Section C

Clinical Care and Treatment Guidelines for Prevention of Postpartum Hemorrhage

INTRODUCTION

This section includes the clinical care and treatment guidelines for prevention of postpartum hemorrhage based on the World Health Organization manual *Managing Complications in Pregnancy and Childbirth: A Guide for Midwives and Doctors (MCPC)* (2000).

Also included is a list of available training manuals and information about how to obtain them.

EMERGENCY OBSTETRIC CARE—VAGINAL BLEEDING AFTER CHILDBIRTH

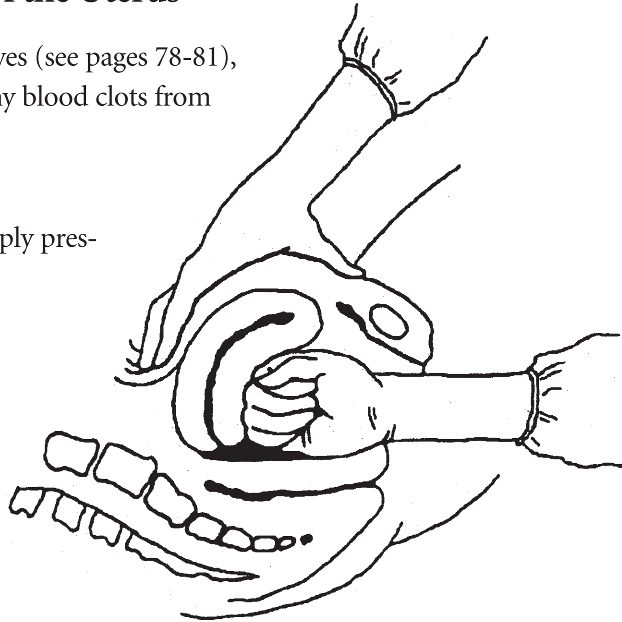
SIGNS/SYMPTOMS	PROBABLE DIAGNOSIS	MANAGEMENT
• Increased vaginal bleeding within the first 24 hours after childbirth • Uterus soft and not contracted	• **Atonic uterus**	• **Massage the fundus of the uterus through the woman's abdomen.** • **Administer oxytocin** ***IV:*** infuse 20 units in 1 L normal saline or Ringer's lactate at 60 drops per minute until uterus is contracted, then 20 units in 1 L normal saline or Ringer's lactate at 40 drops per minute. Do not give more than 3 L. ***PLUS*** ***IM:*** 10 units. • **If oxytocin not available** Administer ergometrine/methyl-ergometrine (do not use if signs/symptoms of pre-eclampsia, hypertension, or heart disease). ***IM or IV:*** slowly infuse 0.2 mg. Repeat 0.2 mg IM after 15 minutes. If required, give 0.2 mg IM or IV (slowly) every 4 hours. • **If bleeding continues** Check for and remove retained placental fragments. • **If bleeding does not stop in spite of management** Perform bimanual compression of the uterus or compress the aorta (see pages C-6). • **If bleeding does not stop in spite of compression** Start an IV infusion (two if possible) using a large-bore cannula or needle. Rapidly infuse normal saline or Ringer's lactate at the rate of 1 L in 15 20 minutes. Give at least 2 L of fluid in the first hour. ***Refer urgently.***
• Increased vaginal bleeding within the first 24 hours after childbirth	• **Tears of cervix, vagina, or perineum**	• Examine the woman carefully and repair tears to the cervix, vagina, or perineum. • **If bleeding does not stop immediately—** ***Refer urgently.***

SIGNS/SYMPTOMS	PROBABLE DIAGNOSIS	MANAGEMENT
• Placenta not delivered within 30 minutes after childbirth • Portion of maternal surface of placenta missing or torn membranes with vessels (there may be no bleeding)	• **Retained placenta/ placental fragments**	• Ensure that the bladder is empty (catheterize if necessary). • **If you can see the placenta** Ask the woman to push it out. • **If you can feel the placenta or placental fragments in the vagina** Remove by hand (wear sterile or high-level disinfected gloves; wrap sterile gauze around fingers). • **If placenta is not expelled and cannot be seen or felt** Give oxytocin 10 units IM. • **If placenta is undelivered after 30 minutes of oxytocin and the uterus is contracted** Attempt controlled cord traction (**see page C-7**). • **If controlled cord traction is unsuccessful** Start an IV infusion (two if possible) using a large-bore cannula or needle. Rapidly infuse normal saline or Ringer's lactate at the rate of 1 L in 15 20 minutes. Give at least 2 L of fluid in the first hour. Attempt manual removal of placenta (**see page C-7**). • **If signs of infection** Give ampicillin 2 g IV every 6 hours ***PLUS*** gentamicin 5 mg/kg body weight IV every 24 hours ***PLUS*** metronidazole 500 mg IV every 8 hours. • **If placenta or placental fragments cannot be removed OR bleeding does not stop immediately** ***Refer urgently.***
• Uterine fundus not felt on abdominal palpation • Slight or intense pain	• **Inverted uterus**	• **Start an IV infusion (two if possible) using a large-bore cannula or needle.** Rapidly infuse normal saline or Ringer's lactate at the rate of 1 L in 15 20 minutes. Give at least 2 L of fluid in the first hour. Give a single dose of prophylactic antibiotics: ampicillin 2 g IV ***PLUS*** metronidazole 500 mg IV; **OR** Give cefazolin 1 g IV ***PLUS*** metronidazole 500 mg IV. ***Refer urgently.*** • **If there is fever and/or foul-smelling vaginal discharge** Give ampicillin 2 g IV every 6 hours ***PLUS*** gentamicin 5 mg/kg body weight IV every 24 hours ***PLUS*** metronidazole 500 mg IV every 8 hours. ***Refer urgently.***

SIGNS/SYMPTOMS	PROBABLE DIAGNOSIS	MANAGEMENT
• Bleeding occurs more than 24 hours after childbirth • Uterus softer and larger than expected for elapsed time since childbirth	• **Delayed postpartum hemorrhage**	• **Administer oxytocin** ***IV:*** infuse 20 units in 1 L normal saline or Ringer's lactate at 60 drops per minute until uterus is contracted, then 20 units in 1 L normal saline or Ringer's lactate at 40 drops per minute. ***Do not give more than 3 L.*** ***PLUS*** ***IM:*** 10 units. • **If oxytocin is not available** Administer ergometrine/methyl-ergometrine (do not use if signs/symptoms of pre-eclampsia, hypertension, or heart disease). ***IM or IV:*** slowly infuse 0.2 mg. Repeat 0.2 mg IM after 15 minutes. If required, give 0.2 mg IM or IV (slowly) every 4 hours. • **If cervix is dilated** Explore uterus by hand (wearing sterile or high-level disinfected gloves) to remove large clots and placental fragments. • **If cervix is not dilated and MVA is not available, OR if bleeding does not stop** ***Refer urgently.*** • **If cervix is not dilated and MVA is available** Perform MVA to remove placental fragments. • **If hemoglobin is below 7 g/dL or hematocrit is below 20% (severe anemia)** Give ferrous sulfate or ferrous fumerate 120 mg by mouth ***PLUS*** folic acid 400 µg by mouth. ***Refer urgently.*** • **If there is fever and/or foul-smelling vaginal discharge** Give ampicillin 2 g IV every 6 hours ***PLUS*** gentamicin 5 mg/kg body weight IV every 24 hours ***PLUS*** metronidazole 500 mg IV every 8 hours. ***Refer urgently.***

To Perform Bimanual Compression of the Uterus

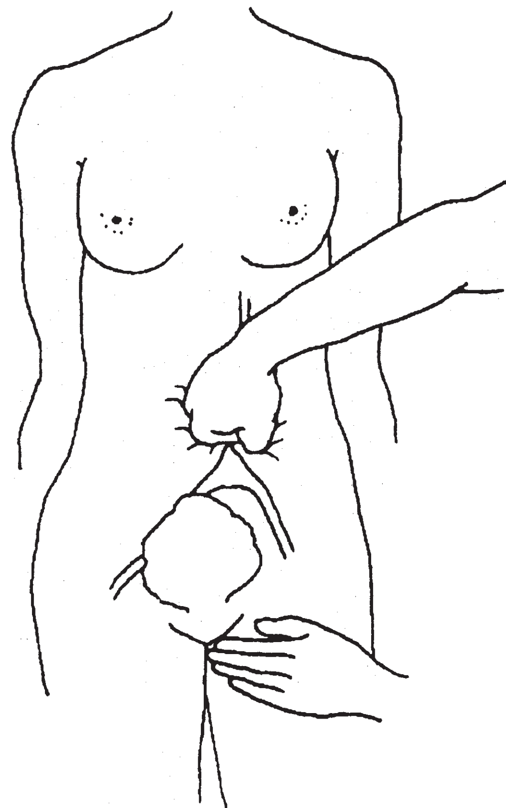
- Wearing high-level disinfected or sterile gloves (see pages 78-81), insert a hand into the vagina and remove any blood clots from the lower part of the uterus or cervix.
- Form a fist.
- Place the fist into the anterior fornix and apply pressure against the anterior wall of the uterus.
- With the other hand, press deeply into the abdomen behind the uterus, applying pressure against the posterior wall of the uterus.
- Maintain compression until bleeding is controlled and the uterus contracts



Alternatively, Compress the Aorta

- Apply downward pressure with a closed fist over the abdominal aorta directly through the abdominal wall:
- The point of compression is just above the umbilicus and slightly to the left.
- Aortic pulsations can be felt easily through the anterior abdominal wall in the immediate postpartum period.
- With the other hand, palpate the femoral pulse to check the adequacy of compression.
- Maintain compression until bleeding is controlled.

Packing the uterus is ineffective and wastes precious time.

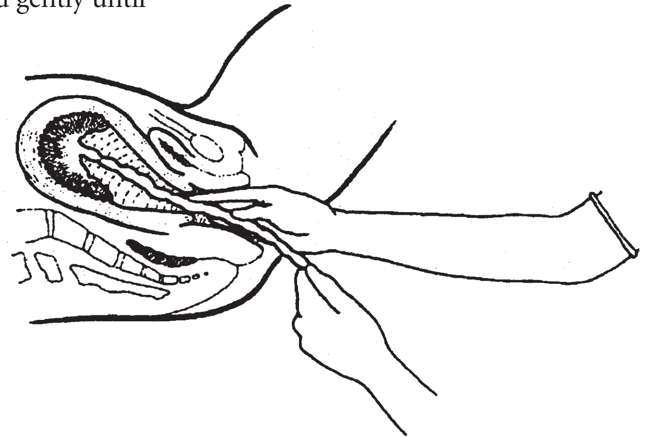


Manual Removal of the Placenta

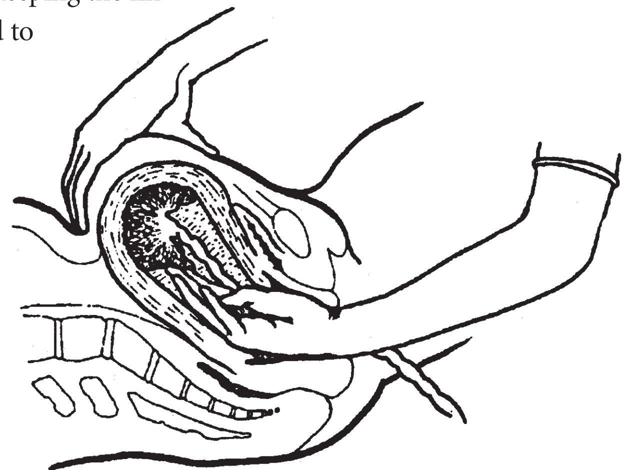
- Review for indications.
- Start an IV infusion.
- Provide emotional support and encouragement. Use calm, soothing language to help the woman relax.
- Catheterize the bladder or ensure that it is empty.
- Give a single dose of prophylactic antibiotics:
  - —ampicillin 2 g IV **PLUS** metronidazole 500 mg IV;
  - —**OR** cefazolin 1 g IV **PLUS** metronidazole 500 mg IV.

Note: If uterine inversion occurs, *refer urgently*.

- Hold the umbilical cord with a clamp. Pull the cord gently until it is parallel to the floor.
- Wearing high-level disinfected or sterile elbow-length gloves, insert the other hand into the vagina and up into the uterus.
- Let go of the cord and move the hand up over the abdomen in order to support the fundus of the uterus and to provide counter-traction during removal to prevent inversion of the uterus.
- Move the fingers of the hand in the uterus laterally until the edge of the placenta is located.



- **If the cord has been detached previously,** insert a hand into the uterine cavity. Explore the entire cavity until a line of cleavage is identified between the placenta and the uterine wall.
- Detach the placenta from the implantation site by keeping the fingers tightly together and using the edge of the hand to gradually make a space between the placenta and the uterine wall.
- Proceed slowly all around the placental bed until the whole placenta is detached from the uterine wall.
- **If the placenta does not separate from the uterine surface** by gentle lateral movement of the fingertips at the line of cleavage, remove placental fragments. If the tissue is very adherent, suspect placenta accreta and refer immediately for laparotomy and possible subtotal hysterectomy.



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Active Management of Third Stage of Labor:

A Tutorial and Presentation Slides

Advances in Maternal and Neonatal Health

Maternal Neonatal Health Project

JHPIEGO

2004

Session Objectives

To review:

- **Definition of third stage of labor**
- **Physiologic vs. active management**
- **Risks and benefits of each method of management**
- **Drugs used in active management**

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Two Methods of Third Stage Management

- Physiologic (“expectant”) management
  - Oxytocics are not used
  - Placenta is delivered by gravity and maternal effort
- Active Management
  - Administration of uterotonic agent
  - After the cord is clamped, placenta delivered by controlled cord traction (CCT) with counter-traction on the fundus
  - Uterine massage after delivery of the placenta as appropriate

Physiologic Management: Advantages and Disadvantages

- Advantages
  - Does not interfere with normal labor process
  - Does not require special drugs/supplies
- Disadvantages
  - Increases length of third stage
  - Increases the amount of blood loss after childbirth
  - Increases risk of postpartum hemorrhage (PPH)

Active Management: Advantages and Disadvantages

- Advantages
  - Reduces length of third stage
  - Reduces blood loss
  - Reduces risk of PPH
- Disadvantages
  - Requires uterotonics and items needed for injection
  - Requires a birth attendant with skills in:
    - Observation
    - Giving an injection
    - Controlled Cord Traction (CCT)

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Procedure for Active Management

- Oxytocin
  - Within 1 minute of birth, palpate abdomen to rule out presence of another baby
  - Give oxytocin
- Controlled Cord Traction
  - Await strong uterine contraction (2–3 minutes)
  - Apply controlled cord traction while applying countertraction above pubic bone
  - If placenta does not descend, stop traction and await next contraction

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Active vs. Physiologic Management: The Bristol and Hinchingbrooke Trials

- Bristol trial: 1,695 women, Hinchingbrooke trial: 1,512 women randomly assigned to:
  - Active management
  - Physiologic management

Prendiville et al 1988; Rogers et al 1998.

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Active vs. Physiologic Management: Bristol and Hinchingbrooke Trial Objectives

Compare effects of fetal and maternal morbidity of:

- Routine active management
- Physiologic management

Prendiville et al 1988; Rogers et al 1998.

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The Bristol Trial: Details of Active Management

- Give one customary uterotonic, either synotometrin (5 units oxytocin and 0.5 mg ergometrine) or 10 units oxytocin if mother has high blood pressure) immediately after delivery of anterior shoulder
- Clamp cord 30 seconds after delivery of baby
- When uterus has contracted, try to deliver placenta by CCT with protective hand on abdomen helping to shear off placenta and preventing uterine inversion
- No special instructions about posture

Prendiville et al 1988.

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The Bristol Trial: Details of Physiologic Management

- Do not give uterotonic
- Leave cord attached to baby until placenta is delivered
- No controlled cord traction or any manual interference with uterus at fundus
- Encourage mother to concentrate on feeling for next contraction or urge to push
- When mother feels contraction or urge or there are signs of separation, encourage mother and help her change posture
- If placenta does not deliver spontaneously, wait, try putting baby to breast and encourage maternal effort

Prendiville et al 1988.

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The Hinchingbrooke Trial: Details of Active Management

- Prophylactic uterotonic within 2 minutes of baby's birth
- Immediate cutting and clamping of the cord
- Delivery of placenta by controlled cord traction or maternal effort
- Randomly assigned to upright or supine posture
- Study setting where both managements are commonly practiced

Rogers et al 1998.

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The Hinchingbrooke Trial: Details of Expectant (Physiologic) Management

- No prophylactic uterotonic
- No cord clamping until pulsation ceased
- Delivery of the placenta by maternal effort.
- Randomly assigned to upright or supine posture
- Study setting where both managements are commonly practiced

Rogers et al 1998.

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Active vs. Physiologic Management: Postpartum Hemorrhage

	Active Management	Physiologic Management	OR and 95% CI
Bristol Trial	50/846 (5.9%)	152/849 (17.9%)	3.13 (2.3-4.2)
Hinchingbrooke Trial	51/748 (6.8%)	126/764 (16.5%)	2.42 (1.78-3.3)

Prendiville et al 1988; Rogers et al 1998.

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Active vs. Physiologic Management: Results

		Active Management	Physiologic Management	OR and 95% CI
Duration 3rd stage (median)	Bristol	5 minutes	15 minutes	Not done
	Hinchingbrooke	8 minutes	15 minutes	Not done
Third stage > 30 minutes	Bristol	25 (2.9%)	221 (26%)	6.42 (4.9-8.41)
	Hinchingbrooke	25 (3.3%)	125 (16.4%)	4.9 (3.22-7.43)
Blood transfusion	Bristol	18 (2.1%)	48 (5.6%)	2.56 (1.57-4.19)
	Hinchingbrooke	4 (0.5%)	20 (2.6%)	4.9 (1.68-14.25)
Therapeutic oxytocics	Bristol	54 (6.4%)	252 (29.7%)	4.83 (3.77-6.18)
	Hinchingbrooke	24 (3.2%)	161 (21.1%)	6.25 (4.33-9.96)

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Active vs. Physiologic Management

- Conclusion: Active management of the third stage reduces the risk of PPH
- Compared to physiologic management, active management
  - Reduces blood loss
  - Reduces the length of the third stage of labor
  - Reduces the need for uterotonic drugs
  - Reduces the need for transportation

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Uterotonic Drugs

- Oxytocin- posterior pituitary extract
- Ergometrine- preparation of ergot
- Syntometrine- combination of oxytocin and ergometrine
- Misoprostol- prostaglandin E1 analogue

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Uterotonic Drugs: Oxytocin

- **Key Message: Oxytocin is the preferred drug for AMTSL when it can be stored properly and administered safely**
- Advantages
  - Acts within 2.5 minutes when given IM
  - Generally does not cause side effects
- Disadvantages
  - More expensive than ergometrine
  - IM or IV preparations only
  - Not heat stable

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Uterotonic Drugs: Ergometrine

- Advantages
  - Low price
  - Effect lasts 2–4 hours
- Disadvantages
  - Takes 6–7 minutes to become effective when given IM; oral form insufficiently effective
  - Causes tonic uterine contraction
  - Increased risk of hypertension, vomiting, headache
  - Contraindicated in women with hypertension or heart disease
  - Not heat stable

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Uterotonic Drugs: Syntometrine

- Advantages
  - Combined effect of rapid action of oxytocin and sustained action of ergometrine
- Disadvantages
  - Increased risk of hypertension, nausea and vomiting
  - Not heat stable

Uterotonic Drugs: Misoprostol

- Advantages
  - May be given orally
  - Low price
  - Long shelf life and easy to store
  - Heat stable
  - *Prevention of PPH is an acceptable off-label use according to United States Pharamcopeia*
- Disadvantages
  - Shivering a frequent side effect
  - Takes longer to act compared to injectable uterotonics

Stability of Uterotonics in Tropical Climates: Conclusions

- Stability of oxytocin is better than ergometrine/ methylergometrine, especially regarding light
- Store refrigerated, in dark, labeled
- Remove from box only for immediate use
- Short periods unrefrigerated are fine (1 month at 30°C, 2 weeks at 40°C)

WHO 1993.

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Nipple Stimulation

- Nipple stimulation has not been shown to reduce risk of PPH
  - Randomized controlled trial of suckling immediately after birth with over 4,000 subjects in Malawi showed no significant difference in frequency of PPH, mean blood loss or retained placenta
- When oxytocics are not available, CCT and fundal massage should be performed
- Advantages of early breastfeeding and nipple stimulation:
  - Stimulates natural production of oxytocin
  - May maintain tone of contracted uterus
  - Benefits baby

Bullough, Msuku and Karonde 1989.

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Recommendations Concerning Selection of Uterotonics

- Use oxytocin, when available
- If oxytocin is not available use ergot alkaloid or misoprostol
- Remember: Do not use ergometrine in women with hypertension or heart disease
- Store uterotonics (except misoprostol) in refrigerator (2–8ºC) and away from light
- Misoprostol has advantages when there is no cold chain.

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Summary

- Active management of third stage includes:
  - Administration of uterotonic agents
  - Controlled cord traction
  - Uterine massage after delivery of the placenta as appropriate
- Ensuring supply of uterotonic is a priority
- Reduces risk of PPH as well as
  - Reduces blood loss
  - Reduces the length of the third stage of labor
  - Reduces the need for uterotonic drugs
  - Reduces the need for transportation

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Rogers J et al. 1998. Active versus expectant management of third stage of labour: The Hinchingbrooke randomised controlled trial. *Lancet* 351(9104): 693–699.

World Health Organization (WHO). 1993. *Stability of injectable oxytocics in tropical climates: Results of field surveys and simulation studies on ergometrine, methylergometrine, and oxytocin*. WHO: Geneva.

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Training Materials

Managing Complications in Pregnancy and Childbirth: A guide for midwives and doctors

Department of Reproductive Health and Research (RHR), World Health Organization, 2000

This manual is written for midwives and doctors at the district hospital level who are responsible for the care of women with complications of pregnancy, childbirth or the immediate postpartum period, including immediate problems of the newborn. The publication is available online in English, French and Spanish and can be downloaded as a Portable Document Format (PDF) file by visitng the web sites below.

English: http://whqlibdoc.who.int/hq/2000/WHO_RHR_00.7.pdf

French: http://whqlibdoc.who.int/hq/2002/WHO_RHR_00.7_fre.pdf

Spanish: http://www.who.int/reproductive-health/docs/impac.pdf

Basic Maternal and Newborn Care: A Guide for Skilled Providers

B. Kinzie, P. Gomez, R. Chase. JHPIEGO Corporation, 2004.

May be ordered at: http://www.jhpiego.org/whatsnew/an033004.htm

Contact Dana Lewison, 1615 Thames St., Baltimore, MD 21231, USA (email: dlewison@jhpiego.net)

Life-Saving Skills (LSS) Manual for Midwives (3rd edition)

Margaret A. Marshall and Sandra T. Buffington, American College of Nurse-Midwives, Washington, D.C 1998

May be ordered at: http://www.shopacnm.com/lifskillssma.html

Life-Saving Skills Manual for Policy Makers & Trainers

Margaret A. Marshall and Sandra T. Buffington, American College of Nurse-Midwives, Washington, D.C 1998

May be ordered at: http://www.shopacnm.com/lifskilmanfo.html

ALARM MANUAL (11th Edition - 2004)

The Society of Obstetricians and Gyneacologists of Canada, 2004

May be ordered at: http://www.sogc.org/SOGCnet/alarmPromo_e.shtml

Healthy Mother and Healthy Newborn Care: A Reference Guide for Care Givers

Washington, DC: American College of Nurse Midwives, 1998.

Requests for this publication should be sent to: The Publications Dept., ACNM, 818 Connecticut Avenue NW, Suite 900, Washington, D.C. 20006 (M368)

May be downloaded at: http://www.jsi.com/intl/mothercare/pubs/HealthyMother/reference.pdf

A pocket guide for providers is also available:

Healthy Mother and Healthy Newborn Care: A Guide for Care Givers (Pocket guide):
ttp://www.jsi.com/intl/mothercare/pubs/HealthyMother/guide.pdf