injection, or misoprostol 600µg orally/sublingually or 800-1000µg rectally.



CONTENT: CONTINUED

METHODOLOGY: CONTINUED

Case Studies

Case 1: Mrs. B. is a nurse-midwife in a clinic. Mrs. S. has come to deliver her baby at the clinic. Mrs. S. has not come for any antenatal check-ups, nor does she have any of her medical records with her. What uterotonic should the nurse-midwife choose for Mrs. S. and why?


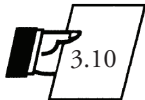
Answer: Oxytocin, if available and properly stored; ergometrine if normal BP and no heart disease; and misoprostol if there is no acceptable storage for the others (and it is available).

Case 2: Mrs. L. is delivering in the clinic in a town with a peak summer temperatures of between 40 and 45 degrees Celsius. The electric supply in town is erratic and there is only one refrigerator for vaccines. The nurse-midwife has stocks of Methergine, oxytocin, and misoprostol available in the clinic. What should she give to mothers delivering in the clinic during the hottest months?

Answer: Misoprostol, because the others would not be stable in that heat. (Pitocin is possible with only 14% loss of potency over one year if stored at 30 degrees or less.)

Case 3: Mrs. H has come to the clinic for her delivery. The clinic has no oxytocin available and the nurse-midwife notes from her antenatal record that she has high blood pressure. What uterotonic should she give?

Answer: Misoprostol, because ergometrine is contraindicated.

- Distribute *Px Handout 3.9: Uterotonics*
- Briefly discuss storage of uterotonics and explain that storage of uterotonics will be explained in more detail in Unit 5. 
- Distribute *Px Handout 3.10: Case Studies*.
- Read each of the case studies in the left-hand column and ask which uterotonic Px would use in each case. 
- Summarize all new information at the end of the exercise. Conclude the session by telling Px that the WHO recommendation is that oxytocin is the most effective choice, and that a dose of 10 IU IM for prevention is to be offered to all women right after delivery. If oxytocin is not available, then ergometrine, Methergine, or Syntometrine should be offered to women without hypertension or heart disease. Misoprostol is a good alternative when the others are not available or appropriate.
- Explain that because misoprostol is newer and not as well known/used, we will go over it in more depth.

Specific Objective #4: Explain the uses and limitations of misoprostol for prevention of PPH.

CONTENT:

METHODOLOGY:

► Use of Misoprostol for the Prevention of PPH

Some government guidelines and protocols for skilled birth attendants specify that SBAs may independently provide prophylactic misoprostol to women immediately after delivery. Since misoprostol is still not as commonly known or used, this training will familiarize health care providers participating. The table below shows the recommended doses of misoprostol tablets for prevention of PPH.

Route of administration and dosage of misoprostol for prevention of PPH

While misoprostol can be given rectally, sublingually, and orally for prevention of PPH, the recommended route is orally.

Route of administration	Dosage
Oral	600µg
Sublingual	600µg
Rectal	800 – 1000µg

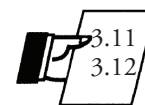
How does misoprostol make the uterus contract?

Misoprostol is an analogue of prostaglandin E1 that causes powerful contractions of the uterus. When the uterus is fatigued, misoprostol (or any uterotonic) helps it to contract by producing the same physiological changes as when the uterus contracts naturally. It has been approved for use in the prevention and treatment of PPH in several countries and can be used to prevent PPH during the third

► Discussion, role play (30 min.)

The trainer should:

- Explain how misoprostol makes the uterus contract.
- Discuss safety and side effects of misoprostol.
- Discuss the steps for administration of misoprostol for the prevention of PPH.
- Ask for volunteers to play the patient and the person accompanying the patient.
- The trainer will play the role of the provider.
- Using real materials, demonstrate the provision of misoprostol for prevention of PPH, explaining each step to Px as well as to the patient and her support person and answering their questions.
- Discuss the dangers associated with misuse of misoprostol.
- Distribute copies of *Px Handouts 3.11: The Use of Misoprostol in PPH Prevention* and *3.12: Steps for Using Misoprostol to Prevent PPH*.



CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

stage of labor when intramuscular or IV oxytocin or Methergine are unavailable or are contraindicated. Misoprostol does not require refrigeration and can be taken orally for the prevention of PPH.

What are the side effects of misoprostol and is it safe?

Several studies have proven that misoprostol is safe and effective to prevent and treat excessive postpartum bleeding. Women can take misoprostol even if they are also taking other medications. It is also safe and without side effects for the newborn, so the woman who was administered misoprostol can feed and care for her baby immediately.

The side effects in the woman are transient and usually go away after 2 to 4 hours. Side effects include:

- Shivering (most common, should pass within first 24 hours);
- Fever (transient rise in body temperature), if fever continues more than 24 hours, suspect infection;
- Headache;
- Nausea, vomiting, and diarrhea may occur but are rare (lasting 2-6 hours);
- Abdominal pain from uterine cramping (lasts until the uterus is well contracted); and
- Seizures and palpitations may occur, but only when an overdose has been administered.

Steps for using misoprostol to prevent PPH:

1. Ensure 600µg of misoprostol is on hand in the delivery room when the second stage of labor (pushing stage) begins.
2. Deliver the newborn. Immediately dry the infant and assess the baby's breathing. Then place the reactive infant, prone, on the mother's abdomen. Remove the cloth used to dry the baby and keep the infant covered with a dry cloth or towel to prevent heat loss.
3. Palpate the uterus to confirm there is not another baby in the uterus.
4. Administer 600µg misoprostol orally if there is no nausea or vomiting. If the woman might vomit the tablets up, place them under her tongue (also 600µg), or rectally (800-1000µg).
5. Clamp and cut the umbilical cord (after the cord stops pulsating or approximately 2-3 minutes after birth of the baby, whichever comes first).
6. After cutting the cord, place the infant directly on the mother's chest, prone, with the newborn's skin touching the mother's skin.

Caution:

Misoprostol is a very powerful stimulator of uterine contractions and can have serious and even fatal effects on the fetus and the mother if incorrectly used to induce labor or for purposes other than preventing or treating PPH.

Specific Objective #5: Demonstrate AMTSL with proficiency.

CONTENT:

Summary

AMTSL reduces the incidence of PPH due to uterine atony by 40-50% and should be offered to all women.

Every birth attendant must have the knowledge, skills, and clinical judgment to perform AMTSL and must have access to the supplies and equipment necessary.

Where all 3 components of AMTSL cannot be performed, the uterotonic should be given prophylactically and the uterus massaged after delivery of the placenta. If the birth attendant has not been trained to apply CCT or a uterotonic drug was not given, WHO advises not to perform controlled cord traction.

The uterotonic of choice is oxytocin, followed by ergometrine or Methergine (not to be given if the woman has heart disease or hypertension). Misoprostol is the choice when an injectable uterotonic cannot be safely provided.

Early cord clamping should be done only if:

- The baby is premature (less than 36 weeks),
- The newborn is asphyxiated and immediate resuscitation is necessary,
- The mother is known to be HIV positive or is Rh negative, or
- The mother starts to bleed profusely and the placenta must be delivered immediately.

METHODOLOGY:

Simulated Demonstration of AMTSL and Simulated Practice (2 hours)

The trainer should:

- Present the summary in the left-hand column. Distribute *Px Handout 3.13: AMTSL*.
- Assess the knowledge and Px skill level from the pretest, participation thus far, and other means (e.g., question and answer segments), giving weight to the components that are the least understood. Note: Some Px will have no experience in performing AMTSL, others may have a lot, and some Px may have learned incorrect habits that must be unlearned.
- Ask Px to brainstorm the steps of AMTSL, including care of the newborn. Put each step on a separate piece of paper. Ask Px to organize the steps in the right order and then tape them to a flipchart.
- Clarify the components, sequence, and timing of the components of AMTSL.
- Pass out *Px Handout 3.14: Competency-Based Training Skills Assessment Checklist for Active Management of the Third Stage of Labor (AMTSL)*.
- Demonstrate AMTSL on a model (having prepared all necessary supplies in advance) and explain steps as s/he goes along. Alternately, call on different participants to tell the trainer which step is next and what should be done (the trainer should demonstrate only correct procedures).
- After demonstrating AMTSL on the

CONTENT: CONTINUED

Never apply cord traction (pull) without applying counter-pressure above the pubic bone on a well-contracted uterus

METHODOLOGY: CONTINUED

model, the trainer will allow each Px to do the same, while being coached by the trainer at first and then by a fellow Px who will use the AMTSL Competency-Based Checklist as a reference.

Throughout the simulated practice, Px should practice their role as clinician by talking to the “patient” and “family member” while performing AMTSL, explaining what is taking place, and reassuring her.

- ➔ Have Px practice in groups of 3 or 4 (mixing more experienced with less experienced Px) at different practice stations (prepared beforehand) until they feel confident of the steps and skills.
- ➔ The trainer will then assess the skills the Px demonstrate in the simulated practice and tell them if they are ready for practice with real patients.

UNIT 4: Early Detection of PPH

Introduction:

Immediate response and action are crucial for survival when PPH occurs. Accurately measuring the amount of blood that a woman has lost is difficult to do, but important for the early detection of PPH. Unit 4 addresses the early detection of PPH and assessment of blood loss during childbirth.

Unit Training Objective:

Participants will be trained on the use of the blood collection drapes and other methods of accurate blood loss estimation.

Specific Learning Objectives:

By the end of this unit, Px will be able to:

- Describe how PPH causes morbidity and death,
- Describe methods used to improve accuracy in estimating blood loss,
- Demonstrate the use of the blood collection drape to measure blood loss, and
- Explain how to monitor women for signs of shock.

Training/Learning Methodology

- Brainstorming
- Group discussion
- Experiential learning exercise
- Demonstration/retrun demonstration
- Trainer presentation
- Role-play
- Practicum

Major References And Training Materials:

- Chua S, et al. Validation of a Laboratory Method of Measuring Postpartum Blood Loss. *Gynecological and Obstetric Investigation* 46:31-33.
- Duthie SJ, et al. Discrepancy Between Laboratory Determination and Visual Estimation of Blood Loss During Normal Delivery. *European Journal of Obstetrics & Gynecology and Reproductive Biology* 38:119-24.
- Lynch CB, et al., eds. *A Textbook of Postpartum Hemorrhage: A Comprehensive Guide to Evaluation, Management, and Surgical Intervention*. Dumfriesshire, UK: Sapiens Publishing, 2006. 17-34. Available online: http://www.sapienspublishing.com/pph_pdf/PPH.pdf

Resource Requirements:

- Computer, LCD projector, CD-ROM containing slides, and screen or white wall
- Flipcharts
- Markers
- Cards
- Blood collection drape (if taught)
- Pelvic model, or use volunteer
- (Standard rag and fluids for demonstration – when ready)
- Surgical gloves - 1 pair
- Long utility gloves
- Vessels of different sizes to hold simulation blood (see Materials for Trainers to Prepare in Advance, below)
- Water
- Red dye
- Thickening agent or gelatin, if available

Evaluation Methods:

- Direct observation using monitoring checklist
- Verbal feedback

Time Required:

Specific Objective	Topic	Time Required
1	Describe how hemorrhage causes morbidity and death.	30 min.
2	Describe methods used to improve accuracy in estimating blood loss.	1 hour
3	Demonstrate the use of the blood collection drape to measure blood loss.	1 hour
4	Explain how to monitor women for signs of shock.	15 min.
	Total Time Required	2 hours, 45 min.

Materials for Trainers to Prepare in Advance

- Collect common materials and/or containers used to measure blood in local clinics or hospitals.
- If there is a commonly used local fabric of a standard size, such as a kanga, lungi, or cleaning cloth that providers can use under the patient following delivery to assess the amount of blood loss, include this for the demonstration.
- Prepare a solution that is similar in consistency to blood. See Participant Handout 4.3 for suggested formulas, or be creative and use local ingredients (water combined with red gelatin or water with a colored thickening agent) to achieve an appropriate consistency and color.
- Blood collection drapes
- Kidney dish and/or calibrated container
- Practice stations set up for blood collection drape simulation
- Copies of Participant Handouts

UNIT 4

Specific Objective #1: Describe how hemorrhage causes morbidity and death.

CONTENT

The Urgency of the Woman's Condition Begins as Soon as Bleeding Starts

Morbidity from PPH includes potential exposure to infected blood supply (if transfusion is needed), anemia, and loss of reproductive capacity if a hysterectomy is needed to control PPH.

Immediate response and action are crucial for survival. Those who live in rural, remote, and hard-to-reach areas are at much higher risk.

Even after practicing AMTSL to prevent PPH, providers must be alert to and recognize excessive postpartum bleeding. AMTSL prevents only 40-50% of PPH. The remaining cases will still need to be diagnosed as early as possible and managed in a timely way.

Reasons for high mortality from PPH


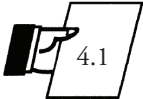
- Failure to recognize excessive blood loss and estimate amount of blood loss
- Failure to provide timely treatment for the cause of PPH
- Failure to provide early and adequate fluid replacement and treatment for shock

Remember, PPH can kill within 2 hours if not managed aggressively and correctly.

METHODOLOGY

Participatory Discussion (30 min.)

The trainer should:

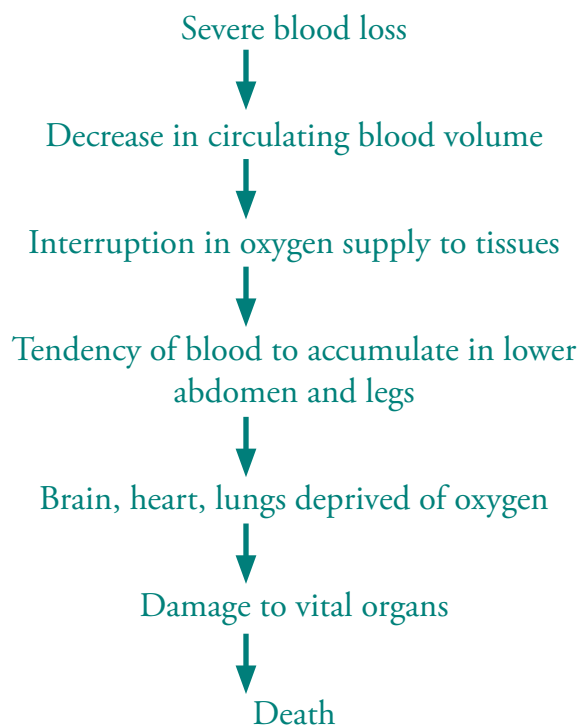
- Explain the difficulty in accurately estimating blood loss and detecting PPH using the contents in the left-hand column.
- Ask: What are the reasons for high mortality from PPH? Supplement responses from content in the left-hand column.
- Emphasize the urgency of PPH because it can kill within 2 hours.
- Show *Slide 4.1 How Hemorrhage Causes Shock, Morbidity, and Death.* 
- Explain what shock is and why fluid replacement is essential.
- Explain how hemorrhage can lead to shock, morbidity, and eventually to death.
- Explain how early recognition of shock, restoration of fluid volume, and control of hemorrhage can prevent morbidity and death.
- Distribute *Px Handout 4.1: How Hemorrhage Causes Morbidity and Death.* 

CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

The principal reason for high mortality associated with obstetric hemorrhage is simple: delayed recognition of excessive bleeding and failure to provide early and adequate treatment and fluid replacement. Unless lost fluid volume is restored as soon as possible and normal tissue perfusion and oxygenation are maintained, the woman is at immediate risk of shock and death.

How hemorrhage causes shock, morbidity, and death

Understanding how hemorrhage causes shock, morbidity, and death is necessary to understanding how to manage shock effectively.



Decreases in circulating blood volume interrupt oxygen supply to tissues, resulting in damage to the vital organs: heart, lungs, kidneys, and brain. When the brain is deprived of oxygen, a process of rapid

CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

deterioration sets in, leading quickly to circulatory collapse and organ failure, which could include cardiac arrest and death.

Shock is a highly unstable condition with a high risk of death. Immediate treatment is needed to save the patient's life. Shock is a reflection of inadequate tissue perfusion. Inadequate tissue perfusion means imminent cell death.

Successful outcomes depend on early recognition of shock, restoration of fluid volume, and control of hemorrhage.

Specific Objective #2: Describe methods used to improve accuracy in estimating blood loss.

CONTENT:

▶ **Estimating Blood Loss**

How can you estimate lost blood volume and PPH so that timely and adequate intervention can be provided? What are some methods of estimating blood loss to detect PPH?

Methods of estimating blood loss

- ➔ Visual estimation
- ➔ Use of the blood collection drape
- ➔ Use of the “Kanga Method” as in East Africa, or adaptation with local materials in each country
- ➔ Collection of blood in a kidney tray or in a calibrated container placed under a cholera bed
- ➔ *Any reliable method that can be devised - a reliable method is needed!*

Visual estimation can be inaccurate, unless providers are trained systematically to make accurate visual estimations. Published studies show that common visual estimation underestimates PPH by 30% -50% (Chua, *et al.*). This inaccuracy increases as blood loss increases (Duthie, *et al.*). Such underestimation delays diagnosis and timely action. However, much can be done to improve visual estimation of blood through competency-based training on reliable estimation of blood loss. It is also useful to have periodic drills where a trainer arranges several examples of blood loss at a facility, simulating real experiences, and has participants estimate and discuss the amounts. This improves and maintains providers’ ability to estimate accurately.

METHODOLOGY:

▶ **Experiential Learning Exercise and Demonstration** (1 hour)

The trainer should:

- ➔ Explain that this session will focus on estimation of blood loss and PPH in order to provide timely and adequate management.
- ➔ Ask: What are some methods of estimating blood loss to detect PPH?
- ➔ Discuss the different methods using the content in the left-hand column.
- ➔ Present the visual estimation exercise, which will allow each of them to know how good they are at accurately estimating blood loss.
- ➔ Give each Px a card, and say: I am now going to show you some slides of blood loss. After you see each slide (labeled a, b, c, etc.), please write down on this card how much blood you think has been lost in the picture on that slide. Using *Slides 4.2 – 4.10*, show each slide, and after each slide ask the Px what they have noted on the card, facilitating a lively exchange and competition among Px. After several Px have given guesses for the slide shown, show the actual amount and proceed to the next slide. After *Slide 4.10*, show *Slide 4.11*, which shows the answers for each image as a review.
- ➔ Ask how many Px got all answers correct, 8 correct, 7 correct, etc. Give a prize to the Px who got the most correct and conclude the exercise by explaining that this clearly shows how inaccurate visual estimation

CONTENT: CONTINUED

The “Kanga Method” of estimating blood loss proved very effective in Tanzania. Standard kangas, which are large pieces of cloth of similar size, weight, and fabric that women wear wrapped around themselves, can be used by providers in lower-level facilities to estimate blood loss accurately. Studies have shown that when 2 kangas are saturated with blood, PPH can be accurately diagnosed for rapid, effective intervention. A cotton pad with a thin plastic lining is in use in Bangladesh, and similar testing of standard cloths has also been conducted in Bangladesh.

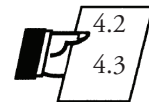
Using a cholera bed to estimate blood loss is also effective. To do so, the woman’s buttocks would be placed over the hole in the bed, rather than placing her legs in stirrups at the end of the bed, and the baby delivered onto the bed, rather than off the bed. A calibrated container should be placed under the hole in the bed so the attendant can monitor the amount of blood collected in the container. It is preferable for the woman not to lie flat—she may deliver in any other position she prefers (squatting, hands and knees, or lying on her side). All blood on the bed must be swept into the hole using only a gloved hand. **Water must not be poured over the perineum or onto the bed until the postpartum blood loss has been measured:** pouring water would artificially increase the volume of liquid in the calibrated container, leading to inaccurate measurement.

Any reliable method that can be devised is acceptable. Other local, standard methods of measuring blood loss can be tested with simulated blood to find an affordable, accessible method of estimating blood loss.

METHODOLOGY: CONTINUED

can be, unless people are trained and practiced in more accurate visual estimation.

- Having prepared measured quantities of simulated blood, and with containers used in local clinics and hospitals and/or a pre-measured, standard-sized, commonly used cloths, saturate/pour into each item different amounts of the liquid. Ask Px to estimate the quantity of liquid collected in/saturating each item. Reiterate that accurate visual estimation requires ongoing training and practice.
- Distribute *Px Handouts 4.2: Improved Estimation of Blood Loss and 4.3: Formulas for Simulated Blood.*



CONTENT: CONTINUED**METHODOLOGY: CONTINUED****Formulas for Simulated Blood:**

A liquid of comparable consistency to blood, useful in blood loss estimation exercises, can easily be made by combining either:

- 475 ml corn syrup,
- 237 ml water,
- 110 grams maize flour,
- 50 ml red food coloring, and
- 10 drops blue food coloring,

or:

- 237 ml corn syrup,
- 15 ml water,
- 30 ml red food coloring, and
- 5 ml yellow food coloring.

Specific objective #3: Demonstrate the use of the blood collection drape to measure blood loss.

CONTENT:

▶ **The Blood Collection Drape and its Use**

The plastic blood collection drape is a simple tool that can be used to assess blood loss. As soon as excessive blood loss is identified, corrective measures can be taken, which will improve patient outcomes. Skilled providers can provide all measures at hand to stop bleeding, begin fluid replacement and, when necessary, transfer patients to a higher-level facility, where more extensive care can be given. Hospitals can begin emergency treatment immediately when excessive blood loss is recognized. However, the blood collection drape is only a tool to measure blood loss. The provider must continuously assess the woman clinically for signs of shock after delivery.

The blood collection drape is a funnel-shaped plastic bag used to measure blood loss after delivery. The upper rectangular portion is placed under the woman's buttocks. The funnel shaped/triangular portion hangs from the end of the delivery table, or is placed flat on the table or floor (depending on the surface on which the woman is delivering). A stiff wire holds the pouch open to collect all blood. The funnel is calibrated with two lines, a yellow alert line at the 350 ml mark, which means preparation for transport must begin, and a red action line at the 500 ml mark, which means that the woman should be transferred immediately to a health facility capable of treating PPH.

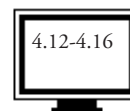
METHODOLOGY:

▶ **Trainer Presentation, Demonstration, and Return Demonstration**

(1 hour)

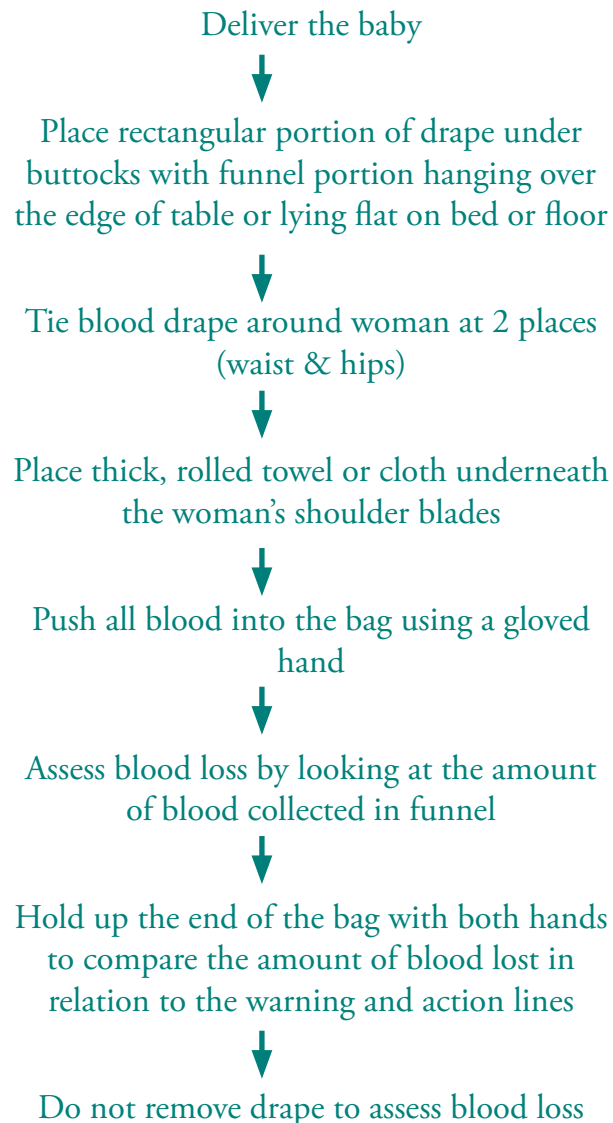
The trainer should:

- ➔ Introduce the blood drape, explaining that it is used for measuring postpartum blood loss by guiding blood into the tip of the funnel, where “warning” and “action” lines indicate serious levels of blood loss.
- ➔ Show the following slides:
 - ➔ *4.12: The Blood Collection Drape*
 - ➔ *4.13: Using the Blood Collection Drape*
 - ➔ *4.14: Correct Placement of the Blood Collection Drape*
 - ➔ *4.15: The Blood Collection Drape in Use*
 - ➔ *4.16: Measuring Blood Collected in the Funnel*
- ➔ Show the actual drape and, while holding up the drape, use *Slide 4.12* to explain the yellow alert line and the red action line.
- ➔ Ask a Px to volunteer to play a patient to model use of the drape. Ask the volunteer to lie on the floor or table. Position the drape and tie it around the volunteer, explaining each step as you go. Demonstrate, using a gloved hand, how to push blood into the funnel and how to lift the funnel to see clearly the level the blood has reached.




CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

The blood collection drape is made of plastic and may be hard to dispose of safely. Some countries, like India, have anti-plastics campaigns and may bar this use of plastic.

Using the Blood Collection Drape**How to Use the Drape**

Once the baby is delivered and the amniotic fluid has passed, both gloved hands are used to slip the blue plastic under the woman's buttocks. This will ensure that only blood

- ➔ During the second demonstration, call on different participants to tell the trainer which step to perform next and how.
- ➔ Clarify each step.
- ➔ Distribute *Px Handout 4.4: Competency-Based Training Skills Assessment Checklist for Using the Blood Collection Drape*. 
- ➔ After demonstrating the use of the blood drape on the volunteer, form teams of Px to work at prepared practice stations, so each Px demonstrates use of the drape while fellow Px use the competency-based checklist as a guide.
- ➔ Circulate around the practice stations. Throughout the simulated practice, each Px should practice her or his role as clinician by talking to the “patient” while applying the blood drape, explaining what is taking place and reassuring the “patient.”
- ➔ Have Px practice in teams until they feel confident of the steps and skills.
- ➔ Assess the skills of the Px.

Methodology continues on page 75.

CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

and no other body fluids are collected in the drape. The drape should be tied around the woman at both the waist and the hips. Tying the drape properly is important because it ensures that the blood is collected within the calibrated funnel. If the woman is positioned at the end of the table, the pouch may hang over the edge of the table. If the woman is lying elsewhere on the bed/table or on the floor, the pouch may lie flat on the bed/table/floor. Once the drape is tied, place a thick rolled towel or cloth under the woman's shoulder blades (scapulae) and head to lift her torso. This inclination will help the blood to flow downward into the funnel and avoid the pooling of blood under her back. In any case, the birth attendant should periodically use a gloved hand to manually push blood into the funnel if it is collecting elsewhere.

To assess the volume of blood in the funnel while the drape is still under the woman, grasp opposite edges of the top portion of the funnel between the fingers and thumb of each hand, lifting the funnel to a vertical position. With the funnel vertical, the level of the blood collected can be compared to the yellow and red lines. There is no need to remove the drape from under the woman when measuring blood loss this way.

CONTENT: CONTINUED**METHODOLOGY: CONTINUED****Cleaning and Storing the Drape**

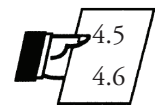
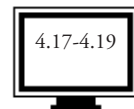
Infection prevention is critically important and is often practiced incorrectly. Proper infection prevention, or universal precautions, ensures that patients, providers, and staff are protected.

There are 3 stages in processing the blood collection drape for reuse: decontamination, cleaning, and storage. If the drape is not to be reused, it must still be decontaminated prior to disposal.

1. *Decontamination* is the first step. Decontamination makes everything safe to handle, killing 80-85% of all microbes and viruses. It requires 10 minutes of immersion in 0.05% bleach solution. Note: Over-processing (soaking too long--more than 10 minutes) can damage the drape; under-processing may be ineffective and is unsafe.
2. *If the drape is to be reused (and water is available):* Next, wash it thoroughly with detergent and water, making sure to remove all blood from the narrowest (lower) part of the funnel. Rinse thoroughly with clean water and air dry in the sun before the next step. Storage is the final important step.
3. *Storage:* Because the drape is not going into the body of the woman, it does not need to be sterile and sterilization would damage the material. Thus, if the drape is to be reused, it should be decontaminated, cleaned, sun dried, folded, and stored until reuse.

The trainer should:

- Explain the importance of infection prevention when handling blood.
- Ask Px what steps they use in processing contaminated equipment. Supplement their answers from the column on the left-hand side.
- Demonstrate the cleaning of the blood drape and the infection prevention procedures that should be observed.
- Show *Slide 4.17: Decontaminate in 0.05% Bleach Solution for 10 Minutes, Slide 4.18: Clean with Soap and Water, and Slide 4.19: Hang the Blood Collection Drape to Dry in the Sun.*
- Explain and demonstrate how to dry and fold the blood drape. (If blood drape is single-use only in your location, discuss the proper disposal of the drape by burning or burying).
- Distribute *Px Handouts 4.5: The Blood Collection Drape and its Use and 4.6: Cleaning and Storing the Drape.*



To Fold and Store the Drape:

- Lay the drape flat on a table.
- Fold the triangular portion of the drape over within itself (so the point touches the center of the top of the funnel) and then over the edge of the rectangular section.
- The opposite sides of the rectangle are folded together, encasing the triangular portion of the drape.
- This is then folded along its breadth, finally looking like a square.
- Once folded, only the blue rectangular portion is visible. This method of folding will occupy the least amount of space.
- The drape should be stored in a clean, dry, and closed place.
- Remember: overexposure, and exposure over time, to bleach and other chemicals used to disinfect may deteriorate the markings and the plastic.

Even if the drape is not to be reused, it must be decontaminated before it is disposed of in accordance with established guidelines.

Specific Objective #4: Explain how to monitor women for signs of shock.

CONTENT:

▶ Observing and Monitoring the Woman for Signs of Shock

Prevention

All women should be examined carefully for tears in the vagina, cervix, or perineum as significant blood loss can occur from some tears. If there are tears, they should be repaired, or if the provider cannot repair them, pressure should be applied with sterile or clean material as the woman is transferred quickly to where the repair can be done. Ruptured uterus should be suspected if other causes cannot be found.

As soon as the placenta is delivered, examine it for torn membranes or missing pieces. If it appears that membranes are torn, or pieces are missing, gently examine the cervix and remove any visible tissue with a sponge forceps. If the missing tissue is not visible, it is likely that it is retained in the uterus and could cause excessive bleeding. Observe the woman to see if the uterus contracts normally.

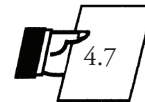
The woman should be observed and monitored for 2 hours after delivery to assess volume of postpartum blood loss as well as vital signs and other symptoms of shock. Use whatever method you find most effective to monitor the amount of postpartum blood loss. Every 15 minutes, palpate the uterine fundus to feel whether it is contracting or remains flabby, and monitor vital signs. Teach the mother and accompanying family members to massage the uterus as well, especially if bleeding begins again.

METHODOLOGY:

▶ Discussion (15 min.)

The trainer should:

- Ask Px to describe the examination of the placenta and cervix following delivery.
- Ask Px to describe how and why to examine the woman for tears.
- Ask Px to describe how to monitor a woman following delivery. Ask for suggestions about how to manage this when they are alone and busy with other patients.
- Describe measures that should be taken to help the uterus contract and reduce blood loss. Stress the importance of gentle but firm uterine massage.
- Distribute *Px Handout 4.7: Observing and Monitoring the Woman for Signs of Shock*.



CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

Throughout the two-hour immediate postpartum period, provide all measures to help the uterus to contract and stop any bleeding:

- Keep the bladder empty;
- Remind the woman how to check and massage her own uterus and to call you if the uterus stays soft or she thinks she is bleeding too much;
- Check the amount of vaginal bleeding every 15 minutes and respond immediately if excessive;
- Check the woman's BP and pulse every 15 minutes and respond immediately if abnormal;
- Every 15 minutes, check that the uterus is well contracted and massage if not;
- Put the baby to the breast; and
- Perform bimanual compression, either internal or external.

Regardless of the level of the facility where the baby is delivered, these measures should be taken (by the trained birth attendant or health provider).

Monitoring to detect shock: How do you know if the woman is in shock?

Because women respond differently to the loss of similar levels of blood, based on their size and level of anemia (i.e., prehemorrhage blood volume and oxygen carrying capacity), some women will exhibit signs of shock even with blood loss less than 1000 cc, or severe PPH.

Signs of the early stages of shock are increasing tachycardia, tachypnea, lowering of blood pressure, pallor, and sweating.

CONTENT: CONTINUED**METHODOLOGY: CONTINUED****Signs of shock include:**

- Rapid heart rate/tachycardia (the **first** sign);
- Weak pulse;
- Rapid breathing/tachypnea;
- Fall in urine output (less than 30 ml/hour is serious);
- Cold, pale, sweaty, bluish skin;
- Alteration in consciousness; and
- Falling blood pressure/hypotension (**late** sign).

Immediate Management

Therefore, while all efforts to manage PPH are ongoing, it is critical to be vigilant in monitoring, observing, and recording vital signs and symptoms so that the onset of shock is detected as soon as possible. When a woman becomes restless and confused, shock is advancing rapidly and immediate, aggressive treatment is needed. If any of these signs are present, treat the woman for shock regardless of how much blood she has lost.

Early recognition of blood loss and timely action is critically important in preventing morbidity and death from PPH, as it can be lethal within as few as 2 hours. In periphery or where higher-level care is less accessible, close monitoring and early diagnosis are even more critical. In regions and populations where chronic anemia and/or anemia during pregnancy is prevalent, the recognition of lesser amounts of blood loss is clinically important. In rural areas with unskilled or minimally-trained birth attendants, where transportation to referral facilities takes much time, we need simple tools that will facilitate early diagnosis so that we can act to avert mortality and morbidity from PPH.

UNIT 5: Treating PPH and Uterine Atony

Introduction:

With the use of AMTSL to prevent PPH, early and accurate detection of PPH using the blood drape or other methods of accurate estimation, and rapid referral and transportation, the incidence of shock from PPH should be greatly reduced. However, about 1% to 3% of women will still suffer intractable PPH from uterine atony. Because women respond differently to the loss of similar levels of blood, there is no uniform level of blood loss at which all women will exhibit signs of shock. Therefore, vigilant observation of signs of shock while prevention efforts are ongoing is essential.

Unit Training Objective:

Participants will be trained in the steps and procedures necessary for treatment of PPH caused by uterine atony. These include management of hypovolemia and hypovolemic shock.

Specific Learning Objectives:

By the end of this unit, Px will be able to:

- Describe the first measures to be taken if PPH occurs,
- Describe the actions to be taken in each level of facility once excessive blood loss is detected,
- Explain the management of hypovolemic shock, and
- Demonstrate the treatment of PPH in a simulated emergency situation.

Training/Learning Methodology:

- Slide presentation
- Group discussion
- Case studies
- Question and answers
- Simulation exercise

Major References And Training Materials:

- Lynch CB, et al., eds. *A Textbook of Postpartum Hemorrhage: A Comprehensive Guide to Evaluation, Management, and Surgical Intervention*. Dumfriesshire, UK: Sapiens Publishing, 2006. 17-34. Available online: http://www.sapienspublishing.com/pph_pdf/PPH.pdf

Resource Requirements:

- ➔ Computer, LCD projector, CD-ROM with slides, and screen or white wall
- ➔ Flipchart
- ➔ Marking pens

Clinical equipment and supplies needed: one practice station should be set up for each group of 4-5 Px. Practice stations should be set up with clinical equipment and supplies as indicated below:

PPH Simulation Practice Station Supplies		
For each station serving 4-5 Px	Total needed for a class of 20-22 Px	
1	5	Emergency tray
3	15	Pairs sterile gloves
1	5	Oropharyngeal airway
1	5	Ambu-bag and mask
2	10	10 drip (IV) sets
		5, 10 and 20 ml syringes/wide bore No. 16 or 18 needles
2	10	IV fluids : Ringers Lactate (10 bottles; normal saline, 5% dextrose solution, etc.)
1+	5+	Of each: oxytocin and ergometrine ampoules/misoprostol
1	5	Local anesthetic (1% plain lignocaine)
1	5	Laboratory bottles and test tubes for bedside clotting test
1	5	Pelvic examination tray
1	5	Foley catheter and urine bag
1	5	Oxygen cylinder with mask or cannula
1	5	Stethoscope
1	5	Sphygmomanometer
1+	5+	Other emergency drugs (adrenaline, atropine, naloxone, etc.)
1	5	Episiotomy/cervical repair kit
1	5	Blankets
		Blocks to raise foot of bed/or table

Evaluation Methods:

- ➔ Simulation Exercise and Feedback

Time Required:

Specific Objective	Topic	Time
1	Describe the first measures to be taken if PPH occurs.	45 min.
2	Describe the actions to be taken in each level of facility once excessive blood loss is detected.	1 hour, 45 min.
3	Explain the management of hypovolemic shock.	1 hour
4	Demonstrate the treatment of PPH in a simulated emergency situation.	1 hour
	Total Time Required	4 hours, 30 min.

Materials for Trainers to Prepare in Advance

- Be sure that all of the clinical supplies and equipment listed under the Resource Requirements are collected from the hospital in advance.
- Copies of Participant Handouts
- Invite or plan for judges to provide feedback and declare the winner of the drill competition.
- Set up practice stations before the beginning of the session.

UNIT

Specific Objective #1: Describe the first measures to be taken if PPH occurs.

CONTENT

METHODOLOGY



Action for PPH

Uterine atony is the most common cause of PPH, but retained tissue, trauma and bleeding disorders are other causes that need investigating, and, if found, need intervention.

After performing the steps of AMTSL, if you observe excessive bleeding and the uterus is contracted and the examinations for retained tissue or trauma are negative, a bedside clotting test can be performed to rule out coagulopathy as a possible cause for PPH. Less than 1% of PPH is from previously existing coagulopathy, but uterine rupture or abruption, preeclampsia/eclampsia, or any severe bleeding can lead to disseminated intravascular coagulopathy (DIC), a life-threatening emergency, which can be detected with this simple test. Treating DIC requires resources only found in comprehensive emergency obstetric care facilities and immediate transfer is required.



Bedside Clotting Test

1. Draw 2ml of venous blood and put it into a small, dry, clean, plain or red-top glass test tube (approximately 10 mm x 75 mm).
2. Hold the tube in your closed fist to keep it warm (+37°C).
3. After 4 minutes, tip the tube slowly to see if a clot is forming. Then tip it



Discussion (45 min.)

The trainer should:

- Explain that in Unit 3 we learned how to provide AMTSL to all women and that in Unit 4 we learned about the need for early detection of PPH and about simple methods for estimating blood loss more accurately, so that timely action can be taken to treat it. Explain that in this session, we are going to learn how to monitor women after delivery to detect PPH (assess the causes of PPH (the 4 T's) and to treat them), and how to prevent shock. Finally, we are going to learn how to treat shock, if it cannot be prevented.
- Review how hemorrhage causes morbidity and death, using *Slide 5.1: How Hemorrhage Causes Shock, Morbidity, and Death.* 
- Use the content in the left-hand column to introduce and describe all procedures to the Px systematically. Distribute *Px Handout 5.1: Action for PPH.* 
- Explain that if appropriate action is taken following the detection of excessive blood loss, the patient is protected from declining rapidly into shock, which can lead to death in a short period of time.
- Explain how to perform a bedside clotting test to rule out coagulopathy.
- Ask Px: If the uterus does not contract when massaged, and the bleeding is

CONTENT: CONTINUED

again every minute until the blood clots and the tube can be turned upside down.

4. Failure of a clot to form after 7 minutes, or a soft clot that breaks down easily, suggests coagulopathy.

If the uterus does not become firm or blood loss exceeds 350 ml

In addition to continuing to keep the bladder empty, massaging the uterus every 15 minutes, and putting the baby to the breast, the SBA should:

1. Administer a second dose of uterotonic to help the uterus to contract. Any uterotonic can be used as per dosage below.

→ Oxytocin can be given, 10-20 IU IM initially. Oxytocin will begin to act within 2-3 minutes if given IM.

Or

→ Ergometrine/Methergine can be given as an IM injection, 0.2-0.4 mg, provided the woman does not have preeclampsia, eclampsia, high blood pressure, or heart disease. It will act within 2-5 minutes of administration and could cause nausea and vomiting. The ergometrine requires stringent handling and storage conditions.

Or

→ Misoprostol, which can be used where refrigeration and ideal storage conditions are not available, can be given orally, sublingually, or rectally, as follows:

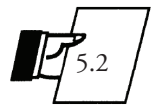
Misoprostol for treatment of PPH

Route of Administration	Dosage
Oral	600µg
Sublingual	600µg
Rectal	800 – 1000µg

METHODOLOGY: CONTINUED

heavy, what is the next step that needs to be taken to prevent shock?

- Explain that PPH must be treated with uterotonics first. Show *Slides 5.2-5.4: Uterotonics Used for the Treatment of PPH*. Explain the advantages and disadvantages of each uterotonic and the correct dosage of each.
- Distribute *Px Handout 5.2: Steps to Take if Blood Loss Exceeds 350 ml*.
- Explain that keeping fluid volume high is critical to preventing shock, so, in addition to stopping the bleeding with uterotonics and massage, adequate fluid replacement is necessary.
- Explain the steps to be taken if the uterus does not become firm or the blood loss is greater than 350ml.
- Explain steps to be taken if blood loss is greater than 500ml.
- Before ending the session, ensure that Px have understood the details and the procedures given in the left hand-column.



CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

→ Misoprostol is effective 9-12 minutes after administration and could cause shivering, nausea, and elevated temperature. It should not be given for at least 2 hours after an earlier dose. If the earlier dose caused shivering or nausea, a second dose should not be given earlier than 8 hours after the first dose.

Recent studies show that although misoprostol is not quite as effective in treatment of PPH as other uterotonics, it is a good alternative when the potency of oxytocin can't be guaranteed because of lack of refrigeration or it has passed its expiration date. Guidelines for misoprostol may change in the near future.

2. Initial steps to treat PPH: Start an IV drip (using a 16-18 bore needle so that the same needle can be used if a blood transfusion is required) with 10-20 IU oxytocin in 500 ml (or 20-40 IU in 1000ml) crystalloid fluids (Ringer's Lactate, Normal Saline, or Hartmann's Solution). Run at 40 drops per minute or 150 ml/hour. (Remember that there are different drips per ml in different countries, so calculate the drop per minute in order to infuse 150/ml/hour.) Subsequent IVs of crystalloid can be given with 5-10 IU in 500 ml (10-20 IU in 1000 ml), run at 150 ml/hour. Oxytocin will begin to act immediately if given intravenously. If high doses of oxytocin are given with large volumes of fluid, oxytocin could have an anti-diuretic effect, causing fluid intoxication/ water toxicity. This is a rare side effect however, especially in younger women of

reproductive age.

3. If retained tissue is suspected and the SBA is trained in this procedure, explore the uterus for retained placenta and remove. If this is not successful and bleeding continues, request surgical assistance. If this facility cannot offer surgical intervention, transfer immediately to a higher facility.
4. If the uterus is contracted but bleeding is excessive, trauma is likely. Omit uterotonic treatment, but provide fluid replacement. If the facility can provide surgical intervention, repair the trauma. If the facility cannot offer surgical intervention, apply pressure to the wound and transfer immediately to a higher facility.
5. If the bedside clotting test is positive, the woman requires emergency treatment for clotting disorders either in the facility she is in if the capacity to treat exists, or a facility she must be transferred to urgently to save her life.

If bleeding from any cause exceeds 500 ml:

Secure a second IV line with a 16-18 bore needle before transfer, so that if the woman's condition deteriorates during transfer, it will not be difficult to start a second IV. Transfer immediately to a facility that can provide higher-level care. It is safest to refer the woman to a facility that can provide surgical intervention as well.

Specific Objective #2: Describe the actions to be taken in each level of facility once excessive blood loss is detected.

CONTENT:

▶ **Observing and monitoring the woman to detect PPH:**

The woman should be observed and monitored for 2 hours after delivery to assess volume of postpartum blood loss, uterine firmness/tone, vital signs, and additional symptoms.

Throughout the two-hour immediate postpartum period, the birth attendant should provide all measures at hand to help reduce postpartum blood loss. Measures should include uterine massage, putting the baby to the breast, and keeping the bladder empty.

Decision making and action once excessive blood loss is detected depend on where the woman is delivering and what capacity the facility has for providing:

- Fluid replacement and oxygen, and
- Management of causes of PPH, particularly uterine atony.

Broadly speaking, action would need to be as follows on the next page.

METHODOLOGY:

▶ **Discussion** (45 min.)

The trainer should:

- Remind Px that during the two-hour immediate postpartum period, the birth attendant should provide all measures at hand to help reduce postpartum blood loss.
- Ask: What are some of these measures? Answers include: uterine massage, putting baby to the breast, keeping the bladder empty.
- Explain that decisions made and actions taken once excessive blood loss is detected depend on where the woman is delivering and what capability the facility has for providing fluid replacement and managing causes of PPH, particularly uterine atony.
- Draw 4 columns on a flipchart labeled:
 1. Extent of blood loss;
 2. Where fluid replacement and PPH management are not available;
 3. Where only fluid replacement/PPH management available; and
 4. Where surgical interventions are available.
- Lead brainstorming to fill in the columns.
- Fill in any missing content and summarize.
- Under the “Extent of blood loss,” column write “> than 350ml in the 1st hour after delivery.” Ask Px to brainstorm the management that should go under each column. Fill in responses according to the content in these pages.

Extent of blood loss	Response, based on resources available at place of delivery		
	Where fluid replacement/PPH management not available	Where only fluid replacement/PPH management available	Where surgical interventions are available
>350 ml after delivery	<p>Continuously provide all measures at hand to stop bleeding: additional uterotonics, put baby to breast, uterine massage, and bimanual compression.</p> <p>Reassess for other causes of bleeding.</p> <p>Continue to assess symptoms and vital signs to detect shock.</p> <p>Preparations to transfer the woman to a higher facility if retained placental tissue, trauma, or clotting problem if bleeding continues without obvious cause.</p>	<p>All in first column plus: Start an IV drip with 10-20 IU oxytocin at 40 drops/minute or 150mL/hour (depending on infusion set).</p> <p>Give appropriate uterotonic based on past history.</p> <p>Prepare to transfer the woman to a higher-level facility if retained placental fragments, trauma, clotting disorder, or continued bleeding.</p>	<p>All in first two columns plus: re-examine for cause of bleeding (atony, retained placenta, trauma, etc.)</p>
>500 ml in first 2 hours after delivery	<p>Refer and immediately transport the woman to a facility that can treat her for PPH.</p> <p>Provide details of treatment given to referral facility.</p>	<p>Start above treatment, plus a second line for fluid replacement with a large bore needle, to be used later if signs of shock develop.</p> <p>Refer and immediately transport the woman to a facility that can treat her for PPH.</p> <p>Provide details of treatment given to referral facility.</p>	<p>All in first 2 columns plus: Provide all needed interventions, which might include fluid and blood replacement, surgery, prevention and treatment of shock, etc.</p> <p>Take appropriate action in labor room or theatre.</p>

CONTENT: CONTINUED**Transporting a woman who is bleeding**

- ➔ Prepare for transfer when blood loss exceeds > 350 ml in 1st hour
- ➔ Transport if blood loss > 500 ml within 2 hours of delivery
- ➔ Elevate legs to improve blood supply to vital organs
- ➔ Keep the woman warm
- ➔ Send a skilled provider with the woman to ensure an open airway, to deliver first aid if the woman goes into shock, and to explain the care provided and the NASG to the woman and her family.
- ➔ Continue uterine massage during transport
- ➔ Provide bimanual uterine compression (external if possible and internal if necessary)
- ➔ Ensure the referral facility knows what uterotonics the woman has been given and when



Principles of Safe and Effective Transfer

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

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


At the right time: Calculate, based on accurate estimation of blood loss and careful observation for signs of shock, the time needed to prepare for transport and to traverse the distance to the referral site.

METHODOLOGY: CONTINUED

- ➔ On the flipchart, Begin again in the “Extent of blood loss” column and write “> than 500ml in the first 2 hours after delivery.” Again, ask Px to brainstorm the management that should go under each column.
- ➔ Show *Slide 5.5: Decision Making and Action Depending on Place of Delivery.* 
- ➔ Discuss the safe transport of women, using the content in the left-hand columns of these pages.
- ➔ Ask Px what precautions should be taken while transporting a woman to a higher facility for management of PPH. Note responses on a flipchart. Use the content in the left-hand column to supplement the Px answers.
- ➔ Show *Slide 5.6: Principles of Safe Transfer.* Ask Px to brainstorm what is meant by each principle. 

Case Studies (1 hour)

The trainer should:

- ➔ Divide Px into 3 groups. Give each group a copy of 1 of the 3 case studies found in *Px Handout 5.3: Case Studies.* Ask the group to chose a Px to record their work and later to present it. Ask each group to spend 20 minutes studying the case study and answering the questions. 
- ➔ Bring Px back together and allow each group 10 minutes to present their case studies. When each group is finished, ask Px to discuss the groups answers to the questions and offer suggestions.
- ➔ Summarize the discussion and point out that each provider, each facility, and each referral network must have their roles

CONTENT: CONTINUED

By the right people: All groups and individuals involved, including SBAs, ambulance/transport drivers, and the patients' families must be prepared to play the roles necessary to provide timely and safe transport.

To the right place: All individuals involved must know in advance which referral facility has the capacity to care for a woman with PPH, in shock, in an NASG, etc., so that time is not wasted traveling to an inappropriate facility, from which the woman will need to be transferred again. The referral site should be informed of the patient's situation as far in advance as possible, so that the referral staff are fully prepared to provide emergency treatment when the woman arrives. An up-to-date record of the patient's history, condition, and treatment should be provided to the receiving facility and providers.

With the right care throughout: When transferred, the patient should always be accompanied by a skilled provider and by family members who can donate blood if required and provide emotional support during transfer. Actions for the skilled provider include: ABCs (open airway, breathing, circulation), oxygen if possible, IVs for fluid replacement, placing a catheter to monitor urine output, keeping the patient warm and in Trendelenberg position, monitoring vital signs continuously, and explaining the NASG and care provided to the woman and her family.

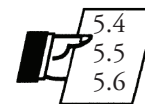
Case Studies

Case 1: Mrs. P. came to the primary health care unit at 16:00 hrs. A traditional birth attendant (TBA) delivered Mrs. P.'s healthy baby girl at home at 04:00 hrs. Mrs. P.'s family had learned about danger signs to look for during delivery from the community health worker. Mrs. P.'s

METHODOLOGY: CONTINUED

and systems established, clarified, and practiced to keep women alive.

- Distribute *Px Handouts 5.4: Observing and Monitoring the Woman to Detect PPH, 5.5: Action to be Taken at Each Facility Level if Excessive Blood Loss Occurs, and 5.6: Transporting a Woman who is Bleeding.*



CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

family was concerned because she seemed to be bleeding excessively. They decided to bring her to the clinic. When she arrived, the nurse estimated that she had lost at least 350 ml of blood. Mrs. P.'s pulse was 95 and her blood pressure was 105/60. The facility had no equipment or supplies for resuscitation or treatment of PPH. The nurse tried to massage the uterus but it would not become firm. She tried bimanual compression, but this was also not effective. The nurse felt there was nothing more that she could do and decided to transfer Mrs. P. to a facility that could offer more emergency care.

1. Did she make the right decision? Is there anything else she could have done?
2. Was the nurse right about the amount of blood Mrs. P. lost? Do you have any way of determining how much blood Mrs. P. lost?
3. How would the nurse know whether Mrs. P. was in shock?
4. What precautions should the nurse take while transporting a woman to a higher facility for PPH to be managed?
5. Please state what you would do to achieve the principles of safe transfer.

The patient has to be transferred:

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

Case 2: Mrs. H. delivered her baby in a small private hospital, attended by a nurse-midwife. The nurse-midwife gave oxytocin immediately after the baby was born. The baby girl was healthy and the nurse-midwife suggested that Mrs. H. breastfeed her baby immediately. The midwife used controlled cord traction to deliver the placenta and immediately began

CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

to gently massage the uterus. Within an hour after the delivery, Mrs. H. began to bleed very heavily. The nurse midwife tried to collect as much of the blood as possible into a kidney dish. Within a short time, the kidney dish was full. The nurse-midwife started an IV drip with 10-20 IU oxytocin in 500 ml crystalloid fluids before transferring Mrs. H. to a higher-level facility.

1. Was this the right decision?
2. How much blood would you estimate that Mrs. H. lost?
3. How would the nurse-midwife know whether Mrs. H. was in shock?
4. What should she do next?
5. What precautions should she take while transporting Mrs. H. to a higher facility for PPH to be managed?
6. Please state what you would do to achieve the principles of safe transfer.

The patient has to be transferred:

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

Case Study 3: Mrs. B. delivered a healthy baby boy in a small district hospital with no surgical facilities. She was attended by a student nurse-midwife, who was supervised by a nurse-midwife on staff. The student nurse-midwife gave oxytocin immediately after the baby was born. The baby boy was healthy and the student nurse-midwife suggested that Mrs. B. breastfeed her baby immediately. The student nurse-midwife used controlled cord traction to deliver the placenta and immediately began to gently massage the uterus. Within an hour after the delivery, Mrs. B. began to bleed very heavily. The student nurse-midwife tried to collect as much of the blood as possible with a

CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

sanitary pad. Very quickly, the sanitary pad was completely saturated. She tried to scrape blood into a kidney dish. Within a short time, the kidney dish was full. The nurse-midwife started an IV drip with 10-20 IU oxytocin in 500 ml crystalloid fluids.

1. How much blood would you estimate that Mrs. B. lost?
2. How would the student nurse-midwife know whether Mrs. B. was in shock?
3. Was there anything else that could have been done at the district hospital?
4. What should the nurse-midwife do next?
5. What precautions should she take while transporting Mrs. B. to a higher facility for PPH to be managed?
6. Please state what you would do to achieve the principles of safe transfer.

The patient has to be transferred:

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

Specific Objective #3: Explain the management of hypovolemic shock.

CONTENT:

▶ Reducing the Incidence of Shock

With the use of AMTSL to prevent PPH, early and accurate detection of PPH with the blood drape or other methods of accurate estimation, and rapid referral and transportation, the incidence of shock from PPH should be much reduced. However, about 1% to 3% of women will still suffer intractable PPH from uterine atony. Multiple blood transfusions are often needed to resuscitate these women and regaining hemostasis may require blood transfusion and/or surgical intervention.

Because women respond differently to the loss of similar amounts of blood, based on their size and level of anemia (i.e., pre-hemorrhage blood volume and oxygen carrying capacity), there is no uniform volume of blood loss at which a woman will exhibit signs of shock. Therefore, vigilant observation of signs of shock while all prevention efforts are ongoing is critical.

Shock is a highly unstable condition with a high risk of death. Immediate treatment is needed to save the patient's life

Management of Hypovolemic Shock

A single individual cannot effectively manage this emergency situation. Help must be urgently requested prior to starting any treatment.

METHODOLOGY:

▶ Discussion (30 min.)

The trainer should:

- Explain that keeping fluid volume high is critical to preventing shock. This means that preventing shock includes not only stopping bleeding with uterotonics and massage, but also adequate fluid replacement.
- Ask Px to describe the symptoms that precede shock and to list the vital signs for early shock, late shock, and severe shock. Note the responses on a flipchart and supplement their answers, using the content in the left-hand column.
- Ask: What is the mechanism in shock that leads to morbidity and death? Highlight the difference between hypoxia and hypovolemia.
- Discuss the changes that hemorrhage causes in the body, which lead to morbidity or death, recording the responses on a flipchart.
- To review, show *Slide 5.1: How Postpartum Hemorrhage Causes Shock, Morbidity, and Death*.
- Review the signs of shock. Distinguish between the signs that indicate early shock and later signs.
- Explain that a single service provider cannot effectively manage an emergency situation. Help must be urgently requested prior to starting any treatment.
- Describe the ABCs of managing hypovolemic shock. Remind Px that



CONTENT: CONTINUED**METHODOLOGY: CONTINUED****Follow A, B, and C (airway, breathing, and circulation)**

Airway and Breathing need to be established and maintained before anything else can be done. **Remember:** Hypoxia kills faster than hypovolemia.

If a woman is not responding when spoken to, her airway may be blocked. An individual with the appropriate skills and training must see that the airway is open.

Once the airway is assured:

- Provide O₂ by mask at 6-10 liters/minute
- No fluids are to be given by mouth
- Keep the patient warm
- Elevate her legs or place her in Trendelenberg position.

Circulating blood volume: If the uterus is not contracting and the woman shows signs of shock, IV fluid replacement is required immediately to correct blood loss.

For effective fluid replacement:

- Ensure adequate fluid replacement
- Deliver fluid as quickly as possible for the first 500ml, and slowed for subsequent IV fluids, providing boluses when needed to stabilize vital signs (see below).

Start 2 IV lines with short, large-gauge cannula (16-18). The volume that can be infused through a cannula is proportional to its diameter and is inversely proportional to its length. Use only crystalloid fluids—Ringer’s Lactate, Normal Saline, or Hartmann’s Solution.

hypoxia kills faster than hypovolemia.

- Explain that if an airway is blocked, an individual with the appropriate skills and training needs to see that the airway is open.
- Put up 2 flipcharts side by side with “Plain IV” written on the left and “IV with uterotonic” on the right. Remind Px that when signs of shock are present, you will need to insert 2 IV lines: one line will be a plain crystalloid fluid and the other will be a crystalloid fluid with a uterotonic. Explain that crystalloid fluids are Ringer’s Lactate, Normal Saline, or Hartmann’s Solution. Under the appropriate column, write the rate at which each line must be infused.
- Explain that Px must not give more than 5000 ml in the first 6 hours and 8000 ml of fluid (total of both IV lines) in the first 24 hours.
- Remind Px that they must keep the woman warm throughout. *Blood loss causes hypothermia* and each patient must be evaluated for blood transfusion through CBC, platelets, type and cross match, and clotting (use bedside clotting test if possible).
- Explain that oxytocin has an anti-diuretic effect at high doses and, with large volumes of fluid, can cause fluid intoxication, so the uterotonic IV must run much more slowly than the plain IV.
- Ask whether Px have ever seen a patient with fluid intoxication. Ask, what the symptoms are. Is there a concern that the patient will experience fluid overload with several liters of the plain IV?

CONTENT: CONTINUED**IV Line #1:**

Begin a **PLAIN FLUID IV** line, using crystalloid fluid, and infuse rapidly so that the patient receives 2000 ml in the first hour as follows:

- ➔ 500 ml in the first 10 minutes
- ➔ The next 500 ml in 10 minutes
- ➔ The next 500 ml in 20 minutes
- ➔ The next 500 ml in 20 minutes
- ➔ Subsequent PLAIN IVs should run @ 150 ml/hour with boluses of 250ml as necessary to maintain the systolic BP at \geq 80 mm/Hg

IV Line # 2:

This is the **UTEROTONIC IV** line. This IV should also be crystalloid fluid with uterotonic added. Continue until the patient is stable. Give no more than 100 IU oxytocin in 24 hours, as follows:

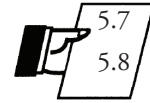
- ➔ 500 ml fluid with oxytocin 10 – 20 IU at 60 drops per minute (depending on the drops per ml for the IV set-ups in a particular country).
- ➔ 500 ml with oxytocin 20 IU at 30 drops per minute until the patient is stable.

These rates will ensure that fluid intoxication is avoided.

- ➔ Do not give more than 5000 ml total of both IV lines in the first 6 hours and 8000 ml of fluid in the first 24 hours.
- ➔ Keep the woman warm throughout: blood loss causes hypothermia.
- ➔ Evaluate the patient for blood transfusion CBC, platelets, type and cross match, and clotting (use bedside clotting test if possible).

METHODOLOGY: CONTINUED

- ➔ Ask for comments and questions and clarify any remaining issues.
- ➔ Distribute *Px Handout 5.7: Reducing the Incidence of Shock and 5.8: Management of Hypovolemic Shock.*

**Group Work** (30 min.)

The trainer should:

- ➔ Explain that Px will develop and present best practices—at different levels of the health system—related to treatment of uterine atony.
- ➔ Divide Px into 3 groups and assign each 1 of the following 3 cases, written on separate sheets of paper:

Group 1: You are a group of OB/GYNs and nurses in secondary and tertiary hospitals. Discuss and then draw a chart showing, step-by-step, the treatment and management of PPH in secondary and tertiary health facilities.

Group 2: You are a group of nurse midwives and staff nurses in a primary health care center. Discuss and draw a chart showing, step-by-step, the treatment and management of PPH when it occurs in primary health facilities.

Group 3: You are a group of midwives and auxiliary nurses working in a health post or sub-center. Draw 2 charts showing, step-by-step, the treatment and management of PPH when it occurs (a) in a home delivery and (b) in an institutional delivery at sub-centers.

- ➔ Explain that Px have 15 minutes to complete their work and that each group should appoint a rapporteur who will write the group's chart(s), based on the group's

CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

Remember that oxytocin, which has an antidiuretic effect at high doses and with large volumes of fluid, can cause fluid intoxication, so the uterotonic IV must run much more slowly than the plain IV.

Fluid intoxication, especially in a young woman of reproductive age, is very rare unless she has severe heart disease or other uncommon conditions. If a maximum of 5,000 ml of plain IV fluids is given during the first 8 hours and 8,000 ml total in 24 hours, pulmonary edema and other adverse effects are extremely unlikely. However, only the plain IV should be used for boluses or to push fluids.

Signs of fluid intoxication are headache, vomiting, drowsiness, and convulsions.

The danger to the patient of infusing too little fluid and under-correcting for hypovolemia far exceeds the danger of fluid intoxication.

If the uterus is contracted, follow the directions for fluid replacement but omit the use of uterotonics, find the source of bleeding (laceration, ruptured uterus, retained products of conception), and address it medically or surgically.

discussion and conclusions. Each group will get 5 minutes to present.

- Move between the groups as they work, supervising, keeping them on track, and providing clarification as needed.
- At the end of 15 minutes, tell Px to stop work and call each group to present.
- After each group's presentation, invite other members of the group to add to the presentation. Then, invite comments and discussion from the rest of the class.
- Make sure that stabilization and transport are part of action taken at the PHC and health post levels.

Specific Objective #4: Demonstrate the treatment of PPH in a simulated emergency situation.

CONTENT:

▶ **Treatment of PPH: An Emergency Situation Simulation Exercise**

Simulation exercises model a common workplace scenario and allow Px to practice problem solving. Simulations are not role plays in a scenario, but rather as close to life as possible depiction, in real time, of clinical management situations. Simulation exercises are often used for emergency preparedness training. An emergency is simulated and staff at all levels—everyone from nurses, to nurse midwives, to doctors—can practice procedures together, to ensure that roles and procedures are defined, they are understood, compatible with each other, and they are realistic for the individual facility. Simulations are a great way to ensure all roles will be performed in a real emergency.

There are two primary reasons for conducting a simulation exercise:

1. *To verify the effectiveness of emergency plans and components thereof:* Where plans are developed for events not previously experienced, clinic and hospital managers and those responsible for caring for patients must be sure that the plans developed will work—the effectiveness of the planned activities and procedures needs to be verified. Events like eclampsia and PPH are not routine events in many settings, but providers and facilities must still plan for appropriate emergency responses. Where simulation exercises reveal a

METHODOLOGY:

▶ **Simulation Exercise**

(1 hour, plus time for Px to prepare)

The trainer should:

- Explain to Px that a simulation exercise model is often used for emergency preparedness training. Explain what a simulation exercise entails, using the content in the left-hand column.
- Explain that, as with any emergency, the clinical team must have emergency readiness. This means that each member of the team knows what must be done in an emergency and why, and that each person knows what role she or he will play, be it team leader (the critical role), providing fluid replacement, providing medications, or dealing with relatives, etc. Since PPH is not a common occurrence in most facilities, trained staff can lose their skills for managing PPH. To prevent this, keeping skills sharp and ready to use, periodic drills—announced and unannounced—should be run.
- Divide Px into 3 groups and assign each 1 of the 3 scenarios given in the left column to perform a simulated PPH emergency drill as realistically as possible within the classroom. The 3 scenarios can also be found in *Px Handout 5.9: Treatment of PPH: An Emergency Situation Simulation Exercise*. Px will not be expected to explain what they are doing, but to play their roles exactly as



CONTENT: CONTINUED

need for improvement, those areas can be addressed and the exercises can be repeated, if needed, to build confidence among the necessary staff. Occasionally, procedures may need to be modified. In that case, a new simulation should be conducted to verify the effectiveness of the modifications.

2. *To provide experience and practice to those who may be involved in a responding to an emergency:* Simulation exercises are a valuable way of putting emergency plans into practice prior to an actual need. Simulations allow staff identified in emergency plans to perform their functions in a lower-stress environment than an actual emergency. This gives staff the opportunity to explore their roles and what is expected from them. Within the exercise format, trainers, service providers, and managers have the opportunity to identify and correct knowledge gaps and functional inconsistencies. This may lead to additional, targeted training or improvements in the planning process after the exercise.

Below are three scenarios for the group work. Each group will be assigned one scenario.

Scenario for Group 1:

Situation: A 28 year-old grand-multipara delivered a healthy baby boy weighing 3,000 gm at 12:30 hrs. at a sub-centre. The placenta delivered at 13:10 hrs. It is now 13:30 hrs. She has been bleeding heavily since delivery of the placenta. As the nurse-midwife works to stabilize her for transfer, she recognizes beginning signs of shock.

METHODOLOGY: CONTINUED

they would in an emergency situation.

- Inform the Px they are expected to prepare during the evening and set up and perform the drill the first thing in the morning, enacting exactly what each member of the facility team would do to deal with the situation. During their preparation, they should assign a role for each team member. In the beginning of the emergency response, the team leader should state that they will lead the response, and proceed to give assignments to each of the others even as they move into action. They should also gather their equipment and any supplies they might need and practice the simulation at least once.
- Explain that the groups may invite one or more other participants to join them, to assist with a role.
- Explain that the performance of each group will be judged on:
 1. Realistic, methodical, and correct approaches to the assigned situation,
 2. Appropriate responsibility taken (technical/non-technical) by team members, and
 3. Appropriate time taken to complete the response correctly.

Each simulation should take approximately 10 minutes.
- Offer to stay and provide support to groups as they prepare and to arrive early in the morning to respond to questions.
- After each simulation, ask the following questions for discussion:
 1. How did the group feel about how their own drill went?

CONTENT: CONTINUED

Roles: the patient, her mother-in-law, and a community midwife based at the sub-center

Scenario for Group 2:

Situation: A 24 year-old woman, gravita-2, para-2, was admitted at 01:00 hrs to a primary health center after 2 hours of labor. On admission she was having strong contractions 2 minutes apart, and delivered a 3500 gm baby girl precipitously at 01:20 hrs. She delivered the placenta 10 minutes later. Her BP at 01:45 hrs. was 90/70 and pulse was 130. She has been bleeding heavily and showing signs of shock. She is accompanied by her mother-in-law.

Roles: the patient, her mother-in-law, one medical officer, one community midwife, a ward aid, and an ambulance driver located at a 24/7 primary health center

Scenario for Group 3:

Situation: A primipara at a tertiary hospital delivered a male baby weighing 3500 gm at 02:30 hrs. The second stage of labor was 2 hours and she was exhausted. The placenta delivered at 03:15 hrs.

During monitoring, the student nurse found that the woman was bleeding heavily. The student nurse informed the nurse-midwife, who found the patient was showing signs of shock. The patient's husband is waiting in the corridor.

Roles: the patient, her husband, a resident, and a nurse-midwife

Additional Groups

An additional scenario may be developed for a community health center or district hospital so all participants have a role to play.

METHODOLOGY: CONTINUED

2. Are there things they would change?
 3. To the rest of the Px and the judges: did the team use the correct approach to the assigned situation?
 4. Was the appropriate (technical/non-technical) responsibility taken by each of the team members?
 5. Was the appropriate time taken to complete the response correctly?
 6. Ask the group performing the simulation whether they feel the exercise was useful and how it might be improved/tailored for their own facilities.
- ➔ Repeat the same process with each group.
 - ➔ Suggest that Px take these simulations back to their facilities and perform similar drills periodically to maintain skills and procedures.
 - ➔ Suggest that Px or others in their facilities arrange surprise drills periodically to see how staff would respond to an unexpected emergency involving shock and to get all staff on board with the role they would play.

UNIT 6: The Non-Pneumatic Anti-Shock Garment (NASG)

Introduction:

A key component of managing hypovolemic shock is ensuring that the available blood in the body is redirected mostly to the upper body so that the vital organs (heart, lungs, kidneys and brain) continue to receive oxygen and the woman is protected from vital organ damage and death. One way to achieve this is to place the woman in the Trendelenberg position, where the head is lower than the feet and hips. However, applying the NASG is a more effective way of ensuring the vital organs continue to receive adequate blood supply and slow bleeding at the same time.

Unit Training Objective:

Trainees will learn how the NASG is effective in reversing hypovolemic shock by shunting blood from the veins of the abdomen and lower extremities to the vital core organs: heart, lungs, kidneys, and brain. Trainees will learn to apply, remove, decontaminate, clean, dry, and fold the NASG.

Specific Learning Objectives:

By the end of the session, Px will be able to:

- Demonstrate how to apply the NASG to revive a woman in shock, and remove it once she has recovered;
- Describe how to carry out medical and surgical procedures while the woman is in the NASG;
- Demonstrate how to clean, fold, and store the NASG; and
- Explain how to develop a system for replacing the NASG after use at the facility level.

Training/Learning Methodology

- Demonstration/return demonstration
- Discussion
- Trainer Presentation
- Quiz

Major References and Training Materials:

- Miller S, Hensleigh P. Non-Pneumatic Anti-Shock Garment. In, Lynch CB, et al., eds. *A Textbook of Postpartum Hemorrhage: A Comprehensive Guide to Evaluation, Management, and Surgical Intervention*. Dumfriesshire, UK: Sapiens Publishing, 2006. 136-146. Available online: http://www.sapienspublishing.com/pph_pdf/PPH-Chap-14.pdf

- ➔ Miller S, et al. A Comparative Study of the Non-Pneumatic Anti-Shock Garment for the Treatment of Obstetric Hemorrhage in Egypt. *International Journal of Gynecology and Obstetrics* 109: 1, 20-24.
- ➔ Miller S, et al. *NASG Training Video*. Available online: <http://www.nasgexchange.org>.
- ➔ Ojengbede O, et al. Management of Tubal Ectopic Pregnancy with the Non-Pneumatic Anti-Shock Garment in UCH and Adeoyo Maternity Hospital, Ibadan and Ayinke House, Lagos. Health Sector Reforms and Maternal Health. *Proceedings of the 39th Annual General Conference of the Society of Gynaecology and Obstetrics of Nigeria (SOGON) – “OLUYOLE 2005.”* Jos, Nigeria: Society of Gynaecology and Obstetrics of Nigeria, 2006. 313 – 314.
- ➔ Ojengbede OA, et al. An Analysis of Haemorrhage Reduction and Improved Recovery Among Patients with Hypovolaemic Shock Secondary to Postpartum and Post Abortion Haemorrhage: A Pilot Study of NASG in Nigeria. *Tropical Journal of Obstetric & Gynaecology* 23: Suppl. 1, S9.
- ➔ U.S. Department of Health and Human Services Centers for Disease Control and Prevention. Use of Bleach in Prevention of Transmission of HIV in Health Care Settings. March 9, 1995. Available online: <http://www.cdc.gov/od/ohs/biosfty/bleachiv.htm>.

Resource Requirements:

- ➔ Flipchart
- ➔ Marker pens
- ➔ NASG
- ➔ A bowl for chits
- ➔ Prizes for quiz

Evaluation Methods:

- ➔ Each Px demonstrates application, removal, and folding of the NASG at least once
- ➔ Observation with a competency-based checklist

Time Required:

Specific Objective	Topic	Time
1	Demonstrate how to apply the NASG to revive a woman in shock and remove it once she has recovered.	2 hours
2	Describe how to carry out medical and surgical procedures while the woman is in the NASG.	30 min.
3	Demonstrate how to clean, fold, and store the NASG.	45 min.
4	Explain how to develop a system for replacing the NASG after use at the facility level.	45 min.
Quiz	Quiz on the NASG	45 min.
Total Time Required		4 hours, 45 min

Materials for Trainers to Prepare in Advance

- Organize 4 tables for practice, each with an NASG, BP apparatus, and copies of the Competency-Based Checklist for Application and Removal of the NASG
- Copies of Participant Handouts

UNIT 6

Specific Objective #1: Demonstrate how to apply the NASG to revive a woman in shock and remove it once she has recovered.

CONTENT

The Non-Pneumatic Anti-Shock Garment (NASG)

A key component of managing hypovolemic shock is ensuring that the available blood in the body is directed mostly to the upper body so that the vital organs (heart, lungs, kidneys, and brain) continue to receive oxygen and the woman is protected from vital organ damage and death. One way to achieve this is to place the woman in Trendelenberg position, where the head is lower than the feet and hips. A more effective way of ensuring this is to apply the NASG.

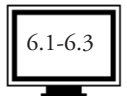
- The NASG is a lightweight (1.5 kg) compression suit made of neoprene, with 6 segments that close around the legs at the ankle, calf, thigh, pelvis, and abdomen.
- Velcro fastenings help keep the garment on tightly.
- The abdominal segment (#5) incorporates a small foam ball that applies pressure to the uterus to decrease bleeding.
- Markings on each section show how to apply it on a woman.
- When applied tightly by one person, the garment supplies enough circumferential pressure from the ankles to the diaphragm to reverse hypovolemic shock by shunting blood from the capacitance vessels of the abdomen and lower extremities to the

METHODOLOGY

Trainer Presentation (5 min.)

The trainer should:

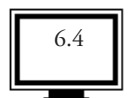
- Introduce the NASG and explain how it protects a woman from vital organ damage and death due to hypovolemic shock.
- Show *Slide 6.1: A Woman in the NASG*.
- Show *Slide 6.2: How the NASG Protects a Woman in Hypovolemic Shock*.
- Show *Slide 6.3: Components of the NASG*.
- Show the garment to Px and explain each part.



Demonstration (55 min.)

The trainer should:

- Invite a volunteer to come and try on the NASG.
- Distribute a copy of *Px Handout 6.1: Flowchart for Applying the NASG* to each Px and ask them to follow the diagram as the trainer demonstrates the application of the NASG on the volunteer.
- Show *Slide 6.4: Applying the NASG*. Explain the general application of the NASG.
- While applying the NASG to the volunteer, explain each step.



Methodology continues on page 106.

CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

vital core organs- heart, lungs, kidneys, and brain.

- It is washable and reusable (at least 30 times). It has received a United States Food and Drug Administration 510K medical device regulation number, K904267/A, Regulatory Class II, January 17, 1991. It can be exported outside the US.
- The NASG can be easily packed into a bag for storage.

A woman in shock may be unconscious and will require one-on-one nursing care to ensure a patent airway, prevent aspiration, etc.

Discomfort with the NASG

If the woman experiences difficulty breathing or is uncomfortable, the abdominal panel must be adjusted. If she is hot, try a fan, cool breeze, and/or cold compresses. If the NASG feels itchy to her, and she is stable, a provider may remove a single leg panel briefly, apply lotion, and quickly reapply the panel.

Application of the NASG for Any Level of Facility or Provider

- General application
- Application for shorter women
- Application if the woman is unconscious

Steps of Application

General Application

Step 1

- To apply the NASG, place it under the woman; the top of the NASG should be at the level of her lowest rib.
- Starting at the ankles, close segment #1

CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

tightly around each ankle.

- Make sure it is tight enough so that you can snap it and hear a sharp sound!

Step 2

- Next, close segment #2 on each calf as tightly as possible.
- Try to leave the woman's knee free in the space between segments so that she can bend her leg. She may be in the NASG for a long time.

Step 3

- Apply segments #3, the thigh segments, in the same way as segments #1 and #2.
- Remember: close segments tightly enough so that you can snap it and hear a sharp sound!

Step 4

- Segment #4, the pelvic segment, goes all the way around the woman at the level of the pubic bone.

Step 5

- Place segment #5 with the pressure ball directly over her umbilicus.
- Then close the NASG using segment #6.

If there are two people present, they can rapidly apply the three leg segments together, each working on one leg, starting at the ankle. However, only one person, using as much strength as possible, should close the pelvic and abdominal segments. If two people close the pelvic and abdominal segments as they can apply too much pressure and compromise the patient's breathing.

Do not close the segment so tightly that it restricts the woman's breathing. One

CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

person can sufficiently manage the whole application if necessary.

When Finished

- ➔ Make sure the patient can breathe normally with the NASG segment #6 in place.
- ➔ If the source of bleeding appears to be uterine atony, administer uterotonic drugs and massage the uterus. The NASG stretches, allowing room for your hand to fit between the woman's abdomen and the NASG.

Application for Short Women (if the very small garment is not available)

If a woman is shorter than those for whom the NASGs available are designed, a simple adjustment can be made so that the larger garment will still fit. To apply the NASG to a short woman:

Step 1

- ➔ If the woman is short, fold segment #1 to the inside of segment #2
- ➔ Begin with segment #2 at her ankles.

Steps 2-4

- ➔ Apply segment #3 to the thighs, as usual. Continue with the rest of the segments as with all women.

Application if the Woman is Unconscious

You will need 2 people!

Applying the garment to an unconscious woman will require 2 people to position the garment beneath her. The final segment, however, should still be closed using only the strength of one person.

The trainer should:

- ➔ Explain application for shorter women. Note and demonstrate that the NASG is adjustable in size and that if the patient is very short the number one segment can be folded up into the #2 segment so that the #2 segment becomes the ankle segment.
- ➔ Explain application if the woman is unconscious
- ➔ After the application is over, ask the volunteer:
 - Q: Can you describe how the NASG makes you feel?
 - Q: Are you experiencing any difficulty in breathing?
 - Q: Are you feeling any discomfort?
 - Q: Are you feeling hot?
 - Q: Are you feeling itchy?

If the volunteer answers yes to any of these questions, try the methods listed in the Content section to alleviate her discomfort.

Note: Do not leave the volunteer for too long in the NASG and do not apply maximum pressure.

CONTENT: CONTINUED**METHODOLOGY: CONTINUED****Step 1:**

- Open the NASG on a flat surface and only open segments #4, #5, #6, keeping segments #1, #2, and #3, closed (but not fastened with the Velcro).

Step 2:

- Fold segments #4 and #6 (the sides that do NOT contain the ball) once towards the yellow midline dots (in toward the black side of the NASG). This will prevent the Velcro from sticking to other parts of the NASG and to the patient or bed linen.

Step 3

- Turn segments #4 and #6 once more toward the yellow midline so that the folded edge lies along the yellow midline.

Step 4

- Take the folded segments #4 and #6 and turn them over towards the colored (maroon or blue) outside of the NASG placed approximately where the yellow midline is on the outside. This will divide the upper portion of the NASG in half along the dotted line.

Step 5

- Turn the woman on her side with her back facing you and place the folded NASG on the bed with the dotted line along the woman's spine and the top edge of the NASG at the level of her lowest rib.
- Push the folded/rolled sections #4 and #6 under her body.

Step 6

- Roll her towards you, turning her to her

Methodology continues on page 108.

CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

other side, over the rolled portions of the NASG. She is now facing you.

- ➔ The second person pulls the folded segments #4 and #6 out from under the woman.

Step 7

- ➔ Turn the woman on her back. She is now lying in the middle of the NASG, with the yellow dots along her spine, with the top edge of the NASG at the level of her lowest rib on the side. Check positioning by placing, but not closing, the #5 segment with the ball over her navel.

Step 8

- ➔ Starting at the ankles, close segments #1 tightly around each ankle.
Remember: Make sure it is tight enough so that you can place a finger under the segment and snap the leg segments to hear a sharp sound!

Removal of the NASG

The NASG should only be removed:

- ➔ Under medical supervision,
- ➔ When the woman is stable, and
- ➔ According to the time line outlined below.

Rapid removal of the NASG or removal of the segments in the wrong order can result in death.

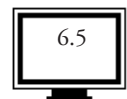
Step 1

Begin removing the NASG only when the woman's condition has been stable for two hours:

- ➔ Bleeding has decreased to <50 ml/hour;

The trainer should:

- ➔ Show *Slide 6.5: Removing the NASG*.
- ➔ Demonstrate how to remove the NASG.

**NASG practice** (45 min.)

The trainer should:

- ➔ Divide Px into 4 teams and put each team at one of 4 or 5 practice tables with an NASG, BP apparatus, and copies of *Px Handout 6.2: Competency-Based Checklist for Application and Removal of the NASG*.
- ➔ Go over the checklist to make sure all Px



CONTENT: CONTINUED

- Hemoglobin level is >7 or the hematocrit 20% (unless the woman's usual hemoglobin is less than 7% and hematocrit is less than 20%);
- Pulse <100 and systolic BP 90 mm/Hg or greater; and
- The woman is conscious and aware.

Step 2

- Wait 15 minutes for redistribution of blood to occur between removing each segment.
- Always wear gloves when handling a soiled garment.
- Removal of the NASG begins with the lowest segment (typically segment #1, or segment #2 if the woman is short and segment #2 is at her ankles) and proceeds upwards.
- 15 minutes after removing the first segment and before proceeding to the next step, take her pulse and blood pressure to verify that she is ready for removal of the next segment.

Step 3

- If pulse and blood pressure stable 15 minutes later, remove the next section.

Steps 4 and 5

- After 15 minutes, take pulse and blood pressure. If stable, remove the next segment.
- Continue following this procedure—remove a segment, wait 15 minutes, take pulse and blood pressure—until all parts of the NASG are removed.

METHODOLOGY: CONTINUED

understand how to use it.

- Have each Px practice quickly applying and removing the NASG to short, tall, conscious, and unconscious patients while explaining, step by step, what s/he is doing.
- Have the other Px use the checklists to observe, see if all steps are followed and to give feedback.

Methodology continues on page 110.

CONTENT: CONTINUED**METHODOLOGY: CONTINUED****CAUTION: Rule of 20**

If the blood pressure falls by 20 mmHg OR the pulse increases by 20 beats/min after a segment is removed:

- a) Rapidly replace ALL segments, and consider the need for more saline or blood transfusions.
- b) If there is recurrent bleeding, replace all segments of the NASG and determine the source of bleeding.

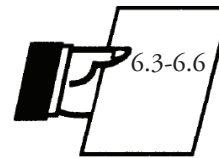
Avoiding Adverse Events When Using the NASG

- Only one person should apply the pelvic and abdominal sections of the NASG (even if the woman is unconscious and two people were required to begin apply the NASG).
- Monitor urine output.
- Ensure airway protection and aspiration prevention as required.
- Ensure one-on-one nursing care throughout.
- Ensure presence of a relative/support person with the unconscious patient, ready to explain the purpose of the garment when patient returns to consciousness and call for help. Surprised, confused, or frightened patients may attempt to remove the garment prematurely, resulting in death.
- Never open the abdominal panel first.

Discussion (15 min.)

The trainer should:

- Ask Px if they have any questions about applying and removing the NASG.
- Describe how to avoid adverse events when using the NASG.
- Distribute *Px Handouts 6.3: Photograph of the NASG, 6.4: The Non-Pneumatic Anti-shock Garment (NASG), 6.5: How the NASG Protects a Woman in Hypovolemic Shock, 6.6: The Components of the NASG, 6.7: Removal of the NASG, and 6.8: Avoiding Adverse Events when using the NASG.*



Specific Objective #2: Describe how to carry out medical and surgical procedures while the woman is in the NASG.

CONTENT:

► **Vaginal Procedures with the NASG On**

The design of the NASG permits complete perineal access. Thus, the source of most obstetric hemorrhages can be located and treated while the garment maintains the woman's vital signs.

The following vaginal procedures can be performed on a woman in an NASG:

- Repair of episiotomy or vaginal and cervical lacerations,
- Manual removal of the placenta,
- Bimanual compression (external or internal),
- Dilatation and curettage (D&C),
- Dilatation and evacuation (D&E), and
- Manual vacuum aspiration (MVA).

Abdominal Surgery with the NASG On

Surgery to obtain hemostasis can also be performed with the NASG in place. The abdominal and pelvic panels must be opened, but only immediately before the first incision. Such procedures may include:

- Cesarean section,
- Repair of ruptured uterus,
- Hysterectomy,
- Salpingectomy/salpingostomy,
- Ligation of arteries,
- Laparotomy,
- Laparoscopy,

METHODOLOGY:

► **Presentation** (30 min.)

The trainer should:

- Ask participants to list vaginal procedures that could be performed with the NASG on. Write responses on a flipchart and fill in missing content.
- Ask: Are there any vaginal procedures that cannot be performed with the NASG on?
- Ask participants to list types of surgery to obtain hemostasis that can be performed with the lower panels of the NASG on. Write responses on a flipchart and fill in missing content.
- Explain that vaginal procedures can be performed with the NASG in place and that no change needs to be made in normal procedures.
- Ask: Are there any surgical procedures that cannot be performed with the NASG on?
- Ask: For surgery, when should the abdominal and pelvic panels of the NASG be removed?
- Reiterate that all panels must be in place for surgery, and the abdominal panels should be removed just before the first incision.
- Encourage Px to ask questions.
- Distribute *Px Handout 6.9: Performing Vaginal Procedures with the NASG On*.



CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

- ➔ Removal of placenta accreta,
- ➔ Repair of broad ligament hematoma, and
- ➔ B-Lynch or other uterine compression sutures.

Prepare the operating theatre for surgery, have all members of the surgical team scrubbed, gowned, gloved, in place, and ready to operate immediately prior to surgery. The woman should be catheterized; the anesthesiologist must be prepared to administer IV fluids to manage a drop in blood pressure.

Step 1

- ➔ Remove **ONLY** segments #4, #5, and #6. With the abdominal portion removed, much of the benefit of the NASG is lost, and the patient may go back into shock.

Step 2

- ➔ Place the patient in steep Trendelenberg position.
- ➔ Operate as quickly as possible.

Step 3

- ➔ Replace segments #4, #5, and #6 as soon as the vaginal procedure is complete.

Specific Objective #3: Demonstrate how to clean, fold, and store the NASG.

CONTENT:

METHODOLOGY:

► Cleaning the NASG

Preparing a Bleach Solution for Soaking the NASG

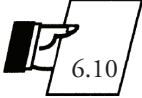
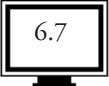
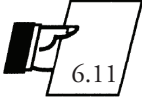
Exposure to too strong a bleach solution will cause the NASG to deteriorate. Because the NASG does not go inside the body, it can be decontaminated in a bleach solution that one-tenth as strong as that used in conventional instrument processing (the NASG should be soaked in a 0.05% bleach solution; standard instrument processing uses a 0.5% bleach solution).

Dilution is necessary when using a pre-made bleach solution because bleach sold commercially is more concentrated than 0.05%. Because the concentration of commercially-sold bleach varies by brand and country, the amount of bleach needed to achieve a 0.05% solution will also vary. The following chart shows how to mix 0.05% solution from pre-made solutions.

Brand of Bleach (Country)	% Avail. Chlorine
Valu Check'd	3%
JIK (Africa)	3.50%
Household Bleach, Clorox (USA, Canada, Peru), Eau de Javel (France, Viet Nam, 15o chlorum*), ACE (Turkey), Jif (Haiti), Red & White (Haiti), Odex (Jordan)	5%
Blanqueador, cloro (Mexico)	6%
Lavandina (Bolivia)	8%
Chloros (UK), Leja (Peru)	10%
Extrait de Javel (France) (48o chlorum*), Chloros (UK)	15%

► Demonstration (15 min.)

The trainer should:

- Ask Px: what happens if textiles are exposed to the same strong bleach solution used on instruments?
- Explain that the NASG should be cleaned in a 0.05% bleach solution, which is one-tenth as strong as the solution used for instrument processing.
- Distribute *Px Handout 6.10: Recommended Dilutions of Sodium Hypochlorite (Bleach) for Decontaminating the NASG.* 
- Ask Px: which brand(s) of bleach are used in your facility? How much bleach should be used to soak an NASG in 50L of water?
- Remind Px that a helpful guideline for decontaminating the NASG is to use one-tenth as much bleach **or** ten times as much water as needed for instrument processing.
- Show *Slide 6.7 Cleaning the NASG* (and also wall chart with step-by-step illustrations of the NASG cleaning process). 
- Demonstrate the correct way of decontaminating and cleaning the NASG.
- Distribute *Px Handout 6.11: Washing and Drying the NASG.* 
- Invite a Px to volunteer to demonstrate cleaning the NASG.

CONTENT: CONTINUED

METHODOLOGY: CONTINUED

% Avail. Chlorine	Bleach Needed to Achieve 500 Ppm = 0.05% = 0.5 g/l Concentration for NASG, for Every:	
	1 Liter of Water	50 Liters of Water
3%	0.17 ml	8.33 ml
3.50%	0.14 ml	7.14 ml
5%	0.10 ml	5.00 ml
6%	0.08 ml	4.17 ml
8%	0.06 ml	3.13 ml
10%	0.05 ml	2.50 ml
15%	0.03 ml	1.67 ml

In general, a bleach solution for soaking the NASG can be made by using one-tenth as much bleach or ten times as much water as is normally used for instrument processing.

In some countries, the concentration of sodium hypochlorite is expressed in chlorometric degrees (° chlorum); 1° chlorum is approximately equivalent to 0.3% available chlorine.

Washing and Drying the NASG

Wear heavy rubber utility gloves.

Prepare a 0.05% bleach solution in a plastic container large enough to completely submerge the NASG.

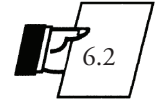
Decontaminate the NASG by submerging it in the container for 10 minutes. You may need to put a brick, stone, or other heavy object on the NASG to keep it under water. Do not handle the NASG during this time.

Do not leave the NASG in the solution more than 10 minutes. It will damage the garment.

Remove tissue or other material by scrubbing with a brush (while wearing heavy utility gloves).

Wash the garment with detergent and cool water, by hand or in a washing machine. Do not machine dry.

Have other Px observe, using *Px Handout 6.2: Competency-Based Training Skills Assessment Checklist for Application and Removal of the NASG*, and provide feedback.



- If there is time, have Px take turns practicing until they feel they are proficient. Supervise the practice and provide guidance as required.

Methodology continues on page 115.

CONTENT: CONTINUED

It is best to wash the NASG alone, as other items, such as threads and lint, will adhere to the Velcro.

If being hand washed, squeeze to expel excess water before drying.

Hang the NASG to dry, outside in the sunshine if possible, rotating sides for equal exposure to the sun. Keep away from plant material such as grasses, burrs, sticks and other material that could cling to the fabric and Velcro.

Folding and Storing the NASG

Folding the NASG correctly is key to being able to unfold it quickly to apply on the next patient who is in shock. If not folded correctly the Velcro may adhere to the wrong parts of the NASG and make it difficult to undo, causing time to be wasted when the NASG is needed in an emergency.

If the NASG is folded correctly, the Velcro closures will not stick as much when you unfold it, and you'll save precious time putting it on the next patient.

Step 1

- Start with segment #1: fold the Velcro in so that it doesn't stick to the outside (maroon or blue side), but is resting on the inside of the segment (black side).
- If you fold it correctly, the "#1" printed on the first segment will not be visible.

Step 2


- Fold segments #2 and #3 in the same way.

Step 3

- Fold the leg segments together like a map or fan.

METHODOLOGY: CONTINUED**Demonstration and Return****Demonstration** (30 min.)

The trainer should:

- Distribute *Px Handout 6.12: Folding and Storing the NASG* and 6.13: *Folding the NASG Flowchart*. 
- Demonstrate the correct way of folding the NASG and placing it back in its carry bag, explaining that if it is not correctly folded it will not open easily when it is needed for a woman who is hemorrhaging.
- Invite a Px to volunteer to demonstrate folding the NASG. Other Px observe, using the checklist, and provide feedback.
- Have Px take turns practicing until they feel they are proficient. Supervise the practice and provide guidance as required.

CONTENT: CONTINUED**METHODOLOGY: CONTINUED****Step 4**

- Fold the leg segments, like a map, up into the abdominal segment.

Step 5

- Fold segment #4 up across the leg segments.
- When folding segment #4, be sure to tuck the Velcro located at the ends of the segment around to the inside. It is important to prevent the Velcro from sticking to the outside of segment #6.

Step 6

- Fold segment #5 across the leg segments.
- Wrap segment #6 tightly around segment #5 and place in carry bag.
- The NASG is now ready to be stored and, more importantly, ready to be applied **quickly** to the next patient.

Storing the NASG

- The NASG should be stored where it is visible and easily accessible.
- Put the folded NASG into a clear plastic bag so that it is visible, but will not get wet or dusty.
- If there is more than one NASG in a facility, each NASG storage location should clearly indicate the others. For example, other NASG locations should be written on a sign posted on the wall above the storage shelf, or on the NASG storage bag if the bag is to be left in the storage location. This way, if, in an emergency, someone goes to retrieve an NASG from its usual place and does not find it there, they will know where to look for another one.

Specific Objective #4: Explain how to develop a system for replacing the NASG after use at the facility level.

CONTENT:

▶ Returning NASGs to lower-level facilities for future use

All facilities must have a clear plan in place for getting NASGs back to their original facility, or back to a central distribution point from which NASGs are returned to the facilities designated to use them.

NASGs will leave lower-level facilities on women being transported to higher-level facilities. How will these referring facilities have garments to use the next time they need them? And how will the garments be cleaned properly for safe use with minimal damage to them?

A clear plan must be made in each facility, cluster of facilities, district, etc., to get NASGs cleaned appropriately and returned to the locations where they are needed. This plan could be made between each pair of referring and receiving facilities, or all garments could go to a central place for cleaning and redistribution to the facilities that are supposed to have them.

Local solutions are needed because if a garment is not available when a woman goes into shock, then a critical piece of the continuum of care is not available.

METHODOLOGY:

▶ Discussion and Group Work (45 min.)

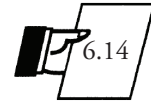
The trainer should:

- Point out that one operational/logistical requirement with the NASG is to set up a system which will ensure that a facility that applies an NASG on a woman in shock and refers her to a higher level gets back a replacement NASG for future use.
- Divide the class into 3 groups, assigning each group to discuss one facility level (primary, secondary, or tertiary). Ask the groups to discuss and develop a system for:
 - Deciding how many NASGs should be kept at their assigned level facility,
 - Where in the facility NASGs should be kept, and
 - How NASGs should be replaced when one is used on a woman and she is referred to for treatment.
- Explain that one key to determining how many NASGs are needed is to think about how many patients have PPH and develop hypovolemic shock in a month. Then determine how many that would be in a day, this will help estimate adequate, but not excessive numbers of garments.
- Allow 20 minutes for the group work.
- Reassemble the Px and ask the reporter for each group to report back on the system that the group developed.
- Make sure that the plans do not include excessive numbers of NASGs, since cost would be prohibitive. Give

CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

encouragement to the groups that have practical plans for a minimum number of NASGs needed, covering as many facilities on all levels as possible.

- ➔ Conclude the session by synthesizing ideas of all 3 groups, seeing if a single consensus idea emerges, and informing Px that they will have to make such plans once the NASG is introduced in their facilities and referral systems.
- ➔ Distribute *Px Handout 6.14: Returning NASGs to Lower-Level Facilities for Future Use*.



Quiz on the NASG

CONTENT:

► Questions on the NASG

1. Q: How does the NASG work?

A: The NASG provides mild pressure, pushing blood from the lower extremities into central circulation, making sure there is sufficient blood getting to the vital organs, including the brain. Additionally, the foam ball over the abdomen applies pressure to the blood vessels of the uterus, decreasing blood flow.

2. Q: What are the indications for using the NASG?

A: The NASG could be used to manage any condition where there is severe bleeding below the diaphragm. Our studies have documented use with all forms of obstetric hemorrhage, as long as the fetus is not viable in utero.

3. Q: What are the contraindications for NASG use?

A: In treating PPH with the NASG, there are no absolute contraindications. For trauma patients, the NASG is contraindicated for patients with severe congestive heart failure or preexisting mitral stenosis. In trauma victims with injury to the chest or head, redistribution of blood to the injured area with NASG placement raises the possibility of associated increased hemorrhage.

We have no data on uterine blood flow and negative fetal effects of the

METHODOLOGY:

► Quiz (45 min.)

The trainer should:

- Explain that, by way of an interactive quiz, we will review the NASG.
- Explain that as a review of information on the NASG, Px will participate in a quiz session.
- Divide Px into four teams. Give each Px a copy of *Px Handout 6.15 Frequently Asked Questions about the NASG*. Explain that they have 15 minutes to study and master the answers to the questions. At the end of 15 minutes there will be a quiz.
- At the end of 15 minutes, take back all of the Px study sheets.
- Pass around a bowl with chits of paper on which the question from the FAQs are written, one question per chit. Invite each participant to pick one chit. When all the questions are distributed, ask one question at a time from the list of NASG FAQs. The Px who picked up that question from the bowl has to answer it. If s/he is unable to answer the question, invite another participant from another team to answer the question (making sure all groups are called on equally). Thus all Px get a chance to answer one or two questions, and the whole class hears all the answers and reviews/builds new knowledge on the NASG. The team with individuals who answered the most questions correctly wins a prize.



CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

NASG—it could be assumed that placing the abdominal portion of the NASG would diminish uterine blood flow and could be detrimental to fetal oxygenation.

4. Q: Does the NASG cause any discomfort?

A: Particularly in a warm environment, patients may complain of being hot. Fans or air conditioning should be provided if possible. After many hours, some women experience itching. This can be relieved by removing one leg segment at a time and massaging with lotion. Do not open the abdominal segment!

5. Q: The NASG is made out of a non-breathable fabric. Won't this make the patient too hot, sweaty, and possibly dehydrated?

A: Women in shock are generally too cold, so the NASG initially will cause no problem. If the NASG is on for a long time, see 4 above. Additional fluids may be necessary when it is hot and a woman is in the NASG for a long time.

6. Q: Can the patient breathe normally with the NASG in place?

A: The patient should not experience difficulty breathing and if general anesthesia is needed, ventilation should not be compromised. Should the patient experience dyspnea (difficulty breathing), the NASG should be removed and cardio-respiratory evaluation carried out, if possible. Mitral stenosis should be suspected and ruled out before replacing the NASG.

7. Q: Patients who are unconscious from shock regain consciousness with the application of the garment and may

- Ask Px if they have any more questions about the NASG.
- Provide answers and clarification as needed.

CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

become frightened when they find themselves in this garment. How do you address that?

A: The proper care of a critically ill, unconscious patient is one-to-one nursing care. However, the reality of some low-resource settings is that there will not be one-to-one nursing care available. If this is the case, it is crucial that a support person (family member, traditional birth attendant, or other accompanying person) continuously be involved in the patient's care and at her side. The support person must be instructed to reassure the patient that the NASG is something which has saved her life, and to also call for assistance from a nurse or doctor when needed.

8. Q: How long can/should the NASG be used on a given patient?

A: There is no particular time limit. The patient should be stable and comfortable in the NASG for hours or days until the bleeding has been arrested (spontaneously or through surgery), the volume restored, and the blood replaced as needed.

9. Q: What is the longest time an NASG has been worn?

A: To date, the longest the NASG has been on a woman has been 58 hours. However, the faster the source of bleeding is discovered and treated, and the woman's blood volume replaced, the better her chance of recovery.

10. Q: When should the NASG be removed?

A: The source of bleeding should have been identified and hemostasis attained. Then,

CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

remove the NASG stepwise when the clinical impression is that the blood volume has been restored with saline and blood as needed.

If equipment is available for measuring Hgb and Hct, a hemoglobin (Hgb) level of about 7g/dl and hematocrit (Hct/pcv) of about 20% should be achieved before removing the NASG.

Note: In places where the mean pregnancy and non-pregnancy Hgb is < 7 (in India 70% of pregnant women have a Hgb of < 7), it may be unrealistic to wait for an Hgb of 7 to remove the garment.

Remember: The NASG should never be removed unless under medical supervision!

11. Q: Why not remove the top of the NASG first?

A: The largest portion of capacitance vessels are in the abdominal cavity, rather than the legs. Removal of the abdominal segment first will cause rapid redistribution of blood and the patient may return to a state of shock.

12. Q: How will you know if the NASG has been removed prematurely?

A: If the woman is still hypovolemic, her BP will decrease and pulse will increase when a segment of the NASG is removed. If this happens, replace the segment immediately.

13. Q: Can surgery be performed with the NASG in place?

A: Vaginal surgery and procedures, such as repair of lacerations or D&C can and should be done without complete removal of the NASG. The upper segments (4 and 5) of the NASG must be opened for laparotomy.

CONTENT: CONTINUED**METHODOLOGY: CONTINUED****14. Q: Does the NASG have to be placed and removed by a doctor?**

A: After a basic training session, anyone who is able to recognize PPH or hypovolemic shock from any source of obstetric hemorrhage can place the NASG. However, the decision to remove the NASG is one based on clinical and laboratory assessment and in most settings would be a physician-initiated decision with physician supervision during the process. Actual physical removal of the NASG can also be done by a skilled health care provider. It is a stepwise process which requires training to assess the stability of vital signs as each segment is removed at 15-minute intervals. Removal also requires the ability to reverse shock by administering additional fluids or blood transfusions. When a physician is not available, well-trained midwives or clinical officers who have been trained on NASG removal can remove it. But, the important thing to remember is that emergency care must always be available when the NASG is removed.

15. Q: How can one ensure that the garment is free of HIV and the hepatitis virus?

A: There is no need to treat the NASG any differently than any other fabric item that gets body fluids on it, except that the % solution needs to be lower or the fabric will wear out too quickly.

The NASG is wrapped on the outside of the body; it does not go inside the body. The NASG must be decontaminated with 0.05% bleach solution, washed, and dried in the sun. These are Universal

CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

Precautions/Infection Prevention Steps.

16.Q: Why are we introducing the NASG when it seems it is still in the research phase?

A: There are different levels of evidence that satisfy different requirements. Globally, the WHO determines what devices, medicines, and procedures can be introduced into public health systems. WHO holds the very highest standards, the “gold standard” based on randomized control clinical trials (RCT). The NASG has not been tested in an RCT, however, an RCT, conducted by the University of California, San Francisco, the World Health Organization, the University of Zimbabwe, and the University Teaching Hospital, Lusaka, Zambia and funded by the National Institute of Health (US) and the Bill and Melinda Gates Foundation, is underway in Zambia and Zimbabwe. The results will not be known until 2012 or 2013. In the meantime, based on the promising results of the NASG pilot trials in Egypt and Nigeria, the MacArthur Foundation, working closely with the Nigerian Ministry of Health, decided that there was enough evidence for them to feel comfortable introducing the NASG into wide spread use.

UNIT 7: Data Collection and Record Keeping

Introduction:

Unit 7 addresses data collection and record keeping. Px will be trained to understand and appreciate the key roles of reliable data in health planning, projection and distribution of drugs, and commodities. During work group exercises participants would have the opportunity to familiarize themselves with the different local and/or project forms and logbooks used for data collection and record keeping.

Unit Training Objective:

- To build trainee's capacity to collect and record data accurately and to train participants to understand the purpose of data collection, including the utilization of accurate and reliable data to improve the quality of their services.

Specific Learning Objectives:

By the end of this session Px will be able to:

- Demonstrate the use of the logbook with real case record forms.

Training/Learning Methodology:

- Participatory discussion
- Group work with case studies
- Homework readings and exercises
- Hands-on practical exercises in filling the logbooks and data forms

Resource Requirements:

- Flipcharts and markers
- Samples of templates of patient forms and logbooks used locally or required by the project
- Participants handouts

Evaluation Methods:

- In-class observation and monitoring
- Verbal questions and answers

Specific Objective	Topic	Time
1	Demonstrate the use of the logbook with real case record forms.	1 hour, 45 min.
	Total Time Required	1 hour, 45 minutes

Materials for Trainers to Prepare in Advance

- Participant Handouts

UNIT 7

Specific Objective #1: Demonstrate the use of the logbook with real case record forms.

CONTENT

Record Keeping and Data Collection

It is important to record basic information on clients who seek health services from providers and/or facilities.

At the provider and facility level, such data are necessary for diagnosis of the disease, determining the severity of the condition of a patient, and determining progression of the illness. The providers use these data for determining treatment regimens and/or making referral decisions. Also, effective monitoring and supervision for continuous quality improvement cannot be done without reliable patient data.

At the regional and national level, patient information is the basis for health care planning, projection of infrastructure and supply needs, resource allocation, and an epidemiological database of morbidity and mortality. Without minimal epidemiological surveillance, no effective planning can happen to enhance the effectiveness and efficiency of the health care system, to assess whether interventions are effective, and to improve public health.


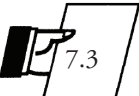
At the intervention or project level, data can inform if, and to what extent, an intervention or group of interventions was successful.

Numbers make sense when they are based on quality data. Therefore, we need good clinical record keeping in

METHODOLOGY

Discussion and Learning Exercise (1 hour)

The trainer should:

- Lead a discussion on the importance of data collection and its various uses.
- Discuss the quality issues regarding data collection.
- Distribute *Px Handouts 7.1: A Primary-Level Logbook*, and *7.2: Guidance and Definitions for Filling out Facility Logbooks*. 
- Explain the headings and how to fill in the pages of the logbook. Explain that the logbook helps systematically document the condition of every patient and the services she receives.
- Explain that during the *Continuum of Care: Addressing Postpartum Hemorrhage* project, the logbook was used to record data on each patient and then collected by the supervisor and aggregated.
- Distribute *Px Handout 7.3: Primary Level Case Studies* and ask Px to enter information from the cases into the logbook format. Allow 10 minutes for Px to enter the data. 
- Read the cases out loud, and ask for volunteers to explain what they entered in the log.

CONTENT: CONTINUED

order to produce good quality data. The basic quality issues related to data are completeness of information in terms of:

- Content,
- Coverage,
- Timeliness, and
- Accuracy.

The reliability of data therefore depends on the completeness and accuracy of information collected.

For example: Logbooks are commonly used at facilities to note what happened to clients, what procedures were performed, and basic information about the client. Therefore, each and every client should be recorded in the logbook (for completeness of coverage) and every item in the logbook should be filled in for a client (for completeness of content). The record keeping for every client and every item should be as accurate as possible.

Data and record keeping need to be kept simple because the primary responsibility of providers is to give care. However, data is also very important in being able to document the success of an intervention, which will influence if it is allowed to continue after the project is over. Providers and managers on all levels of the health system can use the data for problem solving and quality improvement. Likewise, the data will inform decision makers if the intervention is not successful and this information can be used to improve the intervention.

Summary

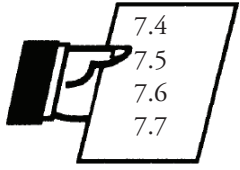
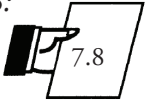
Data and record keeping must be kept simple because the primary responsibility of providers is to give care. However, data is also very important to document the success of an intervention.

METHODOLOGY: CONTINUED

- Ask Px:
 - What they might need to change in the forms for their specific facilities?
 - Is anything missing?
 - Describe any difficulties they had using the logbook or the definitions during the exercise.
 - What they think is useful about using this logbook? For which purposes?

Group Work (45 min.)

The trainer should:

- Distribute *Px Handouts 7.4: Secondary-Level Facility Patient Logbook*, *7.5: Secondary-Level Case Studies*, *7.6: Tertiary-Level Facility Patient Logbook*, and *7.7: Tertiary-Level Case Studies*. 
- Ask Px to form 2 working groups. Instruct Group 1 to work from the secondary-level handouts and Group 2 to work from the tertiary-level handouts.
- Ask each group to fill in the logbook pages, based on the instructions and the two case studies.
- Allow 15 minutes for the groups to discuss and fill in the logbook. Ask a reporter from each group to report back to the whole group on ease/difficulty/problems they had filling in the logbook.
- Ask for additions from the reporters' group, and then comments from the rest of the class.
- Answer any questions about the logbooks, definition guides, and use.
- Distribute copies of *Px Handout 7.8: Record Keeping and Data Collection*. 

UNIT 8: Community Mobilization

Introduction:

Community understanding of the four delays and support for the services that can prevent and treat PPH are necessary for women to access the lifesaving emergency care described in this curriculum. This unit provides an overview of ways to raise awareness of the need for comprehensive emergency obstetric care, and to gain support among communities' and community leaders. Birth preparedness and complication readiness planning is explored in-depth because it is a service-delivery-level activity directly influenced by, and directly impacting, a woman's life and circumstances at the household and community level.

Unit Training Objective:

To help participants understand the role of community-level action reducing the four delays, and providers' potential roles in conducting or influencing community mobilization; specifically by helping clients make birth preparedness and complication readiness plans, which are shared with household members.

Specific Learning Objectives:

By the end of this unit, participants will be able to:

- Describe how to involve the community in preventing the four delays.
- Develop a birth and complication readiness plan with a woman and provide counseling on warning signs, recognizing labor, and emergency readiness.

Training/Learning Methodology:

- Trainer presentation
- Participatory discussion
- Brainstorming
- Role play

Major References and Training Materials:

Howard-Grabman L, Snetro G. *How to Mobilize Communities for Health and Social Change*. Baltimore: Health Communication Partnership, 2003. Available online: http://www.hcpartnership.org/Publications/Field_Guides/Mobilize/pdf/

Shiffman J. Generating Political Priority for Maternal Mortality Reduction in 5 Developing Countries. *American Journal of Public Health* 97:5, 796-803.

Shiffman J, Santon C, Salazar AP. The Emergence of Political Priority for Safe Motherhood in Honduras. *Health Policy Plan* 19:6, 380-390.

Thadeous S, Maine D. Too Far to Walk: Maternal Mortality in Context. *Social Science and Medicine*, 38:8, 1091-1110.

World Health Organization. *Pregnancy, Childbirth, Postpartum and Newborn Care: A Guide for Essential Practice*. Geneva: World Health Organization, 2009. Available online: http://whqlibdoc.who.int/publications/2006/924159084X_eng.pdf

Resource Requirements:

- ➔ Flipcharts and markers
- ➔ Blank paper
- ➔ Markers

Evaluation Methods:

- ➔ Verbal feedback
- ➔ Trainer observation
- ➔ Post-test

Time Required:

Specific Objective	Topic	Time
1	Describe how to involve the community in preventing the four delays.	1 hour
2	Provide counseling on warning signs, recognizing labor, and emergency readiness.	1 hours, 15 min.
3	Develop a birth and complication readiness plan with a woman.	1 hour, 30 min.
4	Complete the post-test and course evaluation	50 min.
Total Time		4 hours, 35 min.

Materials for Trainers to Prepare in Advance

- ➔ Copies of role play scenarios
- ➔ Copies of Participant Handouts, the post-test, and course evaluation

UNIT 8

Specific Objective #1: Describe how to involve the community in preventing the four delays.

CONTENT

The Four Delays, Community, and Skilled Providers

Refer to Unit 2, pages 34-36, as necessary.

METHODOLOGY

Introduction (1 hour)

The trainer should:

- Ask Px:
 - Do you remember the four delays we discussed in Unit 2?
 - What are they?
- Record responses on a flipchart and supplement if necessary. Then, ask Px:
 - How many of you work with the community around your facility?
 - What do you do with the community?
- Record responses on a flipchart. Ask Px:
 - Is it important to involve the community in the work of the health facility?
 - How might you do this?
- Divide Px into four groups. Assign one of the four delays to each group. Give groups 30 minutes to plan how they could involve the community in preventing their assigned delay (even the fourth delay, which is at the facility level).
- Regroup participants and ask each group to present their ideas. Allow five minutes for each presentation.
- Facilitate discussion of the proposed community activities among the large group.

Specific Objective #2: Provide counseling on warning signs, recognizing labor, and emergency readiness.

CONTENT:

► **Prevention of PPH in the Community**

During antenatal care, providers should work with each woman to develop a birth and complication readiness plan. If possible, birth planning should also involve the decision makers in the woman's family (husband, father, mother-in-law, etc.). This should ensure that the woman and her family are aware of warning signs and have already identified actions to take and resources to tap if warning signs present during pregnancy or birth. Birth and complication readiness plans address the first three delays: in recognizing the problem, in deciding to seek care, and in reaching the facility. Community transport schemes should be collaboratively developed by health authorities and facilities within each neighborhood or village so that every family can access those schemes quickly when emergencies arise.

Entry points for birth planning

Providers at different levels and in different roles have varying points of entry to facilitate birth and complication readiness planning with pregnant women:

Community-Level Providers: Community health workers, community midwives, and other skilled birth attendants working at the community level, providing antenatal care and attending homebirths.

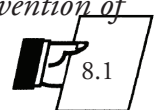
Facility-Level Providers: During routine antenatal care visits, facility-level providers should incorporate birth and complication

METHODOLOGY:

► **Introduction** (30 min.)

The trainer should:

- Explain the roles providers can play in helping a woman make a birth and complication readiness plan.
- On a flipchart, create separate columns for each type of staff the pregnant woman and her family might encounter during pregnancy (e.g., facility-based medical staff, community health workers, ambulance drivers, facility support staff, etc.). Write the name of each group at the top of each column.
- Ask Px: what entry points they have to help facilitate birth and complication readiness planning. Record responses under the appropriate columns, and supplement responses if necessary.
- Distribute *Px Handout 8.1: Prevention of PPH in the Community*.



Discussion and role play (45 min)

The trainer should:

- Explain that a critical step in birth planning, especially with women who plan to deliver at home, is to make sure the woman understands the danger signs.
- Ask Px: what are the main causes of complications during birth for the mother? List the complications along the side of a flipchart, with room to record additional information after each complication.

CONTENT: CONTINUED

readiness planning into antenatal care

All health facility staff: All staff, whether clinical, janitorial, or transport staff, can be oriented to the four delays to urge their family and community members to establish birth and complication readiness plans.

Counseling on Recognizing Labor, Warning Signs, and Emergency Readiness at the Community Level

At every level, providers should counsel women (and the decision makers in their families, if possible) on recognizing labor, warning signs, and being prepared for obstetric emergencies, all of which address the first three delays.

Ensuring a woman understands the danger signs

A critical component of birth and complication readiness planning is ensuring that the woman understands what danger signs to look for and that the danger signs could signify a serious complication. This addresses the first delay.

Warning signs of obstetric complications

Providers should counsel each woman to travel immediately to a health facility if she experiences any of the symptoms listed on the following page.

Signs of onset of labor

Providers should counsel each woman to go to a facility or contact her SBA if she notices any of the following three signs that signify the onset of labor:

- ➔ Bloody, sticky vaginal discharge;
- ➔ Painful contractions five to 20 minutes apart (or closer), depending on how far she is from the facility if that is her choice of birth place;
- or

METHODOLOGY: CONTINUED

- ➔ For each complication, ask Px: how would you explain the danger signs for this complication in a brief but complete way that the woman would understand? Record answers in the space next to each complication on the flipchart.
- ➔ Ask Px:
 - ➔ What signs of the onset of labor should the woman be aware of?
 - ➔ What known risks factors for complications would mean a woman should be especially encouraged to deliver at a facility?
 - ➔ What danger signs should a woman know to look for in her newborn baby?
- ➔ Ask Px: how can we be sure the woman understands the information she is given? (Answer: have her repeat the information, explaining it in her own words.)
- ➔ Explain that Px will be role-playing counseling of women on signs of labor and complications. Divide Px into pairs. Distribute role play slips to Px and allow five minutes for the first role play. Have Px provide feedback to their role play partner before switching roles. (If there is a group of three, be sure to allow enough time for all Px to play the provider role.)
- ➔ Regroup. Ask Px: Without mentioning names,
 - ➔ What counseling points were particularly important?
 - ➔ Was there any incorrect information that you heard given?
 - ➔ What information was left out?
 - ➔ What did you like about the manner with which the counselor spoke to the client?

Danger Sign (Plain Language)	Could Indicate (Clinical Language)
At Any Time	
<ul style="list-style-type: none"> • Bag of waters breaks and labor does not begin within 24 hours 	(Preterm) premature rupture of membranes
<ul style="list-style-type: none"> • Baby stops moving for 24 hours 	Fetal death
<ul style="list-style-type: none"> • Strong abdominal pains 	Infection, miscarriage, or tubal pregnancy
<ul style="list-style-type: none"> • Vaginal bleeding at any time: <ul style="list-style-type: none"> ○ In an amount similar to monthly bleeding ○ With pain 	Placental abruption, ectopic pregnancy, miscarriage
<ul style="list-style-type: none"> • Vaginal bleeding without pain, in the second half of pregnancy 	Placenta previa
<ul style="list-style-type: none"> • Moderate or severe fever (above 38°C) • Bad-smelling vaginal discharge 	Infection
<ul style="list-style-type: none"> • Chills • Cold sweats • Fast breathing • Feeling dizzy, faint, weak, or confused • Pale skin • Fast but weak pulse 	Shock
<ul style="list-style-type: none"> • Strong headaches • Blurry vision or double vision • Pain in the upper abdomen, similar to feelings of indigestion, that starts suddenly and stays • Hands, feet, etc. react too much when tapped firmly with the first 2 fingers (overactive reflexes) • Face and hands are swollen, especially when the woman first gets up in the morning • Sudden weight gain • Fainting • Fits/convulsions 	Preeclampsia
During Labor	
<ul style="list-style-type: none"> • Pain in or above the uterus between contractions 	Infection
<ul style="list-style-type: none"> • Contractions stop • Baby feels loose in the belly 	Uterine rupture
<ul style="list-style-type: none"> • Loss of consciousness 	Shock and/or eclampsia
<ul style="list-style-type: none"> • Strong contractions lasting longer than 12 hours (24 hours if first pregnancy) 	Obstructed labor
<i>Table continues on following page</i>	

UNIT 8/OBJECTIVE #2

Danger Sign (Plain Language)	Could Indicate (Clinical Language)
During Labor, continued	
<ul style="list-style-type: none"> • Baby comes feet, bottom, hands, or face first (before head) 	Dangerous fetal position
<ul style="list-style-type: none"> • Cord comes out before the baby 	Prolapsed cord
<ul style="list-style-type: none"> • Uterus is firm between contractions, or firm at all times • Abdomen is sore or tender • Baby moves less or doesn't move at all • Baby's heartbeat is too fast, too slow, or undetectable 	Detached placenta
During Labor or After Delivery	
<ul style="list-style-type: none"> • More bleeding than normal: <ul style="list-style-type: none"> ○ A "gush" or burst of blood during the second stage of labor ○ Steady bleeding before the placenta has come ○ Bleeding without pain between contractions ○ More blood is lost than would fit in a typical cup (provider should explain that it is very hard to estimate blood loss accurately, and the woman should go to a facility if there is any worry that she has lost this much blood) 	Detached placenta, PPH, or placenta previa
<ul style="list-style-type: none"> • Placenta does not come out 	Retained placenta
<ul style="list-style-type: none"> • Uterus feels soft, will not firm up with massage, after delivery 	PPH and/or retained placenta
<ul style="list-style-type: none"> • Fits or convulsions • Eyes roll uncontrollably • Hands and/or face twitch • Skin starts to look blue around mouth • Breathing has a loud, bubbly sound 	Eclampsia

CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

- Water breaks.

Risk factors, when known

Several major risk factors increase the likelihood the woman will experience obstructed labor or other complications. The woman should be especially encouraged to deliver in a facility if it is known that:

The woman:

- Is carrying twins,
- Is very young,
- Was malnourished as a child,
- Has a deformed pelvis,
- Is diabetic,
- Had a previous delivery that was very difficult,
- Has a history of PPH,

Or the baby:

- Is in a breech or transverse position,
- Is very large, or
- Its head is still up high and can be felt above the public bone (not in the pelvis).

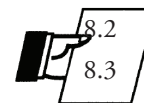
Danger signs in the newborn

Women should also be informed of key danger signs for the baby before, during, or after birth, including:

- Fever
- Diarrhea/loose stools
- Continuous crying
- Cough/breathing problems
- Irritability
- Lethargy
- Inability to feed
- Vomiting

- What didn't you like?
- How can we improve our counseling to make sure women and their families are well-prepared to recognize and act on danger signs? To recognize labor and be ready for emergencies?

- Distribute *Px Handout 8.2: Counseling on Recognizing Labor, Warning Signs, and Emergency Readiness at the Community Level* and *Px Handout 8.3: Danger Signs in Plain Language*.



CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

- Abdominal distension/pain
- Pus/pustules

Scenarios for role play

Non-provider roles can include:

- A 14-year-old primipara
- A 32-year-old grand-multipara carrying twins
- A 24-year-old diabetic woman
- A 28 year old woman who had severe bleeding with her first birth

If there is an odd number of Px, a third person can participate in a group, playing the woman's husband, mother-in-law, or other family member/support person.

Specific Objective #3: Develop a birth plan with a woman.

CONTENT:

► Developing a Birth and Complication Readiness Plan

Advantages of delivering at a facility

Because most women who develop PPH have no risk factors, delivering at a facility means that the woman is already at a place where she can access higher-level care if needed, including skilled providers, drugs, and equipment. This addresses the first three delays and ensures that skilled providers are involved and able to help identify problems that arise.

In addition to PPH, many other complications of delivery requiring higher-level care can develop unexpectedly. Delivering in a facility is especially important for young women and for women living with HIV, because both are more likely to develop complications and, even in normal deliveries, the facility can provide antiretroviral drugs for the women living with HIV for prevention of mother-to-child transmission of HIV.

Barriers to Facility Delivery

Women may be unable to deliver in a facility because of distance, cost, provider attitudes, household decision-making, or other reasons.

Some barriers can be addressed by facilities through:

- ➔ Implementation of ambulance transportation schemes, or
- ➔ Provider training that emphasizes treating women with respect, improving the quality of facility services.

METHODOLOGY:

► Brainstorming and Discussion

(45 min.)

The trainer should:

- ➔ Ask Px: do most women in your community deliver in a facility or at home?
- ➔ Write “home delivery” on one flipchart and “facility delivery” on another. Draw a line through the middle of each flipchart, labeling one side of each “advantages” and the other side “disadvantages”
- ➔ Recording responses in the appropriate sections of the flipcharts, ask Px:
 - ➔ What are the advantages of delivering at home?
 - ➔ What are the disadvantages?
 - ➔ What are the advantages of delivering in a facility?
 - ➔ What are the disadvantages?
- ➔ Prepare another flipchart, labeled “barriers to facility delivery.”

Building on responses provided, ask Px:

- ➔ What are the barriers to women delivering in a facility?
- ➔ Which barriers can the facility address, and how?
- ➔ Which barriers need to be addressed by others (e.g., MOH)?
- ➔ Explain that birth planning can help reduce barriers to facility deliveries and ensure that

CONTENT: CONTINUED

Other barriers may require involvement of other groups, such as the MOH providing incentives for facility births, or mobilization at the community level to generate funds for transport and/or facility expenses.

Discussion points for birth and complication readiness planning

When discussing birth and complication readiness plans with a woman and her family decision makers, the following key messages should be included:

- Importance of being prepared if an emergency occurs;
- Advantages of delivering at a facility;
- Importance of skilled attendance in facility or at home;
- Key preparations beforehand, depending on place of delivery:
 - For delivery at a facility: when to go, what to bring, money for transport and/or facility costs, and identifying willing blood donors; or
 - For delivery at home: an SBA, clean birth space, new blade and cord ties, plan to immediately breastfeed, and an emphasis on emergency transport plan.

Importance of skilled attendance

Whether a woman delivers in a facility or at home, skilled birth attendance is critical. A skilled birth attendant is trained in recognizing signs of complications, including estimation of blood lost, can provide lifesaving interventions, and can make the decision to seek higher-level care if needed. SBAs do not employ harmful traditional practices, which are sometimes used by unskilled attendants and result in serious complications.

METHODOLOGY: CONTINUED

women are as prepared as possible for delivery, whether they choose to deliver at a facility or at home.

- Ask Px: has anyone ever helped a woman make a birth plan?
- Ask the Px who respond, recording responses on a flipchart:
 - What are the necessary components of a birth and complication readiness plan?
 - What questions do you ask the woman?
 - What roles, in your experience, have other decision makers played in birth planning?
- Building on the responses provided, have Px brainstorm the information that should be relayed to a woman and her family during birth planning. Present the following questions, recording answers on flipcharts and supplementing responses as necessary:
 - What advantages of facility delivery should providers discuss with a woman and her family during birth planning?
 - What important information about SBAs should the provider share with the woman and her family?
 - What specific preparations should a woman and her family make for delivery in a facility?
 - When should she go to the facility, and what should she bring?
 - What specific preparations should a woman make if she plans to deliver

CONTENT: CONTINUED**METHODOLOGY: CONTINUED****Key preparations for delivery in a facility**

In advance, the woman and decision makers need to identify the following:

- ➔ Who will make the decision to go to the facility if the decision maker is not present?
- ➔ How will the woman travel to the facility?
- ➔ Is there a cost for transportation to the facility? If so, how will transportation be paid for?
- ➔ How much does delivering at the facility cost? How will that be paid for?
- ➔ How soon can the woman and her family start saving for these expenses?
- ➔ Who will travel to the facility with the woman?
- ➔ Who is identified as a willing donor of blood if the woman needs it?
- ➔ While the woman is away, who will look after her other children (if she has any) and her home?

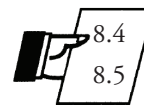
When to go and what to bring: When a woman should go to the facility depends on how far she lives from the facility.

A woman who lives within easy reach of the facility should go once labor is well established (contractions regular, five minutes apart).

If a woman lives far from the facility, she should begin her journey (via previously organized transport) at the first signs of labor. If she has the resources and support to do so, she should travel to the community where the facility is located two to three weeks prior to her due date. If she has family or friends who live near the facility and are able to help her, she should stay with them until she is ready to go to the facility.

at home? What supplies does she need to have ready?

- ➔ Distribute *Px Handout 8.4: Developing a Birth and Complication Readiness Plan* and *Px Handout 8.5: Birth Planning Card*.



Methodology continues on page 143.

CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

If the facility has a maternal waiting home that the woman is eligible to use, and she has the resources to do so, staying at the waiting home is also recommended.

When a woman travels to the facility, she and her support person(s) should bring:

- Her birth planning card and/or maternal record;
- Large clean cloths, which will be used for washing, drying, and wrapping the baby and (a second set) as sanitary pads after birth;
- Clothes for both adults and the baby; and
- Food and water for the woman and her support person.

Preparations for delivery at home

In advance, the woman and decision makers need to identify the following:

- Who will make the decision to go to a facility if the usual decision maker is not present?
- Who will stay with the woman during labor?
- Who will be nearby for at least 48 hours after she gives birth?
- Who will help care for the woman's other children (if she has any) and her home while she is in labor and recovering?

The provider should also reiterate to the woman (and decision makers, if possible):

- An SBA should be called at the first sign of labor; and
- If the woman needs help, she should be linked beforehand to existing community resources for help, such as community emergency transport, willing blood donors, a community fund to cover costs, etc.

Some programs provide women with home-based maternal records—simple, pictorial cards that women can use to record

CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

information about pregnancy, labor, delivery, and complications. Home-based maternal records help the woman and family determine that complications are developing and facilitate sharing this critical information with a provider.

If a home-based maternal record is used, the provider should explain the sections of the card, information collected, and any signs or symbols to the woman as well as to any decision makers with her. The provider should take time to verify that the woman and her companions understand the card, especially if they cannot read. If the provider is working with the woman alone, the woman should be instructed to explain the card to her family members. If the woman is seen for multiple antenatal visits, the provider should review the home-based maternal record each time, to reinforce the importance of the record and its accurate use.

Preparations for delivery at home

If a woman plans to deliver at home, she should identify where she will give birth. This should be a clean, warm room with a clean surface covered by clean cloths.

In advance of labor, the woman and her family should also gather the following materials:

- Clean cloths of varying sizes to be used for: the woman's bed, drying and wrapping the baby, cleaning the baby's eyes, for washing and drying the birth attendant's hands, and to use as sanitary pads after the birth;
- If there is a cloth or mat of standard sized used in the community to help estimate blood loss (an adaptation of

CONTENT: CONTINUED

the kanga method), such a cloth should be acquired if possible;

- Blankets for mother and baby;
- Clean buckets with clean water;
- A means of heating the clean water;
- Soap;
- Three large bowls: two to be used for washing and one to hold the placenta; and
- Plastic for wrapping the placenta.

Scenarios for Birth and Complication Readiness Planning Role Plays

Group 1 (2 Px): You are a woman pregnant with her first child and a provider counseling her on birth and complication readiness planning. The woman lives far from a facility and plans to give birth at home. The provider should discuss with her the advantages of giving birth at a facility, the advantages of using a skilled attendant for a home birth, and steps needed to take in either situation. The woman should leave the counseling session with a birth preparedness and complication readiness plan (including transport), written or pictorial, and a plan to tell her husband, mother-in-law, and/or other decision-makers of her plans and what she needs.


Group 2 (2 Px): You are a pregnant woman and a provider helping her plan. The woman lives a medium distance from the facility and this is her first pregnancy. The woman should leave the counseling session with a birth preparedness and complication readiness plan (including transport), written or pictorial, and a plan to tell her husband, mother-in-law, and/or other decision-makers of her plans and what she needs.

Group 3 (3 Px): You are a woman, her husband, and a provider who live in a community with

METHODOLOGY: CONTINUED

Role Play (45 min)

The trainer should:

- Tell Px they will be role-playing birth preparedness counseling using Px Handout 8.x and Px handout 8.x: Birth Planning Card.
- Divide Px into groups of 2-3 Px each. Distribute *Px Handout 8.6: Scenarios for Birth Planning*. 
- Give Px 15 minutes for the role play, prompting them to switch roles half-way through.
- Regroup. Ask Px:
 - What can providers do to help make counseling effective?
 - How should providers respond when clients are unable to take all needed birth preparedness measures?
- To conclude, ask Px: what other measures can we take in our roles as providers and community members to help ensure that all women have sound, realistic, birth preparedness and complication readiness plans? Write suggestions on a flipchart.

CONTENT: CONTINUED**METHODOLOGY: CONTINUED**

a large hospital. The woman is pregnant with her second child and she had a lot of bleeding at her first birth, but is healthy now. The woman and her husband favor delivery at home because of costs. The provider should discuss with her the advantages of giving birth at a facility, the advantages of using a skilled attendant for a home birth, and steps needed to take in either situation. The woman and her husband should leave the counseling session with a birth preparedness and complication readiness plan (including transport), written or pictorial, and plans to tell any other decision-makers of her plans and what she needs.

Group 4 (3 Px): You are a pregnant woman, her husband, and a provider. The woman is pregnant with her first child and plans to give birth at home. Her husband's aunt is a traditional birth attendant and the family plans for her to help with the birth. The woman and her husband should leave the counseling session with a birth preparedness and complication readiness plan and a plan to tell her mother-in-law, husband's aunt, and/or other decision-makers of her plans and what she needs.

Group 5 (2 Px): You are a pregnant woman and a provider. This is the woman's sixth pregnancy and she plans to give birth at home. She gave birth to two of her children alone and is not concerned about having anyone around to help her. The provider should discuss with her the advantages of giving birth at facility, the advantages of using a skilled attendant for a home birth, and steps needed to take in either situation. The woman should leave the counseling session with a birth preparedness and complication readiness plan.

Conduct the post-test and course evaluation

CONTENT:

Post-Test

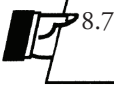
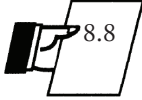
The Pre/Post-Test Key is found in the *Trainer's Tools*, page 147.

METHODOLOGY:

Conduct the Post-Test and Course Evaluation

(45 min.)

The trainer should:

- ➔ Distribute copies of *Px Handout: 8.7: Post-Test*. 
- ➔ Explain that the Px will have 45 minutes to take the test. The questions are a combination of fill-in-the-blanks, multiple choice, true and false and matching. Read the instructions carefully.
- ➔ Distribute copies of *Px Handout: 8.8: Course Evaluation*.
- ➔ Ask Px to complete the evaluation before departing. 

Trainer's Tools

Pre/Post-Test Answer Key

Note to the Trainer: The correct answer (or answers) for each question are highlighted in bold. There are a total of 50 correct answers. Each correct answer is worth 2 points.

1. List at least 4 causes of uterine atony. Note to trainer: Only 4 answers are required
 1. **Uterine fatigue caused by prolonged labor or overuse of oxytocin for induction**
 2. **Precipitous labor (labor that progresses very rapidly)**
 3. **Over-distended uterus in the case of polyhydramnios (excess amniotic fluid), multiple gestation (twins, triplets), macrosomia (large fetus as in gestational diabetes)**
 4. **Retained blood clots**
 5. **High parity (many children)**
 6. **Chorioamnionitis (infection of gestational sac and membranes)**
 7. **Retained placenta/products of conception**

2. List the 4 elements of the *Pathfinder International Model for Clinical and Community Action to Address Postpartum Hemorrhage*
 1. **Preventive active management of the third stage of labor by skilled providers at all levels of care, including an appropriate preventive uterotonic provided within 1 minute of delivery of the baby;**
 2. **A simple plastic drape used to measure blood loss or other standard means of accurate estimation to alert the birth attendant of PPH;**
 3. **A non-pneumatic anti-shock garment that reverses shock and maintains blood around vital organs during transport and until treatment is available; and**
 4. **Improved communication and transportation systems to minimize the 3 delays related to maternal mortality.**

Multiple Choice Questions: Circle all the correct answers

3. Which of the following is a type of obstetric hemorrhage:
 - a. Antepartum hemorrhage
 - b. Postpartum hemorrhage
 - c. A ruptured ectopic pregnancy
 - d. Retained placenta
 - e. **All of the above**

4. When a woman presents in hypovolemic shock, how much fluid should you infuse in the first 20 minutes?
- 250 mL
 - 500mL
 - 1000mL**
 - 1500mL
5. Please mark all the steps in active management of third stage labor:
- Administration of a uterotonic within 1 minute of delivery of the baby**
 - Controlled cord traction to deliver the placenta**
 - Delivery of the baby
 - Uterine massage following delivery of placenta to ensure that the uterus is contracted**
 - None of the above
6. What is the oral and sublingual dose of misoprostol administered to prevent postpartum hemorrhage?
- 200µg
 - 400µg
 - 600µg**
 - 800µg
7. When is the blood drape placed underneath the woman's buttocks and tied around her waist and hips?
- Before delivery of the baby
 - After the delivery of the placenta
 - Immediately after the delivery of the baby**
8. What does the red line on the blood drape indicate to the provider?
- To get prepared to transfer the woman to a higher-level facility
 - To immediately transfer the woman to a higher-level facility.**
 - To start observing the bleeding every 20 minutes
 - None of the above

9. How can you ensure that the NASG is free of the HIV virus?
- a. Put it out in the sun to dry
 - b. Decontaminate the garment with a 0.05% chlorine solution
 - c. Wash the garment with soap and water or in a washing machine
 - d. All of the above**
10. How is misoprostol commonly administered to prevent PPH?
- a. Injectable
 - b. Oral tablets**
 - c. Vaginally
11. The 4 delays include:
- a. Delay in recognizing that there is a problem
 - b. Delay in the decision to seek care
 - c. Delay in reaching a facility that can provide life-saving treatment
 - d. Delay at the facility, once reached, in providing the quality emergency treatment the woman requires.
 - e. All of the above**

True/False Questions: Circle either T (true) or F (false)

12. **T** F A blood collection drape is a tool for measuring blood loss that can be used on all women who deliver.
13. **T** F Obstetric hemorrhage is one of the leading causes of maternal mortality.
14. **T** F Postpartum hemorrhage can be caused by genital tract or perineal lacerations
15. **T** F Two-thirds of postpartum hemorrhage cases occur in women with no identifiable risk factors
16. **T** F When collecting data for research it is important to get the patient's permission to use their information.
17. **T** F The most common side effect of misoprostol is shivering.

18. **T F** The NASG is an inflatable device that shunts blood to the brain, heart, and lungs and stabilizes hypovolemic patients
19. **T F** The NASG is made of neoprene and Velcro.
20. **T F** The NASG shunts blood from the veins of the abdomen and lower extremities to the vital core organs (heart, lungs, kidneys, and brain).
21. **T F** If the woman experiences difficulty breathing with the NASG, the provider may adjust the abdominal panel.
22. **T F** Because the NASG is so effective, only 500 mL of crystalloid fluids should be given in the first hour.
23. **T F** Only one person, using as much strength as possible, should apply the pelvic and abdominal sections of the NASG.
24. **T F** When removing the NASG, start at the abdominal segment
25. **T F** When applying the NASG, start at the abdominal segment.
26. **T F** The NASG can be disinfected and washed 30 times.
27. **T F** 40-50% of PPH can be prevented using AMTSL.
28. **T F** Misoprostol needs to be refrigerated.
29. **T F** Misoprostol works by helping the uterus contract, squeezing the blood vessels closed.
30. **T F** All women must be encouraged to develop a birth preparedness and complication-readiness plan, and to deliver (if possible) with a skilled provider.

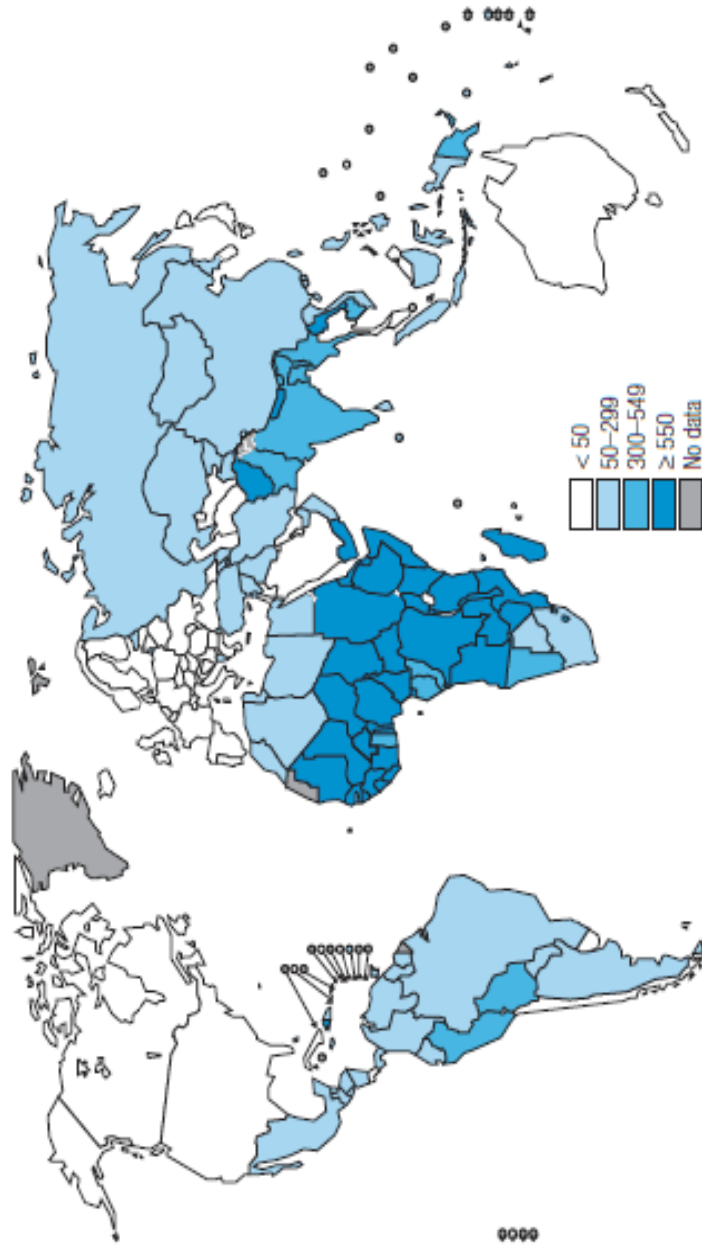
Matching: Write the correct letter next to the matching definition

31. __D__ : is defined by how well it maintains active ingredient potency and other measures like pH when stored over time.	A. Blood Drape (BD)
32. _G_ A two handed delivery of the placenta, involving gentle downward cord traction with one hand and upwards and backwards uterine counter-pressure with the other, performed only on a contracted uterus.	B. Uterotonic
33. __A__ A funnel-shaped plastic sheeting to catch blood, with markings at 350 ml and 500 ml, that is placed under the woman after delivery of the baby to enable the attendant to assess blood loss.	C. Hypovolemic Shock
34. __I__ Surgical removal of the uterus to stop intractable obstetric hemorrhage	D. Uterotonic stability
35. __B__ A drug that stimulates uterine contractions.	E. Non-pneumatic Anti-Shock Garment (NASG)
36. __J__ Excessive bleeding immediately after delivery, within the first 24 hours	F. Crystalloid Intravenous (IV) Fluids
37. __H__ Vaginal bleeding after delivery that exceeds 500 ml, or that is less than 500 ml and causes symptoms of shock.	G. Controlled Cord Traction
38. __C__ Clinical signs of decompensation of the circulatory system, due to excessive blood loss.	H. Postpartum Hemorrhage (PPH)
39. __E__ A garment that can be placed around the legs, pelvis, and abdomen of a woman who is in hypovolemic shock, compressing the blood vessels in her lower extremities and the uterus, that will stabilize her (shunt blood to her vital organs) until she can be treated at an appropriate higher-level facility.	I. Emergency (Caesarean) Hysterectomy
40. __F__ Ringers Lactate, Hartmann's Solution, Normal Saline used for fluid replacement for PPH.	J. Primary Postpartum Hemorrhage
41. __K__ Includes 3 components a) Administration of a uterotonic within 5 minutes after the birth of a newborn b) delivery of the placenta by controlled cord traction, (after the cord has stopped pulsing) c) followed by uterine massage	K. Active Management of the Third Stage of Labor (AMTSL)

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



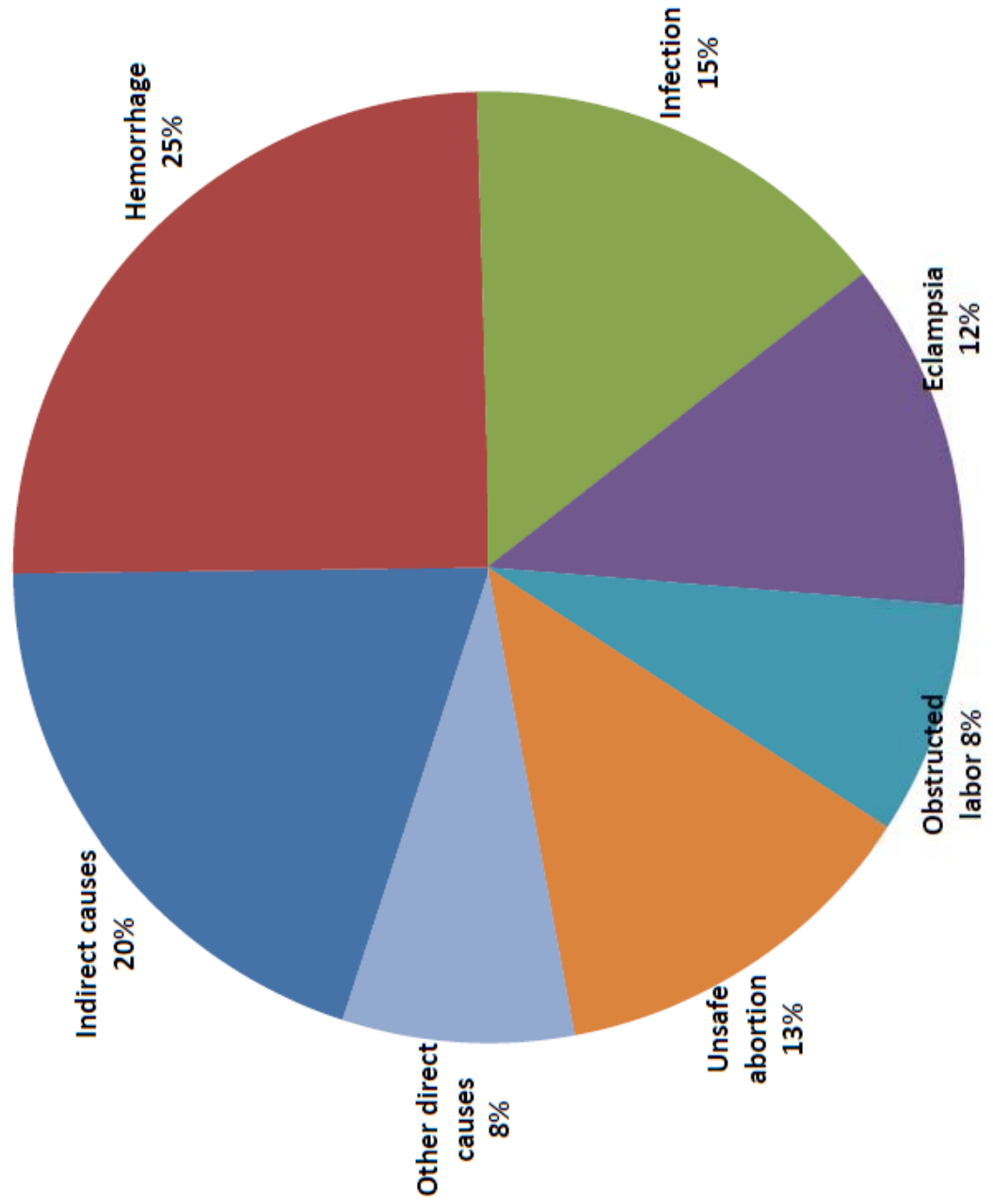
Maternal Mortality Indicators in Select Countries

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

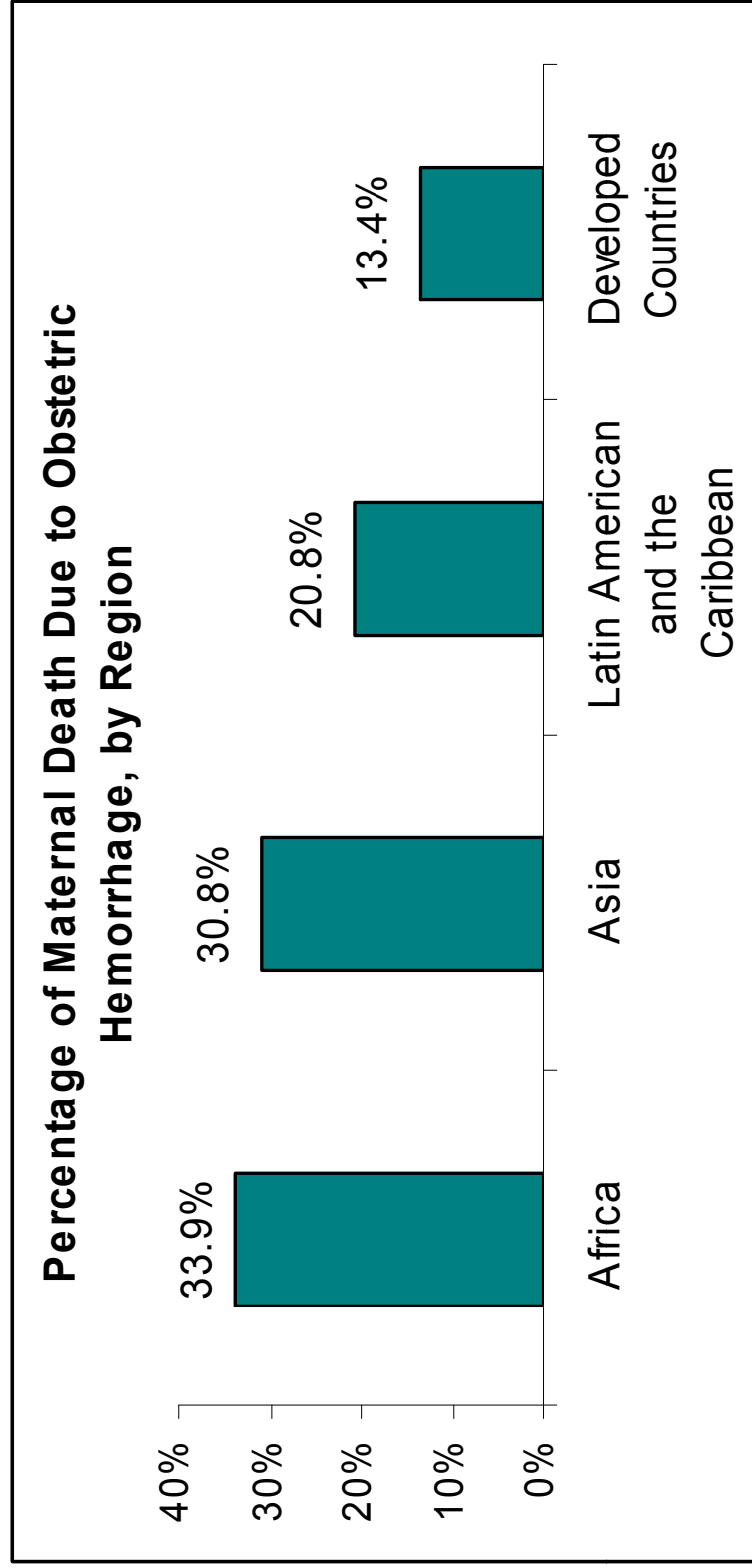
^[2] PRB Datafinder

Causes of Maternal Death Worldwide



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

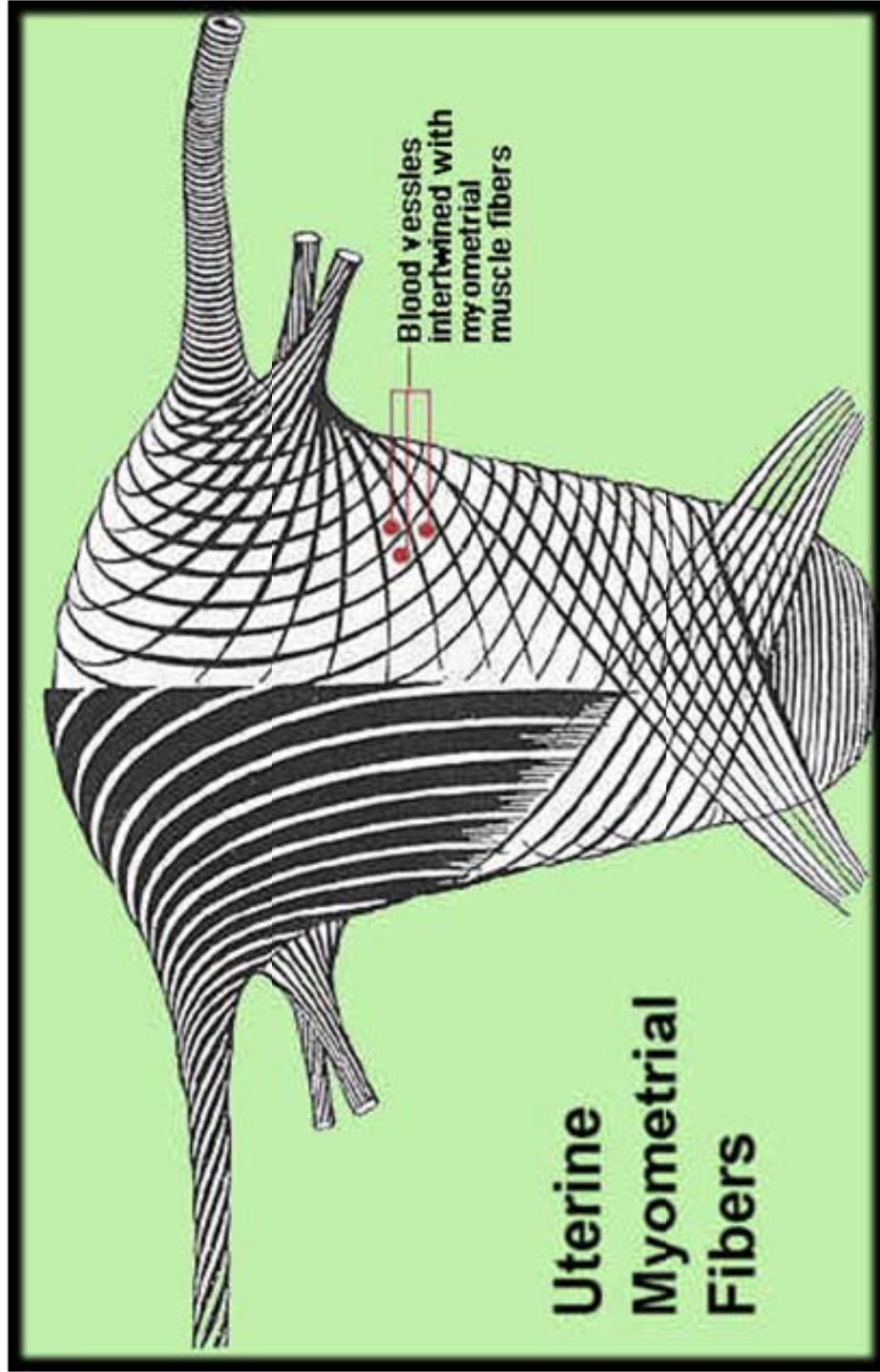
Percentage of Maternal Death Due to Obstetric Hemorrhage, by Region



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 T's 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
Oxytocin (IM injection)	<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.

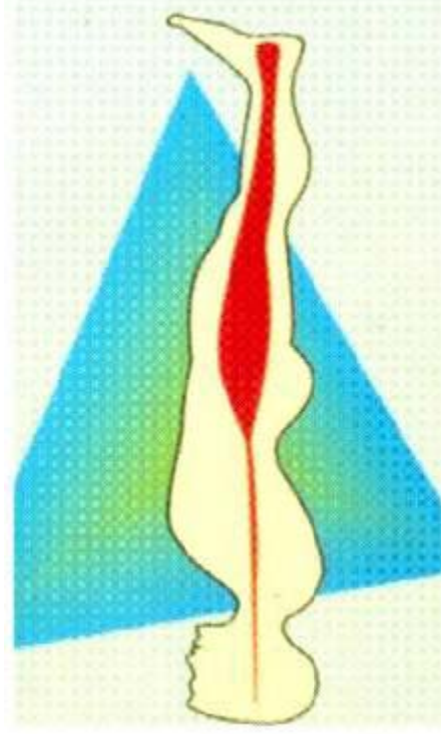
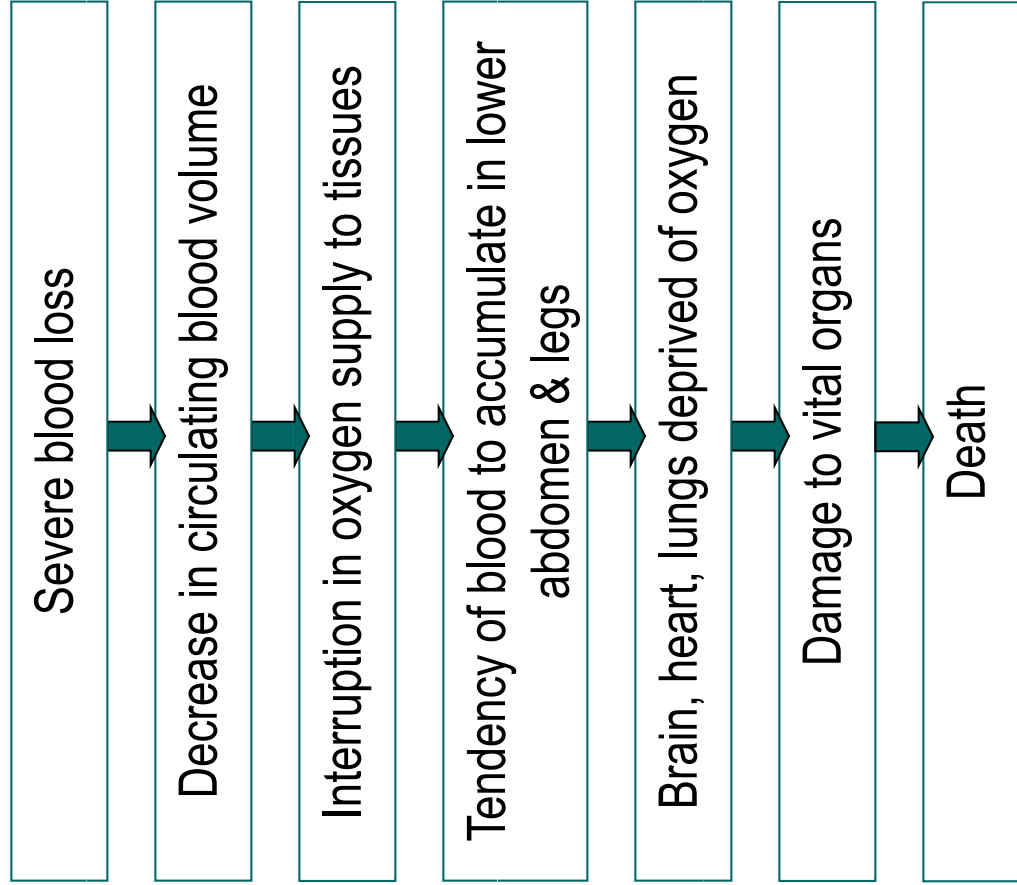
Uterotonic Selection for Prevention of PPH

Uterotonic	Advantages/ Disadvantages	Doses for Prevention	Storage Requirements
Ergometrine (IM Injection)	<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. 	0.2mg-4mg (use local standards as dosage may range from 0.2 mg – 4 mg)	<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

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 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

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 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

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 F



Floor Spill, 100cm Diameter

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 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

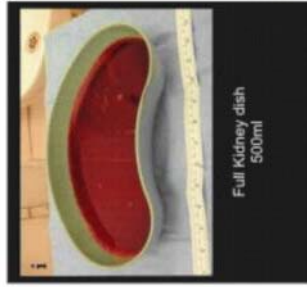
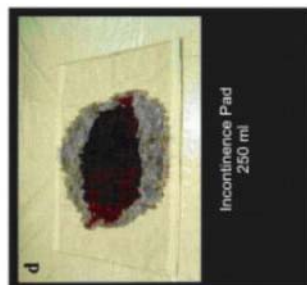


Full Kidney Dish

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



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.).

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 woman 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

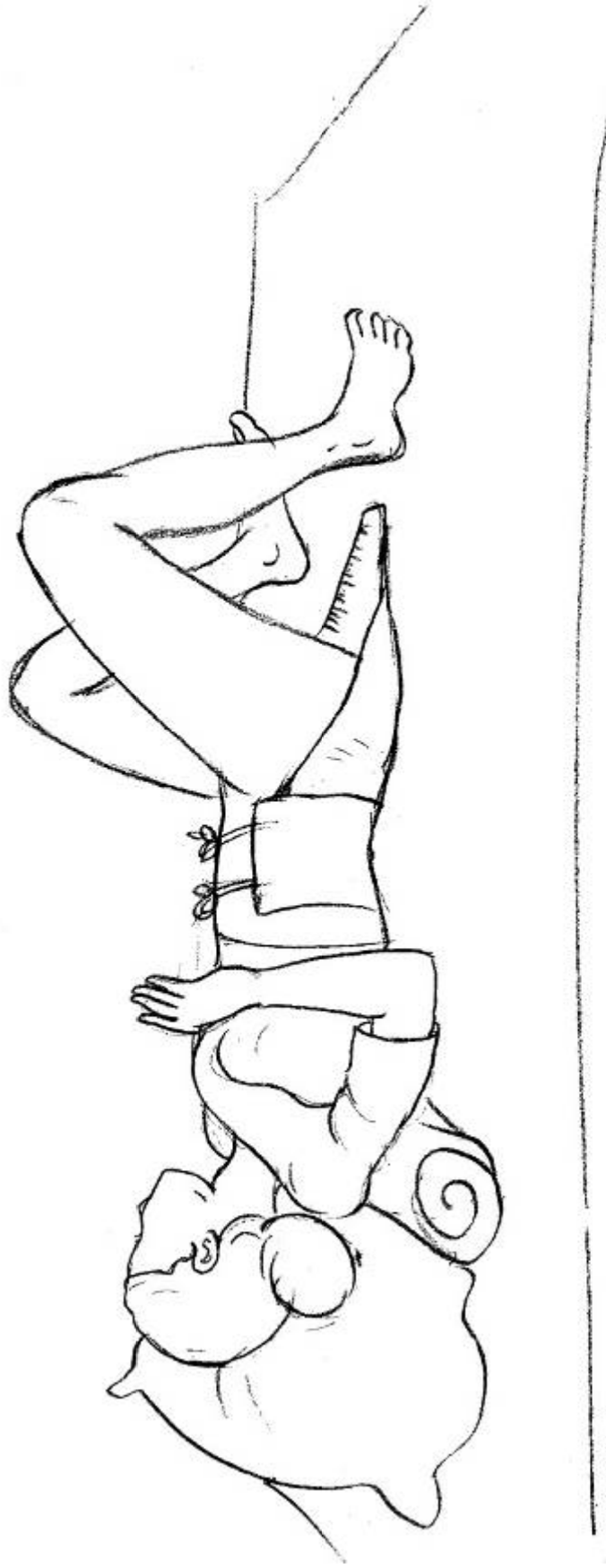
Push all blood into the bag using gloved hand

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



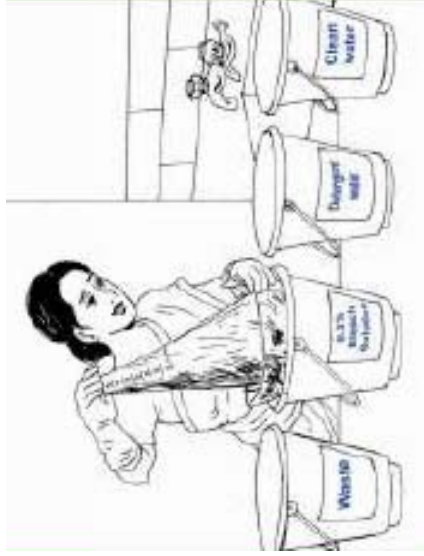
The Blood Collection Drape in Use



Measuring Blood Collected in the Funnel



Decontaminate in 0.05% Bleach Solution for 10 Minutes



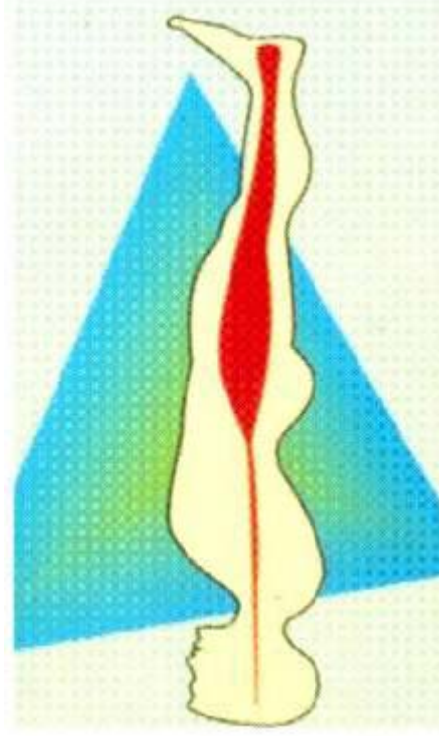
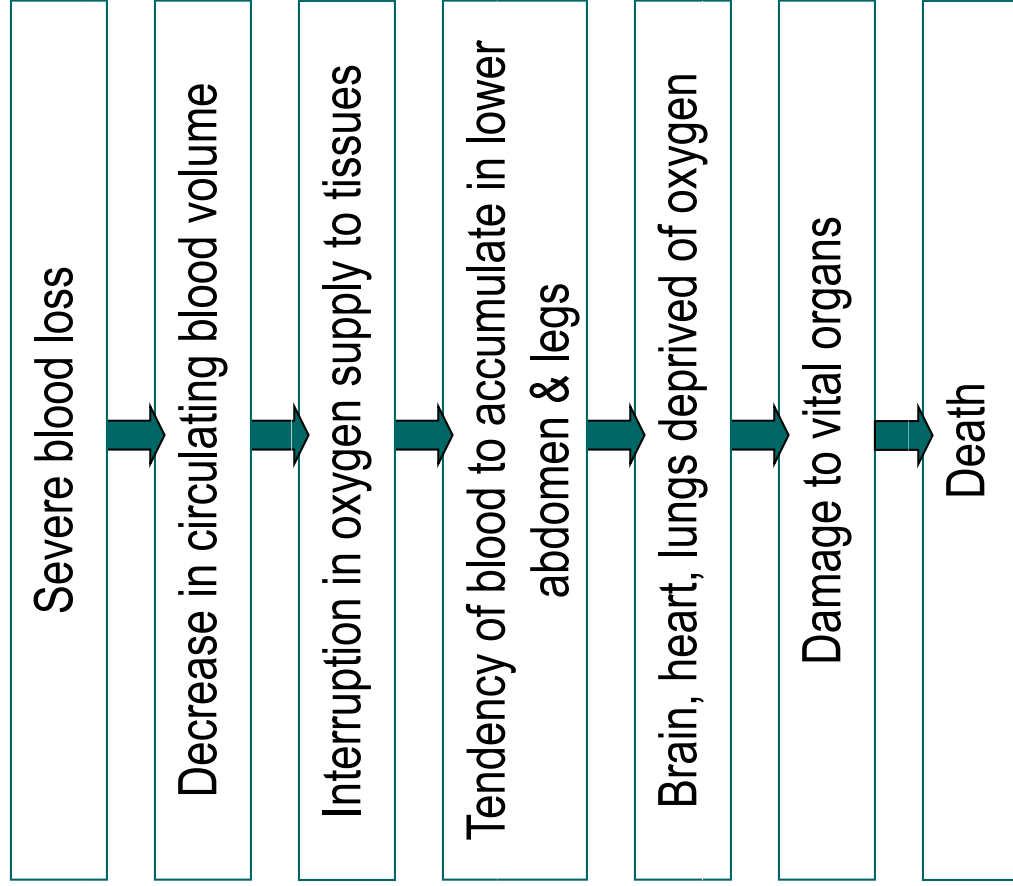
Clean with Soap and Water



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
Oxytocin (IM injection or IV)	<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 doses 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. 	<p>600 µg orally or sublingually</p> <p>800-1000 µg rectally</p>	<ul style="list-style-type: none"> • Store at room temperature in a closed container.

Decision Making and Action Depending on Place of Delivery

		Place of delivery		
		Where resuscitation/PPH management not available	Where only resuscitation/PPH management available	Where surgical interventions available
Extent of blood loss	>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

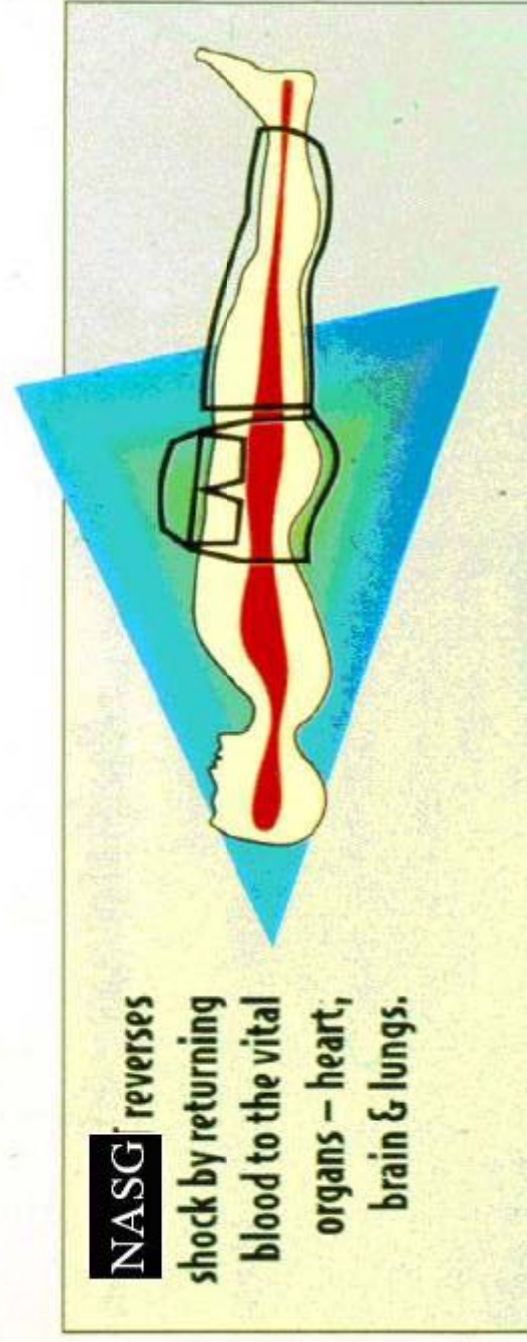
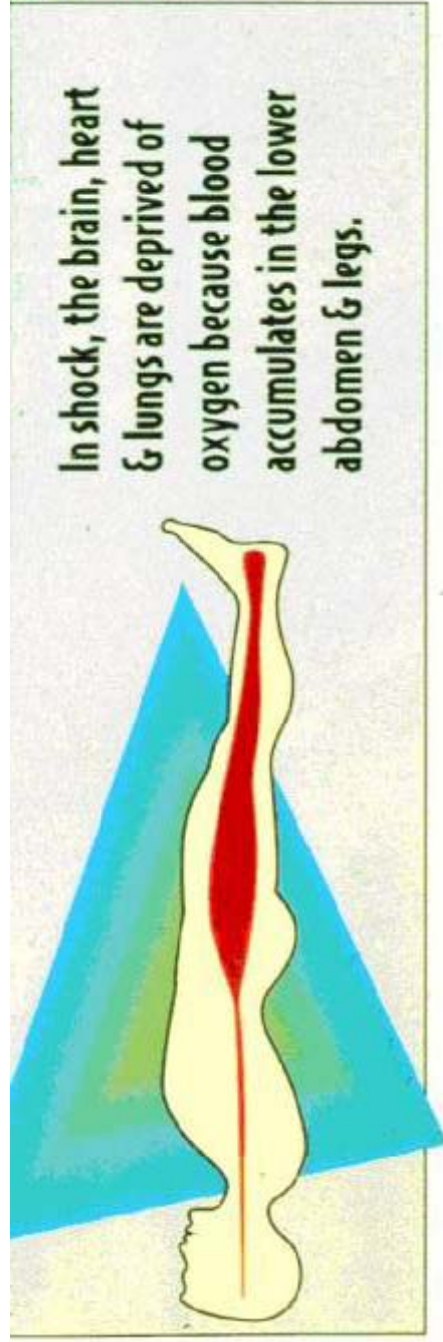
To achieve safe transfer, the patient has to be transferred:

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

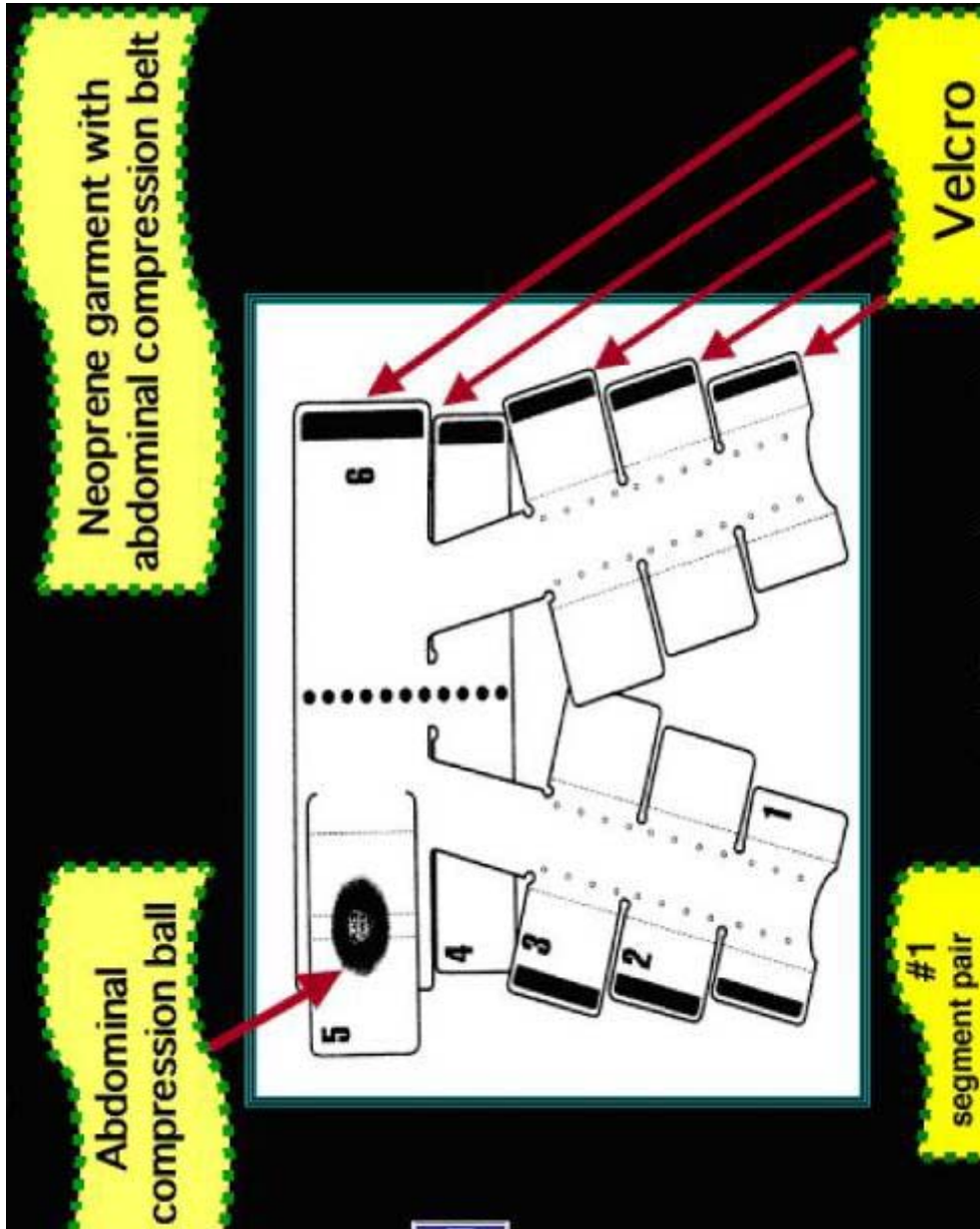
A Woman in the NASG



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.

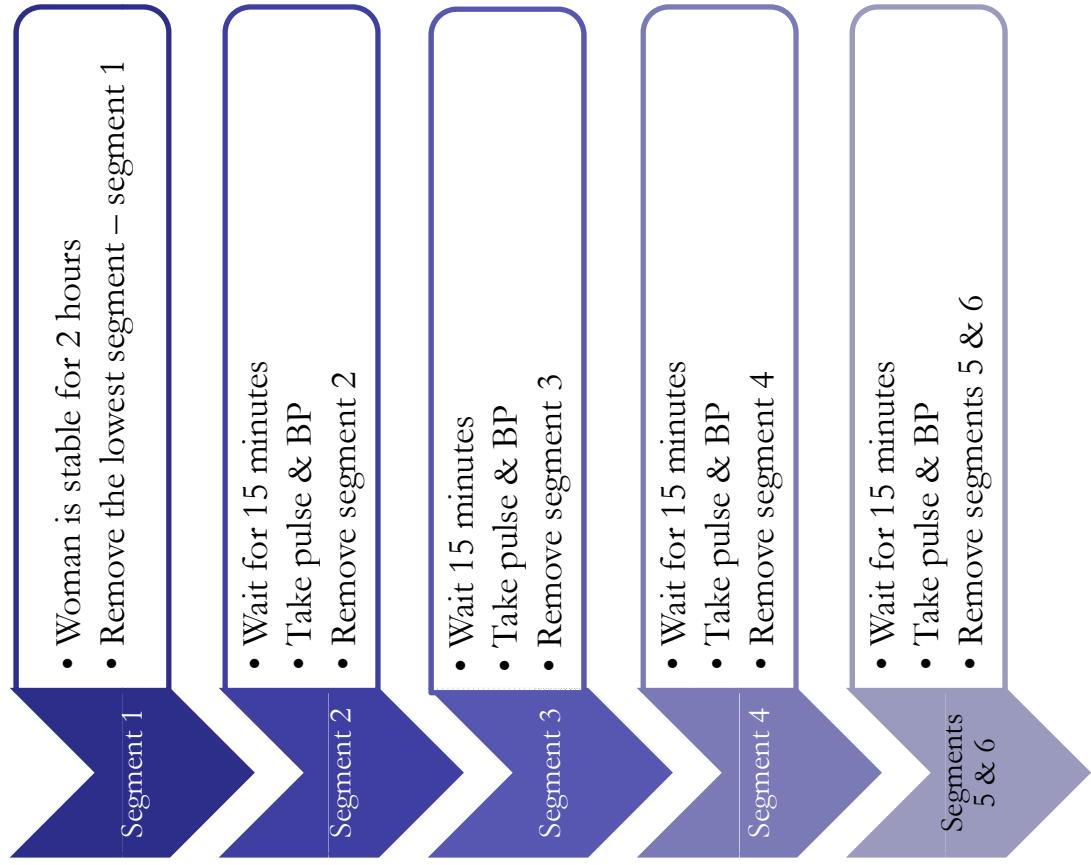
Place segment 4 so it goes around the woman with its lower edge at the level of her pubic bone

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

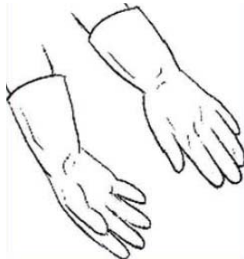


Avoiding Adverse Events When Using the NASG

- 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

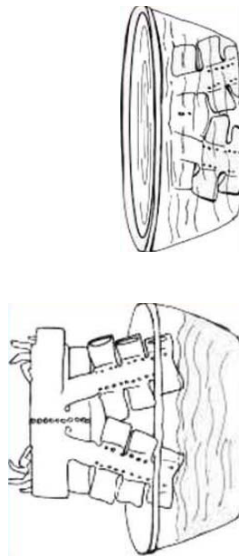
1. Put on gloves



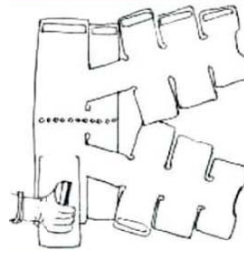
2. Mix bleach solution



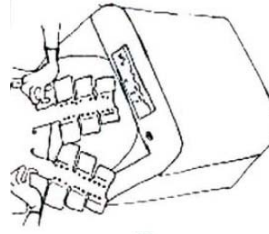
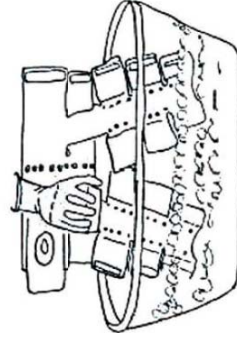
3. (a) Immerse NASG
(b) Soak in bleach 10 mins.



4. Scrub



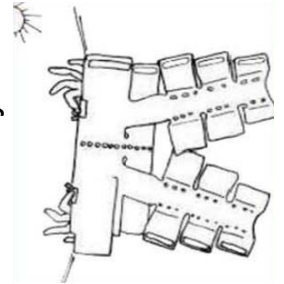
5. Wash



6. Squeeze



7. Dry



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