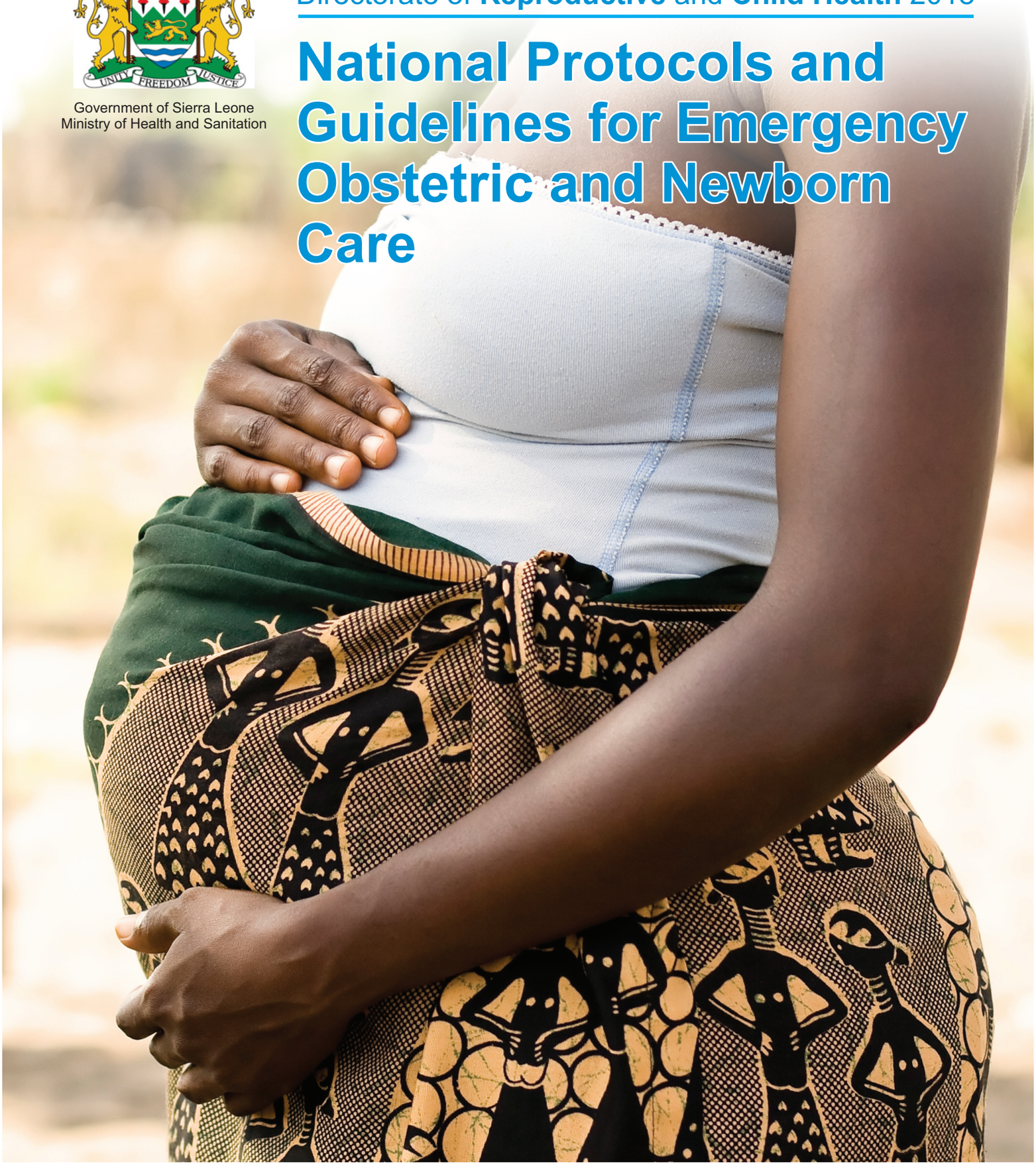
Government of Sierra Leone
Ministry of Health and Sanitation

Directorate of **Reproductive** and **Child Health** 2018

National Protocols and Guidelines for Emergency Obstetric and Newborn Care



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National Protocol for Management of Anemia in Pregnancy

- Anemia is usually caused by nutritional deficiency and worsened by the demands of pregnancy
- **Mild anemia :** Hemoglobin 10 - 10.9 g/dl
- **Moderate anemia:** Hemoglobin 7 - 9.9 g/dl
- **Severe anemia:** Hemoglobin < 7 g/dl
- Test all pregnant women for anemia with a Hb level at the first prenatal visit (all pregnant women should get point of care test for Hb, HIV & Syphilis at first ANC visit)
- Suspect sickle cell anemia in women with severe anemia and refer for sickle cell testing
- Screen all women for anemia by checking for pallor at every prenatal visit
- Repeat Hb level at 28 weeks
- Blood loss during and after labor can be fatal for the anemic woman
- Labor and first 2 weeks of puerperium are periods of greatest risk in severely anemic women

SYMPTOMS OF ANEMIA

- Pale conjunctiva and mucous membranes
- Dizziness
- Breathlessness at rest or on exertion
- Generalized edema

EFFECTS OF ANEMIA

- Low birth weight
- Preterm labor
- Stillbirth
- Congestive heart failure

MANAGEMENT

DURING PREGNANCY

- All pregnant women: **Ferrous Sulphate** 200mg + **Folic Acid** 0.4mg daily **(Fefol)**
- Mild anemia: Fefol twice a day
- Moderate anemia: Fefol three times a day
- Severe anemia: Refer to CEmONC for possible transfusion, then maintain on Fefol
- Pregnant women with sickle cell anemia – Folic Acid 5 mg daily only (Ferrous should not be given as women with sickle cell are at risk for iron overload)
- Provide nutrition counseling for women with anemia
- Refer for Hb testing if develops signs or symptoms of anemia
- If in heart failure, transfuse slowly and give **Furosemide** 40mg IV with each unit of blood
- Deworm with **Albendazole** 400mg once or **Mebendazole** 500mg once during pregnancy
- Give Intermittent Preventive Treatment for Malaria monthly

SEVERE ANEMIA IN LABOR

- Deliver in CEmONC
- Transfuse as needed if severe anemia or if symptomatic
- Give oxygen by mask
- Consider shortening the second stage with forceps or vacuum delivery
- Minimize blood loss

POSTPARTUM

- Prescribe Fefol daily for 3 months postpartum for all women

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National Protocol for Diagnosis and Management of Abortion (Miscarriage)

SIGNS AND SYMPTOMS

- Amenorrhea or positive pregnancy test with bleeding or cramping < 22 weeks gestation
- Suspect septic abortion if fever, uterine tenderness, or foul discharge
- Suspect bowel or other injuries if fever, tenderness, or vomiting after surgical treatment

DIAGNOSIS

THREATENED ABORTION
• Perform pregnancy test & ultrasound if available
• Light bleeding
• Closed cervix

INEVITABLE & INCOMPLETE ABORTION
• Perform pregnancy test & ultrasound if available • Heavy bleeding • Dilated cervix • Inevitable – no expulsion of products of conception (POC) • Incomplete – partial expulsion of POC

COMPLETE ABORTION
• Perform pregnancy test & ultrasound if available
• Light bleeding • Closed cervix
• H/o expulsion of POC

MANAGEMENT

THREATENED ABORTION

- Medical treatment usually not necessary
- Monitor vitals & bleeding
- Confirm pregnancy viability by ultrasound and refer to ANC if viable
- Rule out ectopic pregnancy
- Give analgesic if needed
- Avoid strenuous activity
- Avoid sexual intercourse
- Bed rest is NOT necessary
- Do not give hormones or tocolytics as they will not prevent abortion
- Counsel & give support to woman & partner

INEVITABLE & INCOMPLETE ABORTION

- **Refer to hospital or CHC where Manual Vacuum Aspiration (MVA) & trained staff available**
- **If bleeding heavily or anemic – transfer to hospital with transfusion availability**
- IV access & IV fluids before transfer
- Analgesics if needed for pain
- Examine if POC are visible in cervical os and remove with sponge/ring forceps
- If POC not visible in os, proceed with immediate uterine evacuation

Pregnancy <14 weeks:

- If hemodynamically unstable: perform MVA. If stable and ectopic not suspected: perform MVA or use **Misoprostol*** (800 mcg by vagina or sublingual every 8hrs, max 3 doses)

Pregnancy ≥14 weeks:

- Use Misoprostol* (400 mcg PV/SL every 4hrs, max 6 doses, or **Oxytocin** 40 IU in 1L IV fluids, 40 drops/min)
- Monitor vitals & transfuse if needed
- Offer FP & post-abortal counseling

COMPLETE ABORTION

- **Refer to hospital or CHC where MVA & trained staff available**
- IV access & IV fluids before transfer
- Analgesic if needed for pain
- Evacuation of uterus usually not necessary
- Observe for heavy bleeding – if heavy: MVA to ensure no remaining POC and give 800mcg Misoprostol by vagina or sublingual for post-abortal hemorrhage
- Offer FP & post-abortal counseling

*See Misoprostol guidelines

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National Protocol for Diagnosis and Management of Ectopic Pregnancy

Ectopic pregnancy is a condition where a pregnancy implants in the fallopian tube or anywhere outside of the uterus. The pregnancy can rupture, causing life-threatening internal bleeding and risk of death.

SUSPECT ECTOPIC PREGNANCY IN ANY WOMAN WITH:

- Bleeding + Pain + Early Pregnancy (or + HCG)
- Bleeding + Pain + History of Amenorrhea
- Pain without bleeding + Early Pregnancy (or + HCG)
- Early Pregnancy (or + HCG) + Unexplained Severe Anemia
- Place IV Line + start IV fluids and **TRANSFER to CEmONC Immediately**

SIGNS AND SYMPTOMS

- History of amenorrhea
- Abdominal pain (severe)
- Rebound abdominal tenderness
- Pain with movement of the cervix
- Spotting or bleeding after a normal menstruation may or may not be present
- Pallor, dizziness and/or feeling like fainting
- Signs of shock: low BP, rapid pulse, rapid respiration, cold and clammy skin

INVESTIGATIONS

- Pregnancy test
- Blood: Hemoglobin, Blood group, Cross-matching
- Abdominal and Pelvic Ultrasound
- Abdominal Paracentesis or Culdocentesis

MANAGEMENT

- IV fluids (rapid infusion)
- Prepare for emergency surgery
- Blood transfusion if indicated
- Antibiotics (**Ampicillin** + **Gentamicin** IV)
- Analgesics as needed for pain
- Indwelling urinary catheter

Provide Treatment

- Emergency Exploratory Laparotomy – inspect ovary and tubes, salpingectomy is treatment of choice
- Auto transfusion if indicated

Ruptured Ectopic Pregnancy is a Surgical Emergency

- Time from diagnosis to surgical treatment should be less than 30 minutes
- Perform laparotomy immediately without waiting for results, if in poor condition or deteriorating

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National Protocol for Management of Preterm Labor

- Preterm labor (PTL) - contractions leading to cervical change before 37 weeks gestation
- Preterm birth (PTB) - birth before 37 weeks gestation, is a major cause of neonatal mortality

MANAGEMENT OF LABOR

- Transfer any woman with PTL to the nearest CEmONC if delivery not imminent
- Monitor labour with partograph and notify pediatrics to prepare for resuscitation
- Routine C/S not recommended unless there is an obstetric indication
- Avoid vacuum-assisted birth as risk of intra-cranial bleeding is high

DURING PREGNANCY

- Antenatal corticosteroid therapy can improve fetal lung maturity and chances of neonatal survival when given to women in PTL from 24 weeks to 34 weeks gestation
- Confirm diagnosis of PTL by documenting cervical dilation or effacement over 2 hours
- Confirm gestational age because risk of harm from corticosteroids might outweigh benefits in preterm births > 34 weeks gestation (LMP, exam in early pregnancy, ultrasound, fundal height)
- Do not administer corticosteroids if there is clinical evidence of maternal infection (fever, uterine tenderness, foul-smelling amniotic fluid) as it can make infection worse
- Confirm that preterm newborn is in facility able to provide adequate resuscitation and care (preferably facility with neonatal intensive care unit)
- Administer **Dexamethasone**, 6 mg IM, every 12 hours X 4 doses
- Dexamethasone can be repeated after 1 week if PTB has not happened and PTB is imminent
- Give tocolytic up to 48 hours only to allow window to provide corticosteroids or to allow transfer to CEmONC (**Nifedipine** 20mg orally, then 10mg 6 hourly, max dose = 40mg/day - monitor fetal condition and maternal vitals as Nifedipine can cause drop in BP)
- Do not use tocolytics if Preterm Rupture of Membranes (PROM), chorioamnionitis, placental abruption, or maternal cardiac disease
- Corticosteroids can increase blood sugars in diabetic women – monitor and treat blood sugars

ANTIBIOTICS

- Antibiotics can improve outcomes in women with PROM and/or clinical signs of infection – give antibiotics only if membranes are ruptured or signs of infection
- **Erythromycin** 250mg 6 hourly X 10 days or until birth, OR **Ampicillin** 2g IV 6 hourly

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National Protocol for use of Misoprostol

- **Misoprostol** is a uterotonic medication used for many obstetric and gynecological conditions including induction of labor, prevention and treatment of postpartum hemorrhage, and management of abortion complications
- 800mcg of Misoprostol is equivalent to 40 IU of **Oxytocin** (Oxytocin works faster)
- Routes of administration include oral (swallow), sublingual (place under tongue for 30 minutes), vaginal (place in posterior vagina), and rectal (place inside rectum)
- If 25mcg tablets not available: dissolve 200mcg Misoprostol in 200ml of water – 25mls of this solution = 25mcg
- Misoprostol 100mcg tablets should not be cut up as the dose will be inaccurate
- Misoprostol for induction of labor should only be used in a **CEmONC** facility where urgent C/S for fetal distress or uterine rupture is available
- Misoprostol should not be used for induction of labor in a **BEmONC** facility - patients requiring induction of labor should be transferred to a **CEmONC** facility
- Obtain oral informed consent from every woman before administering Misoprostol

CONTRAINDICATIONS

- DON'T use Misoprostol for labor induction in women who have had a CS or other uterine surgery (like myomectomy) as it can cause uterine rupture
- DON'T use Misoprostol for augmentation of labor

SIDE EFFECTS

- Fever, shivering and chills are most common side effect – give **Panadol**
- Vomiting – give antiemetics; usually resolves within 2-6 hours
- Diarrhea – rehydrate; usually resolves within 24 hours

INDICATION	DOSAGE	ROUTE OF ADMINISTRATION
PPH Prophylaxis – Active Management of 3rd Stage (Oxytocin preferred because it works faster)	600mcg	Oral – single dose
PPH Management or Post-abortal Hemorrhage	800mcg	Sublingual or Rectal – single dose
Incomplete, Inevitable, or Missed abortion (<14wks)	800mcg	Sublingual or Vaginal – every 8hrs until expulsion, max 3 doses
Incomplete, Inevitable, or Missed abortion (14-20wks)	400mcg	Sublingual or Vaginal – every 4hrs until expulsion, max 6 doses
Intrauterine Fetal Death (14-17wks)	200mcg	Vaginal – every 4hrs until expulsion, max 6 doses
Intrauterine Fetal Death (18-27wks)	100mcg	Vaginal – every 4hrs until expulsion, max 6 doses
Intrauterine Fetal Death (≥28 wks)	25mcg	Vaginal or Oral – every 4hrs until expulsion, max 6 doses
Induction of Labor	25mcg	Vaginal or Oral – every 4hrs until cervix 4cm dilated, max 4 doses

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National Guideline for use of Oxytocin in Labor

- **Oxytocin** is a uterotonic used in induction & augmentation of labor, active management of the 3rd stage of labor, & treatment of PPH
- Oxytocin should only be used for augmentation of labor in a **CEmONC facility** where urgent C/S for fetal distress or uterine rupture is available
- Oxytocin should not be used for augmentation of labor in a **BEmONC facility** or other **PHU** - patients requiring augmentation of labor should be transferred to a **CEmONC facility**
- Oxytocin (for augmentation of labor), can only be used by a **physician** or by a **midwife** under supervision of a physician - **Misoprostol** SHOULD NEVER be used for augmentation of labor

USE OXYTOCIN CAREFULLY

- Use Oxytocin carefully to prevent hyperstimulation, fetal distress and uterine rupture
- Obtain oral informed consent from every woman before administering Oxytocin
- Women receiving Oxytocin should be monitored closely and never left alone
- Oxytocin should only be used mixed with IV fluids as a dilute infusion during labor
- Oxytocin should not be used if there is fetal distress: HR < 100 or > 180
- Oxytocin should not be used if maternal condition is poor: abnormal respiratory rate or pulse, low urine output, low BP, heavy vaginal bleeding or other severe maternal condition

NEVER inject IM Oxytocin in a pregnant woman as it can cause uterine rupture and fetal death (Pepper Injection)

INDICATIONS FOR AUGMENTATION WITH OXYTOCIN

- If a partograph documents unsatisfactory progress of labor (do not administer oxytocin without use of a partograph)
- If there are no signs of cephalo-pelvic disproportion or obstruction
- If inadequate contractions are the cause of unsatisfactory progress of labour

PREPARING OXYTOCIN

Mixture: 2.5 units + 500cc NS or Dextrose			
Dose: mIU per minute	**Number of drops per minute**	**Dose: mIU per minute**	**Number of drops per minute**
2.5	10	**10**	40
5	20	**13**	50
8	30	**15**	60
Mixture: 5 units + 500cc NS or Dextrose			
15	30	**25**	50
20	40	**30**	60

MONITORING OXYTOCIN

- **You MUST monitor progress of labor with a partograph**
- Perform and document vaginal exam every 4 hours • Monitor and record infusion rate and maternal and fetal status Q 30 minutes on partograph • Fetal HR: stop infusion for fetal distress (HR < 100 or > 180 - if no recovery of fetal HR after 20 minutes, give **Salbutamol** 2mg po x 1 or **Nifedipine** 20mg po x 1 to relax uterus)
- Duration and frequency of contractions: stop infusion for hyperstimulation (> 5 contractions in 10 minutes, or any contraction lasting > 60 seconds) • Oxytocin can be restarted after 30 minutes of normal fetal HR and normal uterine contractions

OXYTOCIN INFUSION

- Start with Oxytocin concentration of 2.5 units in 500ml IVFs at dose of 2.5 mIU/min
- ↑ dose by 2.5 mIU/minute every 30 minutes until good contraction pattern established (3 contractions in 10 minutes)
- Increase dose only until good contraction pattern achieved, then maintain that dose
- If good pattern not achieved with dose of 15 mIU/min, increase concentration of Oxytocin to 5 units in 500ml IVFs – and start at 15 mIU/min and increase every 30 minutes until you get a good contraction pattern with maximum dose of 30 mIU/min
- If unable to achieve good contraction pattern at 30 mIU/min, then augmentation has failed – proceed to C/S

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National Protocol for Induction of Labor

- Induction of labor –artificially stimulating the uterus to start labor
- Induction of labor should only be carried out in **CEmONC** facilities where C/S can be performed
- **DO NOT** perform induction of labor in a **BEmONC facility** or other **PHU**
- Induction can be performed with **Oxytocin** or **Misoprostol**

USE OXYTOCIN OR MISOPROSTOL CAREFULLY

CONTRAINDICATIONS

- **NEVER** use Oxytocin or Misoprostol in woman with a previous C/S or other uterus surgery
- **NEVER** inject IM Oxytocin in a pregnant woman as it can cause uterine rupture and fetal death

INDICATIONS

- > 41 weeks gestation
- Pre-labor rupture of membranes at term
- Pre-eclampsia or gestational hypertension > 37 weeks
- Severe pre-eclampsia
- Vaginal bleeding
- Fetal growth restriction
- Chorioamnionitis
- IUFD or other fetal / maternal condition

CAUTION

- Use medications carefully to prevent hyperstimulation, fetal distress and uterine rupture
- Obtain oral informed consent from every woman before administering Oxytocin or Misoprostol
- Women receiving Oxytocin or Misoprostol should be monitored closely and never left alone

PREPARING OXYTOCIN

Mixture: 2.5 units + 500cc NS or Dextrose			
Dose: mIU per minute	**Number of drops per minute**	**Dose: mIU per minute**	**Number of drops per minute**
2.5	10	**10**	40
5	20	**13**	50
8	30	**15**	60
Mixture: 5 units + 500cc NS or Dextrose			
15	30	**25**	50
20	40	**30**	60

INDUCTION WITH OXYTOCIN OR MISOPROSTOL

- Induction success based on favorable cervix as assessed by Bishop Score
- If cervix is favorable (score of 6 or more), labor usually successfully induced with Oxytocin
- If cervix unfavorable (score < 6), ripen the cervix using oral or vaginal Misoprostol first
- Misoprostol oral: 25mcg every 4 hrs, maximum 4 doses
- Mispoprostol vaginal: 25mcg every 4 hours, maximum 4 doses
- Discontinue Misoprostol and use Oxytocin once cervix is ripened or after 12 hours
- If Misoprostol not available, use Oxytocin alone
- Give Oxytocin 2.5 units in 500ml IVF at dose of 2.5 mIU/min and increase per protocol (in table)

Calculating Bishop Score

Score	0	1	2	3
Dilatation (cm)	closed	1-2	3-4	more than 5
Length of cervix (cm)	more than 4	3-4	1-2	less than 1
Consistency	firm	average	soft	N/A
Position	posterior	mid	anterior	N/A

MONITORING

- **You MUST monitor progress of labor with a partograph**
- Perform and document vaginal exam every 4 hours
- Record medication dose or infusion rate & maternal/fetal status Q 30 minutes on partograph
- **Fetal HR:** stop medications for fetal distress (HR < 100 or > 180 - if no recovery of fetal HR after 20 minutes, give **Salbutamol** 2mg po x 1 or **Nifedipine** 20mg po x 1 to relax uterus)
- Duration and frequency of contractions: stop for hyperstimulation (> 5 contractions in 10 minutes, or any contraction lasting > 60 seconds)
- Medication can be restarted after 30 minutes of normal fetal HR and normal uterine contractions
- If unable to achieve adequate contraction pattern with Oxytocin at 30 mIU/min, then induction has failed – proceed to C/S

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National Protocol for Management of Unsatisfactory Progress of Labor

DIAGNOSIS	FINDINGS	TREATMENT
• False Labor	• Cervix not dilated, infrequent or no contractions	• Examine for ruptured membranes, UTI or other infection • Discharge and encourage return when in labor
• Prolonged Latent Phase	• No dilation beyond 5cm after 8 hours of regular contractions	• If no cervix change or fetal distress, re-evaluate diagnosis • If cervix change, augment with **Oxytocin** & reassess Q 4hrs • If no progression to active phase after 8 hrs Oxytocin, do C/S • If infection, augment & give antibiotics (**Ampicillin** + **Gentamicin**)
• Prolonged Active Phase	• Cervical dilatation to the right of alert line on partograph	• If contractions adequate, suspect CPD, obstruction, or malpresentation. • If none present, augment with Oxytocin • If contractions inadequate, augment with Oxytocin
• Cephalopelvic Disproportion (CPD)	• Arrest of dilatation & descent in presence of good contractions	• Fetus large or pelvis small; trial of labor is best test • Clinical pelvimetry of limited value • If fetus alive → C/S; If dead → Craniotomy or C/S
• Obstructed Labor	• Arrest of dilatation & descent with moulding, caput, edema • Ballooning of lower segment, maternal/fetal distress	• If head unengaged or too high → C/S • If fetus dead → Craniotomy vs C/S • Can cause ruptured uterus!
• Inadequate Uterine Activity	• < 3 contractions in 10 minutes, each lasting < 40 seconds	• If contractions inadequate, augment with Oxytocin
• Prolonged Expulsive Phase	• Cervix fully dilated with urge to push, but no descent	• Rule out malpresentation and obstruction • Augment with Oxytocin, if no descent: assist with vacuum or forceps per protocol • Proceed to Cesarean section

CAUTION
- Transfer to CEmONC if augmentation with Oxytocin needed
- Don't use Misoprostol for labor augmentation
- Never leave woman on Oxytocin alone
- Never give pregnant woman IM Oxytocin

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National Guideline for Vacuum-Assisted Birth

- Vacuum assistance is indicated in cases of fetal distress, prolonged expulsive phase or for other conditions were assisted delivery is needed
- Procedure should only be done if a Cesarean Section can be performed within 1 hour, in case an emergency happens as a result of vacuum extraction
- Transfer to **CEmONC** facility if vacuum extraction is needed
- Should be performed only by clinicians who are trained & competent in its use

CONDITIONS BEFORE USE

- Vertex presentation
- Cervix fully dilated
- Term fetus
- Fetal head at minimum of 0 station
- Adequately skilled clinician
- Adequate progress on partograph

PROCEDURE

- Use Partograph
- Provide support and analgesia
- Assess position of fetal head by feeling fontanelles and sagittal suture
- Identify median flexion point 3cm in front of posterior fontanelle
- Apply appropriate size cup with middle of the cup over flexion point
- Edge of cup should be 1cm in front of posterior fontanelle
- Ensure no maternal soft tissue trapped within rim of cup
- Create vacuum gradually to 0.8 kg/cm^2 and check application
- Start traction in line of pelvic axis, perpendicular to cup
- Apply traction at onset of each contraction and maintain throughout contraction
- Encourage woman to push with contractions and with traction
- Do not apply traction in between contractions – check fetal heart rate
- If progress & no fetal distress, continue traction w/ contractions max 30 mins only
- Deliver head slowly and disengage vacuum when head delivered
- Check for genital trauma and repair any lacerations
- Antibiotics not indicated
- Document procedure in chart and disinfect and sterilize equipment

COMPLICATIONS

- Scalp edema (caput) – counsel mother that it resolves in hours, no intervention needed
- Scalp abrasions or lacerations – pediatrician to evaluate • Cephalohaematoma – pediatrician to evaluate, requires observation & resolves in 3-4 weeks
- Intracranial bleeding – rare and requires transfer for immediate pediatric intensive care

STOP PROCEDURE!

- **If fetal head does not advance or no descent with 3 pulls**
- **If the cup slips off the head twice**

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National Protocol for Active Management of Third Stage of Labor & Immediate Care of the Newborn

Active management of the third stage of labor reduces the incidence of postpartum hemorrhage and should be used routinely for ALL deliveries

ACTIVE MANAGEMENT OF THIRD STAGE

Within 1 minute of delivery of the baby:

- Palpate to exclude a second baby
- Administer 10 IU **Oxytocin** IM (preferred) or 600mcg **Misoprostol** orally/sublingually
- Place on mother's belly, dry baby
- Clamp and cut cord immediately if resuscitation needed
- Delay cutting cord 1-3 minutes if resuscitation not needed
- Deliver placenta by controlled cord traction (stabilize uterus by applying counter-traction with other hand) and check to ensure placenta complete
- Check to ensure that uterus is contracted
- Make sure bladder is empty
- Monitor uterine tone every 15 minutes for the first 1 hour and massage to expel clots only if necessary
- Estimate and record blood loss
- If PPH – refer to PPH protocol
- Keep woman and newborn in birthing room for at least one hour after birth
- Initiate breastfeeding within the first hour if mother and baby stable
- Do postnatal check at 1 and 6 hours after delivery and before discharge: BP, pulse, respiration, uterine tone, blood loss, state of patient
- Keep woman and newborn in the facility for at least 24 hours after birth
- Schedule additional postnatal checks at 3-7 days and 6 weeks after delivery
- Before discharge, counsel on birth spacing, exclusive breastfeeding, contraception, resumption of sexual relations, follow-up care, and warning signs for mother and newborn

IMMEDIATE CARE OF THE NEWBORN

Immediately after delivery

- Wipe the baby with dry cloth and keep baby warm
- Assess if resuscitation required

BREATHING

- Put baby skin to skin with mother and encourage breastfeeding immediately and within 1 hour of birth
- Do not bath baby for at least 24 hours
- Clean cord with chlorhexidine 7.1% solution and expose cord above the diaper
- Give Vitamin K (dose 1mg/1ml) - 1mg IM (term babies) or 0.5mg IM (preterm babies)
- Apply 1% tetracycline eye ointment to the inside of the lower eyelids of both eyes

NOT BREATHING

- Call for help (refer to neonatal resuscitation protocol)
- Suction mouth and nose only if meconium present, suction not needed if baby vigorous and crying
- Resuscitate baby using the Ambu Bag and mask
- After resuscitation, treat as a breathing child

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National Protocol for Management of Antepartum Hemorrhage (APH)

- Vaginal bleeding after 22 weeks of pregnancy
- Vaginal bleeding in labour before giving birth
- **Transport to CEmONC immediately with IV line in place**

DIAGNOSIS	SIGNS & SYMPTOMS
• Abruptio Placentae: Placenta detachment	• Painful bleeding (abdominal pain); tense/tender uterus • Decreased/absent fetal movement, fetal distress, absent fetal HR
• Placenta Previa: Placenta implanted at or near cervix	• Painless bleeding; relaxed uterus • Normal fetal condition
• Ruptured Uterus	• Bleeding sometimes absent/light as it might be internal • Usually a complication of obstructed labor • Severe abdominal/labor pain which suddenly stops; distension; abnormal uterine shape • Fetal distress, absent fetal HR, easily palpable fetal parts

INVESTIGATIONS & ACTIONS

- **Call for help**
- Rapid evaluation: vital signs, consciousness, volume of blood loss, pain
- If shock suspected, immediately begin treatment
- Check fetal heart rate and ask about fetal movements
- Insert large IV line and start IV fluids & check Hb, blood type, cross-matching, bedside clotting time
- Perform ultrasound if available
- Perform gentle speculum or vaginal exam and prepare to do emergent cesarean section

MANAGEMENT

ABRUPTIO PLACENTAE

- Transfuse whole blood as necessary

If heavy bleeding:
- Deliver as soon as possible
- If cervix fully dilated → vacuum
- If birth not imminent → C/S

If spotting & fetal HR abnormal (<100 or >180):
- Perform rapid vaginal birth or immediate C/S

If spotting & fetal HR normal or absent:
- If in labor and ctx are poor → augment with **Oxytocin**
- If cervix unfavorable, perform C/S (be prepared to do a B-Lynch suture or hysterectomy)

PLACENTA PREVIA

If heavy or continuous bleeding:
- Perform immediate C/S irrespective of fetal maturity

If spotting or bleeding has stopped & fetus alive but premature:
- Expectant management until heavy bleeding or delivery
- Keep in hospital until delivery
- Give antenatal corticosteroids
- Ensure blood available for transfusion
- Delivery by C/S at 37 weeks
- Vaginal delivery might be possible if placenta is low-lying and not completely obstructing cervix

RUPTURED UTERUS

- Transfuse as necessary
- Vaginal bleeding may be absent or spotting despite significant intra-peritoneal hemorrhage
- Immediately perform laparotomy when stable
- Repair uterus if possible
- If uterus cannot be repaired, perform sub-total hysterectomy
- Total hysterectomy if tear extends through cervix

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National Protocol for Management of Postpartum Hemorrhage (PPH)

- Blood loss > 500ml after vaginal birth or > 1000ml after cesarean birth
- Any blood loss that **threatens the life** of the patient
- Patient with PPH can **die in < 1 hour** of bleeding if no action taken
- Make plans to transfer to CEmONC early with an **IV line in place**
- If indicated, administer uterotonic and/or **Tranexamic Acid** prior to transfer to CEmONC
- Primary PPH: occurs within 24 hours of delivery; Secondary PPH: occurs after 24 hours of delivery
- **Tranexamic Acid is a life-saving treatment that when available, should be given in ALL cases of PPH, in addition to uterotonics and other treatment methods**

SIGNS AND SYMPTOMS

- Bleeding
- Rapid pulse, ↓BP, rapid respiration
- Pale conjunctiva or pallor
- Restlessness or confusion

INVESTIGATIONS & ACTIONS

- **Call for help**
- Do quick check to determine cause: Tone, Tears, Tissue, Thrombin
- Insert large IV line & start IVFs & check Hb, blood type, cross-matching, bedside clotting time

MANAGEMENT

UTERINE ATONY (TONE)

- Massage uterus
- Catheterize
- Examine cervix, vagina, perineum
- **Oxytocin** 40 units in 1L IVFs fast (or 10 units IM), then continue at 40 drops/min for 6hrs
- **Misoprostol** 800mcg sublingually or rectally
- Bimanual compression or aortic compression
- Uterine Balloon Tamponade (give **Ampicillin** 2g IV)
- **Tranexamic Acid*** 1g IV (10ml of 100mg/ml) given over 10 mins. Give 2nd dose if bleeding continues after 30 mins or if restarts within 24 hrs of completing 1st dose.
- Laparotomy

RETAINED PLACENTA (TISSUE)

- Massage uterus
- Catheterize
- Examine cervix, vagina, perineum
- Oxytocin 40 units in 1L IVFs
- Tranexamic acid 1g IV over 10 minutes
- **Retained placenta with NO BLEEDING is high risk for accreta – TRANSFER to CEMONC and do not attempt removal!**
- Do manual removal of placenta under analgesia
- Give Ampicillin 2g IV
- Evacuate uterus in theatre for retained products and prepare for further surgical intervention

LACERATION (TEARS)

- Confirm uterus is firm
- Catheterize
- Examine cervix, vagina, perineum
- Provide analgesic & give Ampicillin 2g IV
- Repair laceration under anesthesia
- If uterine rupture – laparotomy
- Tranexamic acid 1g IV over 10 minutes

COAGULOPATHY (THROMBIN)

- Massage uterus
- Catheterize
- Examine cervix, vagina, perineum
- Oxytocin 40 units in 1L IVFs
- Tranexamic acid 1g IV over 10 minutes

*Give Tranexamic acid ASAP, and give 1st dose only within 1-3 hours after delivery; do not give to women with a known thromboembolic event like a DVT during pregnancy

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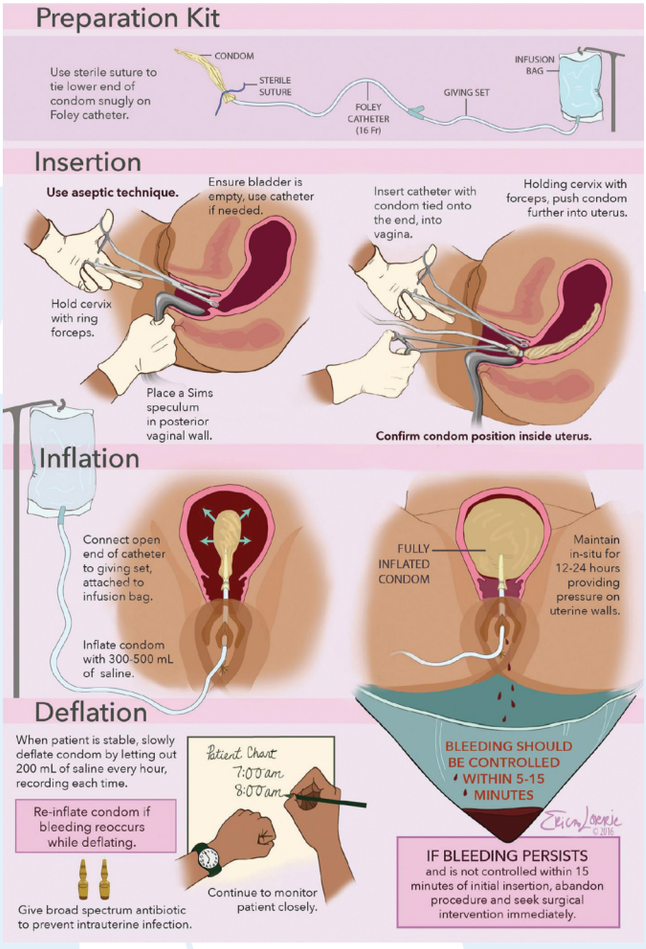
National Protocol for Intrauterine Balloon Tamponade

- Intrauterine balloon tamponade can be used when uterotonics and bimanual compression have failed to control postpartum hemorrhage
- Can be used at any level PHU
- OK to place intrauterine balloon and administer uterotonics and/or **Tranexamic Acid** while awaiting transfer to CEmONC

EQUIPMENT NEEDED

• 2 Condoms + Foley Catheter + Speculum + Clamp + Ring Forceps + Saline or Water + String + 60ml feeding syringe + Gauze



Source: Jhpiego

INSERTION PROCEDURE

- Give **Ampicillin** 2g IV x 1
- Apply antiseptic solution to perineal area and vagina
- Place urinary catheter to drain bladder
- Secure 2 condoms (to prevent 1 bursting) on a foley catheter with a string
- Perform vaginal exam and identify cervix
- Insert sterile speculum in vagina
- Grasp anterior lip of cervix with sterile ring forcep
- Grasp catheter with forcep & thread through cervix making sure inflatable bulb is past internal cervical os (this can be done blindly if speculum/forceps not available)
- Once bulb in uterus, inflate condom with 300-500ml saline/water using syringe or giving set
- Optional, but OK to pack upper vagina with roller gauze to prevent balloon expulsion
- Palpate fundus abdominally & mark with pen as reference for monitoring

MONITORING AND REMOVAL OF BALLOON

- Give **Oxytocin** 40 units in 1L IVFs at 60 drops per minute; give Tranexamic Acid 1g IV if indicated
- Monitor vital signs, urine output, uterine fundal height, and vaginal bleeding
- After 24 hours if uterine fundus remains same level & no bleeding, start deflation
- Deflate balloon 100-200ml every hour as long as no bleeding (re-inflate for bleeding)
- If no bleeding 30 minutes after balloon deflated, remove balloon and stop Oxytocin
- If bleeding starts after balloon deflated or Oxytocin stops, re-inflate, restart Oxytocin and prepare for surgical treatment
- Remove urinary catheter
- Monitor woman for 24 hours after balloon removal before discharge home

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Directorate of **Reproductive** and **Child Health**, 2018

National Protocol for Obstetric Blood Transfusions

- Used correctly, blood transfusions can save lives
- **Transfusions can cause severe complications & transmission of infections so use appropriately**

INDICATIONS FOR TRANSFUSION

- Hypovolemic shock from conditions including PPH, APH, and surgery
- Severe anemia (Hb <7 g/dl) especially late in pregnancy or with cardiac failure
- Most obstetric patients require transfusion at a Hb level < 7 g/dl but other factors should also be weighed before making a decision to transfuse

RISKS OF TRANSFUSION

- Incompatible blood transfusion can cause severe hemolytic reactions and death
- Transmission of infections like HIV, Hep B, Hep C, Syphilis, Malaria
- Blood can become contaminated with bacteria and cause life-threatening infections

PROCEDURE FOR TRANSFUSION

- Screen all blood for infectious agents – HIV, Hep B, Syphilis, Hep C
- Perform compatibility tests (blood typing & cross-matching) in all non-emergent cases
- Use emergency release form for release of uncross-matched units only during emergencies
- Transfuse unit of blood as fast as possible in cases of acute obstetric blood loss
- Monitor the patient and respond immediately if any adverse reactions occur
- Don't give any other medications during transfusion
- Closely monitor temperature, blood pressure, pulse, respiration, fluid balance, and adverse reactions:
  - Before starting the transfusion
  - 15 minutes after starting the transfusion
  - 30 minutes after starting the transfusion
  - Every hour during the transfusion
  - Every 4 hours after stopping the transfusion for 24 hours

MANAGING ADVERSE TRANSFUSION REACTIONS

- Adverse reactions range from minor skin rash to anaphylactic shock
- If reaction noticed, stop transfusion immediately, call physician, and give IV fluids
- If reaction is minor, give **Promethazine** 25mg orally and observe
- For anaphylactic shock, give:
  - **Adrenaline/Epinephrine** 0.1ml in 10ml NS or RL IV slowly once
  - **Promethazine** 50 mg IV once
  - **Hydrocortisone** 1g IV every 2 hours as needed
  - Monitor closely and if needed, transfer to referral center when stable
- Immediately after reaction, draw fresh sample of woman's blood & send with blood unit, transfusion record, and compatibility form, to blood bank
- Report all transfusion reactions to physician and blood bank and complete transfusion reaction report
- Record type of reaction, length of time after start to reaction, volume, & number of units transfused

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National Guideline for Postoperative Care After Obstetric Surgery

- Close monitoring and intensive care is needed after obstetric surgery to allow prompt identification and treatment of complications and to ensure optimal recovery after surgery

IMMEDIATE CARE AFTER SURGERY

- Provide close anesthesia and nursing supervision in special post-operative care area for **1 hour after surgery**
- Women with complicated surgery might need longer periods of monitoring
- Ensure continuous monitoring and supervision until woman is conscious
- Check vital signs (pulse, BP, respiratory rate, temperature) every 15 minutes in first hour
- Check vital signs every 30 minutes in second hour
- Check vital signs hourly for 2 more hours, then routine vital signs every 6 hours
- When checking vital signs, assess consciousness and evaluate for airway obstruction, hypoxia, hemorrhage (internal and external), postoperative pain, and vomiting/aspiration
- If vital signs become unstable or if bleeding is more than expected, call for help
- If vital signs unstable or heavy bleeding, blood transfusion or repeat surgery might be needed
- Promote breastfeeding within the first hour if mother is awake and alert

ROUTINE CARE AFTER SURGERY

- Give prophylactic IV antibiotics 15-60 minutes before making skin incision and continue x 24 hours only
- Continue IV antibiotics for 7 days for complicated cases
- Encourage patient to walk 12 hours after surgery to decrease risk of thrombosis (clots) in legs
- Transfer to regular post-operative ward 1 hour after surgery if vital signs and bleeding normal
- For uncomplicated procedures, give liquid diet starting 6-12 hours after surgery
- If infection or if C/S was for uterine rupture, wait until bowel sounds present before giving liquids
- Discontinue IV fluids once woman is tolerating liquids well
- Give regular diet 24 hours after surgery if patient doing well
- Monitor urine output and urine color
- Early catheter removal reduces risk of infection - if urine clear and output adequate, remove catheter 8 hours after surgery or after first postoperative night
- If urine not clear, leave catheter until urine is clear
- Wait 48 hours after surgery to remove catheter if: uterine rupture, prolonged or obstructed labor, massive perineal edema, or puerperal sepsis with pelvic peritonitis
- If bladder injured during labor or surgery or if there is suspicion of bladder injury – leave catheter in place for minimum 7 days and until urine clear
- If woman not on antibiotics – give **Nitrofurantoin** 100mg po daily until catheter removed
- If there were signs of infection or if the woman currently has fever – give broad spectrum antibiotics until the woman is fever-free for 48 hours, then oral to complete 7 days
- Encourage ambulation 12-24 hours after surgery, and ambulate 3 times a day
- Most women can be discharged 3-4 days after surgery, if there were no complications
- Women should be voiding and ambulating without difficulty, eating regular diet, have stable vital signs and no fever x 24 hours prior to discharge home

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National Protocol for Management of Fever after Childbirth

- Fever (≥38.0°C) more than 24 hours after giving childbirth
- Caused by infection in uterus, breast, bladder, kidney, lungs, or wound, and can lead to sepsis.

STABILIZE
- ABC & perform rapid evaluation: temperature, pulse, BP, respiration, level of consciousness
- If shock suspected, immediately begin treatment: IV fluids, antibiotics, transfer to CEmONC

INVESTIGATIONS (if available)
- Complete physical exam including breast and pelvic exam
- **Blood:** full blood count, culture and sensitivity, malaria, HIV, kidney and liver function tests
- **Urine:** urinalysis, microscopy, culture & sensitivity
- **Vagina:** endo-cervical swab for culture

DIAGNOSIS	FINDINGS	TREATMENT
Postpartum Endometritis	• Fever/chills, lower abdominal pain, tender uterus, foul lochia	• Remove any retained placental fragments • Ampicillin 2g IV 8 hourly + Gentamicin 100mg IV 8 hourly + Metronidazole 500mg IV 8 hourly x 48-72 hrs • If afebrile after 48-72 hrs, change to Amoxicillin 500mg po 8 hourly and Metronidazole 500mg po 8 hourly x 7 more days
Pelvic abscess	• Persistent fever, lower abdominal pain, tender uterus, poor response to antibiotics, pus on culdocentesis	• IV Amp + Gentamicin + Metronidazole X 48-72 hrs • If afebrile, change to Amoxicillin 500mg po 8 hourly and Metronidazole 500mg po 8 hourly x 7 days • Surgical drainage through cul-de-sac or laparotomy
Breast engorgement	• Breast pain and tenderness 3-6 days postpartum, both breasts hard and enlarged • No fever	• Breastfeed or express breasts; analgesics as needed; antibiotics not necessary
Mastitis	• Pain & tenderness in one breast, red area of breast	• Oral antibiotics x 10 days (Co-amoxiclav 1g 8 hourly or Amoxicillin 1g 8 hourly or Cloxacillin 500mg 6 hourly or Erythromycin 250mg 8 hourly); continue breastfeeding
Breast abscess	• Firm fluctuant area in one breast, very tender, redness, draining pus	• Drain and pack abscess + oral antibiotics x 10 days (Co-amoxiclav or Amoxicillin or Cloxacillin or Erythromycin); continue breastfeeding
Wound cellulitis	• Painful & tender wound, hardened edges, redness & swelling around wound	• Amoxicillin 1g po 8 hourly x 7 days
Wound abscess or hematoma	• Unusually tender wound with bloody or serous discharge	• Open and drain wound + Amoxicillin 1g po 8 hourly x 7 days (Ampicillin IV for deep infection)
Cystitis	• Painful and frequent urination, lower abdominal pain	• Amoxicillin 500mg po 6 hourly x 3 days or Nitrofurantoin 100 mg po twice a day x 3 days
Pyelonephritis	• Fever/chills, painful and frequent urination, flank pain, CVA tenderness (back/rib cage)	• Ampicillin 2g IV 8 hourly + Gentamicin 100mg IV 8 hourly or Ciprofloxacin 400mg IV 8 hourly x 48 – 72 hours • If afebrile, Amoxicillin 500mg po 6 hourly x 5 days
Pneumonia	• Fever, cough, difficult breathing, chest pain, rales, low oxygen saturation	• Ceftriaxone 2g IV 24 hourly • If afebrile, Amoxicillin 500mg po 6 hourly x 5 days
Deep vein thrombosis	• Swelling in leg, warmth, tenderness, fever	• Anticoagulation in CEmONC

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National Guideline for Management of Intrauterine Fetal Death (IUFD)

- Death of a fetus inside the uterus > 22 weeks of pregnancy
- Possible Causes: Pre-eclampsia/eclampsia; infection; fetal growth restriction; congenital abnormalities; gestational diabetes
- Suspect IUFD if decreased/absent fetal movements & absent heart tones

MANAGEMENT

- Confirm by ultrasound – absent fetal heart activity, abnormal fetal head shape, reduced or absent amniotic fluid, doubled-up fetus
- Induce or augment labour
- There is risk of coagulopathy with IUFD – suspect if blood fails to clot after 7 minutes with bedside clotting test
- Assess cervix for favorability with Bishop Score
- If cervix favorable (Bishop Score 6 or more) – induce with **Oxytocin**
- If cervix unfavorable (Bishop Score < 6) – use Misoprostol, foley catheter, or oxytocin
- If signs of infection – fever, foul smelling vaginal discharge, tender uterus – give antibiotics 8 hourly (**Ampicillin** 2g IV + **Gentamicin** 100 mg IV)

Calculating Bishop Score

Score	0	1	2	3
Dilatation (cm)	closed	1-2	3-4	more than 5
Length of cervix (cm)	more than 4	3-4	1-2	less than 1
Consistency	firm	average	soft	N/A
Position	posterior	mid	anterior	N/A

DELIVERY AND POSTPARTUM CARE

- Perform Cesarean Section only as a last resort
- Augment labor with Oxytocin if indicated
- Delay rupturing of membranes to prevent infection
- If obstructed labor, consider vacuum delivery or craniotomy
- Provide active management of the third stage of labor
- If stillbirth is macerated, give IV antibiotics for 48 hours and continue with orals for 5 days

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National Protocol for Management of Hypertensive Disorders of Pregnancy

MILD PRE-ECLAMPSIA AND MILD GESTATIONAL HYPERTENSION

SIGNS AND SYMPTOMS

- **BP ≥ 140/90** (at least 2 readings, 4 hours apart)

PLUS, any of these:

- Proteinuria (at least 2+)
- Headache
- Visual disturbance
- Generalized edema (hand, face)

Note:
↑BP prior to pregnancy or < 20 weeks gestation is chronic HTN. New onset ↑BP >20 weeks is pre-eclampsia or gestational HTN. ↑ BP without proteinuria or other symptoms of pre-eclampsia is gestational HTN (management is same as pre-eclampsia). Women with chronic HTN can have super-imposed pre-eclampsia

MANAGEMENT

- Can be managed outpatient by BEmONC or CEmONC clinic (refer from lower level PHU)
- Gestational age < 37 weeks → monitor BP and fetal heart rate twice a week in clinic
- Counsel about danger signs (headache, blurry vision, upper abdominal pain)
- **Refer** immediately to CEmONC if Systolic BP ≥ 160 or Diastolic BP ≥ 110 or any danger signs
- **DELIVER** at gestational age > 37 weeks; assess the cervix and induce or augment labor

SEVERE PRE-ECLAMPSIA AND SEVERE GESTATIONAL HYPERTENSION
Inpatient management in CEmONC required

SIGNS AND SYMPTOMS

- Systolic **BP ≥ 160** or Diastolic **BP ≥ 110**
- Severe headache
- Visual disturbance
- Epigastric or right upper abdominal pain
- Scanty urine - output < 30ml/hr
- Hyperreflexia
- Pulmonary edema (dyspnea, chest pain, increased respiratory rate, rales on auscultation of lungs)
- Generalized edema
- **HELLP** syndrome is a form of severe pre-eclampsia (**H**aemolysis; **E**levated **L**iver function; **L**ow **P**latelets)
- Proteinuria

Note:
Diagnosis can be made with ↑BP and any of these signs and symptoms
Severe pre-eclampsia or eclampsia can sometimes occur **without proteinuria**
Eclampsia can sometimes occur **with a normal BP** and **without proteinuria**

MANAGEMENT

- Manage in hospital
- **DELIVER AS SOON AS POSSIBLE**
- Place IV cannula and urinary catheter
- Monitor fetal heart rate 3 times a day
- Monitor respiratory rate, BP & urine output
- Check CBC, liver and kidney function tests
- Give **Magnesium Sulphate** & continue for 24 hours after delivery
- Monitor for magnesium toxicity* & withhold or delay Magnesium Sulphate for signs of toxicity
- If Respiratory arrest → give **Calcium Gluconate** 1g IV slowly
- Give antihypertensive drugs if systolic BP ≥ 160 or diastolic BP ≥ 110
- Gestational age < 24 weeks → **DELIVER immediately** as pre-viable
- Gestational age 24-34 weeks → administer **Dexamethasone** per protocol and **DELIVER** after 24 hours if severe range BP or other severe symptoms persist
- Gestational age ≥ 37 weeks → **DELIVER** within **24 hours**
- Determine mode of delivery by Bishop score and patient condition

Note:
Signs of Magnesium Sulphate toxicity: respiratory rate < 16/minute; absent patellar reflexes, urinary output < 30ml/hour

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National Protocol for Management of Eclampsia

ECLAMPSIA

- Serious complication of pre-eclampsia that can cause **death**
- Characterized by **convulsions** associated with elevated blood pressure (BP) and proteinuria
- In some cases, eclampsia can occur with normal BP and without proteinuria
- Treat all women with convulsions for eclampsia until another diagnosis confirmed
- Differential diagnosis – Epilepsy, cerebral malaria, meningitis, hypoglycemia
- Treatment is **Magnesium Sulphate** to prevent more seizures and urgent **DELIVERY** of the baby
- If in PHU**:** Place IV line + give loading dose Magnesium Sulphate + **TRANSFER to CEmONC**

MANAGEMENT

NURSING CARE

- **CALL FOR HELP**
- Maintain airway, breathing and circulation (ABCs)
- Prevent aspiration injuries **(Do not restrain)**
- Place woman in the left lateral position and keep airway clear of secretion
- Maintain airway and give oxygen
- Keep the vein open using a large bore cannula – if possible, place 2 IV lines
- Give **Magnesium Sulphate** per protocol
- Give medications for severe HTN per protocol
- Place urinary catheter and monitor urine output
- Monitor vital signs every 15 minutes – BP, pulse, respirations
- Monitor fetal wellbeing
- Transfer to CEmONC when stable
- Do necessary laboratory investigations – complete blood count and platelets, creatinine, liver function tests, blood glucose, malaria
- Maintain intake and output chart
- Keep patient dry to prevent fluid overload, but rehydrate as needed using IV fluids or oral fluids if conscious
- **RECORD ALL OBSERVATIONS AND TREATMENTS ON CHART**

MEDICAL TREATMENT

- Stabilize patient
- Administer Magnesium Sulphate load (4g IV + 10g IM) to prevent other convulsions
- Administer **Hydralazine** 5 mg IV push or IV infusion per protocol (or other antihypertensive) if BP ≥ 160/110
- Keep diastolic BP between 90-100 mm/hg and systolic BP between 140-150 mm/hg
- Expedite **DELIVERY** as soon as possible
- **DELIVER** within **12 hours** of convulsions regardless of gestational age
- If in labor, perform spontaneous vaginal delivery
- Assisted delivery or C/S for fetal distress
- If not in labor, decide best route of delivery – C/S or induced labor
- **Continue** Magnesium Sulphate for 24 hours after delivery or after last convulsion
- Monitor hepatic and renal function
- Restrict IVFs to rate of 80ml/hr if urine output > 30ml/hr, or 100 ml/hr if output < 30ml/hr
- Auscultate lungs for rales & if present, hold IV fluids & give **Furosemide** 40mg IV once
- Monitor for magnesium toxicity & delay or withhold next dose for signs of toxicity
- If respiratory arrest give **Calcium Gluconate** 1g IV slowly

Note: Signs of Magnesium Sulphate toxicity: respiratory rate < 16/minute; absent patellar reflexes, urinary output < 30ml/hour

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National Guideline for Administration of Magnesium Sulphate for Severe Pre-Eclampsia & Eclampsia

- **Magnesium Sulphate** is drug of choice for prevention and control of eclamptic convulsions (fits)
- Use the same dose to treat severe pre-eclampsia and eclampsia
- If in PHU, administer loading dose of Magnesium Sulphate and **TRANSFER** to CEmONC with IV line

LOADING DOSE

Administer Intravenous (IV) PLUS Intramuscular (IM)

Note: Give same dose regardless of patient weight

If patient is fitting, give IM dose first and then give IV dose when patient is calm

4g Magnesium Sulphate IV

- Give 4g of Magnesium Sulphate IV slowly over 5 minutes

How to prepare 4g for IV injection

- Only 20% Magnesium Sulphate solution can be administered IV
- If using 50% Magnesium Sulphate solution: dilute by adding 8mls Magnesium solution + 12mls sterile water or NS = inject total 20mls of this dilute 20% solution IV
- If using 20% Magnesium Sulphate solution: solution is already dilute = just inject 20mls of this dilute 20% solution IV
- Retain IV line in position
- Insert urinary catheter

10g Magnesium Sulphate IM

- Give 10g total of Magnesium Sulphate – 5g in each buttock as a deep IM injection

How to prepare 5g for IM injection

- Only 50% Magnesium Sulphate solution should be administered IM
- Using 50% Magnesium Sulphate solution: Mix 10ml of 50% Magnesium solution + 1ml Lignocaine 2% or 2ml Lignocaine 1% and inject in each buttock directly
- Retain IV line in position
- Insert urinary catheter

MAINTENANCE DOSE

Note: Give same dose regardless of patient weight

- Give 5g Magnesium Sulphate in alternate buttock every four hours
- Monitor and record blood pressure, respiratory rate, and reflexes hourly
- Monitor and record IV input and urinary output hourly to prevent fluid overload
- Restrict IVFs to rate of 80ml/hr if urine output > 30ml/hr, or 100 ml/hr if output < 30ml/hr
- Continue treatment for 24 hours after delivery or after the last convulsion, whichever occurs last
- Ensure there are no signs of Magnesium Sulphate toxicity* before giving repeat dose
- If signs of toxicity present, delay the next IM dose to four hours later

FURTHER FITS

Note: Give in addition to maintenance dose

Patients < 70kg	Patients ≥ 70kg
• Give 2g Magnesium Sulphate IV slowly • Mix: 4mls of 50% Magnesium Sulphate solution + 6mls of sterile water or NS	• Give 4g Magnesium Sulphate IV slowly • Mix: 8mls of 50% Magnesium Sulphate solution + 12mls of sterile water or NS

*MAGNESIUM SULPHATE TOXICITY

Monitor closely for signs of toxicity: • Respiratory rate < 16/minute • Absent patellar reflexes • Urinary output < 30 ml/hour - If respiratory arrest – give Calcium Gluconate 1g IV slowly - Antihypertensive medication should be started if systolic BP ≥ 160mm/hg or diastolic BP ≥ 110mm/hg

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National Protocol for Administration of Emergency Antihypertensive Medications in Pregnant & Postpartum Patients

- **EMERGENCY** Antihypertensive medication treatment should be started if systolic **BP ≥ 160 mm/hg** or diastolic **BP ≥ 110 mm/hg** to prevent **STROKE**
- Goal for pregnant women with hypertension is to keep BPs slightly above normal (goal: systolic BP 140-150 mm/hg and diastolic BP 90-100 mm/hg) to allow adequate blood flow to the placenta
- Check BP before giving another dose of medication and every 30 minutes
- Once BP stabilized and drops **< 160/100**, treatment should be continued with **oral medications**
- PHUs should administer loading dose of **Magnesium Sulphate** + oral antihypertensive drugs + **REFER** immediately to CEmONC

HYDRALAZINE (Apresoline)

EMERGENCY Intravenous Treatment:
- Give Hydralazine as an IV push or IV infusion
- Maximum IV dose: 20mg in 24 hrs
- **STOP HYDRALAZINE WHEN DIASTOLIC BP IS ≤ 90 MM/HG**

IV Push
- Give 5mg IV slowly
- Repeat every 5 mins until BP goal achieved
- Repeat hourly as needed

IV Infusion
- Use 500 ml RL or NS and run 300 ml as preload over 15 minutes
- Add 20mg Hydralazine in remaining 200 ml
- Allow 100 mls to run in over 5 minutes at 33 drops per minute (total dose = 10mg)
- Reduce the number of drops gradually as the BP decreases and stop when diastolic BP ≤ 90mm/hg

Oral Maintenance Dose when BP < 160/100
- Give 25mg to 50mg orally 4 times a day

LABETALOL

EMERGENCY Intravenous Treatment:
- Give Labetalol 10mg IV push
- If response inadequate after 10 minutes, give 20 mg IV push → then ↑ to 40mg after 10 minutes → then ↑ to 80mg after 10 minutes until BP treatment goal is achieved
- Maximum IV dose: 300mg in 24 hrs
- **STOP IV LABETALOL ADMINISTRATION WHEN DIASTOLIC BP IS ≤ 90 MM/HG**

EMERGENCY Oral treatment:
- Give 200mg orally once
- Repeat dose after 1 hour until BP treatment goal is achieved
- Maximum po dose: 1200mg in 24 hours

Oral Maintenance Dose when BP < 160/100
- Give 200mg every 6-12 hours

* Do not use labetalol in women with congestive heart failure, hypovolemic shock, or asthma

NIFEDIPINE (immediate release)

EMERGENCY Oral Treatment:
- Give 10mg orally once
- Repeat dose after 20 minutes until BP treatment goal is achieved
- Maximum dose: 30mg in 90 minutes (for acute treatment to lower BP)

Oral Maintenance Dose when BP < 160/100
- Give 10-20mg every 12 hours

METHYLDOPA

EMERGENCY Oral Treatment:
- Give 750mg orally once
- Can repeat dose after 3 hours until treatment goal is achieved
- Maximum dose: 3000mg in 24 hrs

Oral Maintenance Dose when BP < 160/100
- Give 250mg every 6-8 hours
- Maximum po dose: 2000mg in 24 hours

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National Guideline common Neonatal Drug Doses

DRUG	DOSE	ROUTE	FREQUENCY	COMMENT
Ampicillin	**<u>0-7 days:</u>** 50mg/kg per dose **<u>8-28 days:</u>** 50mg/kg per dose	IV/IM IV/IM	BD TDS	• First line for serious bacterial infection in combination with gentamicin
Ceftriaxone	100mg/kg per dose	IV	OD	• Pus draining from eyes • Meningitis
Dextrose 10%	2ml/kg	IV	Once, may be repeated as needed	• Hypoglycaemia • Blood sugar <2.2
Gentamicin	**<u>0-7 days:</u>** • Low birth weight infant (<2.5 kg): 3mg/kg • Normal birth weight (2.5 kg): 5mg/kg **<u>8-28 days:</u>** 7.5mg/kg	IV/IM IV/IM IV/IM	OD OD OD	• First line for serious bacterial infection in combination with ampicillin
Phenobarbital (200mg/1ml) → Dilute by adding 4ml NS → (200mg/5ml)	**<u>Loading dose:</u>** 20mg/kg **<u>Maintenance dose:</u>** 5mg/kg	IV/IM IV/PO	Give loading dose over 15 minutes Calculated Doses: **1-1.5 Kg:** 0.5-0.75 ml **1.51-2 Kg:** 0.75-1 ml **2.1-2.5 Kg:** 1-1.25 ml **2.51-3 Kg:** 1.25-1.5ml **3.1-3.5 Kg:** 1.5-1.75ml OD	• First line for convulsions • 24 hours after the loading dose is given, the maintenance dose should be started for 2 days

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National Guideline for Management of Neonatal Sepsis

Early Detection in Hospital

All babies in hospital should be observed at least every 4 hours
Review should include: full set of vitals; review of cord; review of activity and breastfeeding

Treatment of Suspected Neonatal Sepsis

IF YOU NOTICE ANY OF THE DANGER SIGNS:

- **fast breathing (≥60bpm)**
- **respiratory distress**
- **grunting**
- **central cyanosis**
- **lethargy**
- **poor feeding**
- **temperature <35.5 or >38**
- **pus from cord**
- **redness spreading from cord**
- **history of convulsions**
- **bulging fontanelle**

TREAT FOR SEPSIS

- **Assess breathing and measure SpO_2**
  If there is respiratory distress, or SpO_2 is <90%: **Give supplementary oxygen**
- *If severe respiratory distress:* **consider CPAP**

- *If the baby has severe respiratory distress:* **Give maintenance IV fluid appropriate to the age and weight of the baby**
- *If unable to feed and no respiratory distress:* **Start NG feeds**
- *If the baby has severe pallor:* **consider transfusion**
- *If the baby is jaundiced:* **start phototherapy**
- *If baby born at home, or Vit K not given in maternity:* **Give Vitamin K**

Assess for convulsions and signs of hypoglycaemia (lethargy, not feeding, not crying) and measure blood glucose level if possible

If hypoglycaemia clinically suspected, or blood sugar level under 2.2 mmol/L: **give dextrose 10% 2ml/kg IV bolus.** *If the baby is clinically stable:* **consider performing LP**

GIVE AMPICILLIN AND GENTAMICIN
CONTINUE TREATMENT FOR 7-10 DAYS

Ampicillin Doses		
Age	**Dose**	**Frequency**
0-7 days	50mg/kg	Twice a day
8-28 days	50mg/kg	Three times a day
29 days +	50mg/kg	Four times a day

Gentamicin Doses			
Age	**Weight**	**Dose**	**Frequency**
<7 days	<2.5kg	3mg/kg	Once a day
	>2.5kg	5mg/kg	Once a day
7 days +		7.5mg/kg	Once a day

When to start Ceftriaxone
❖ If there is no improvement after 48 hours treatment with Amoxicillin + Gentamicin

GIVE CEFTRIAXONE 100MG/KG ONCE A DAY
CONTINUE TREATMENT FOR 21 DAYS

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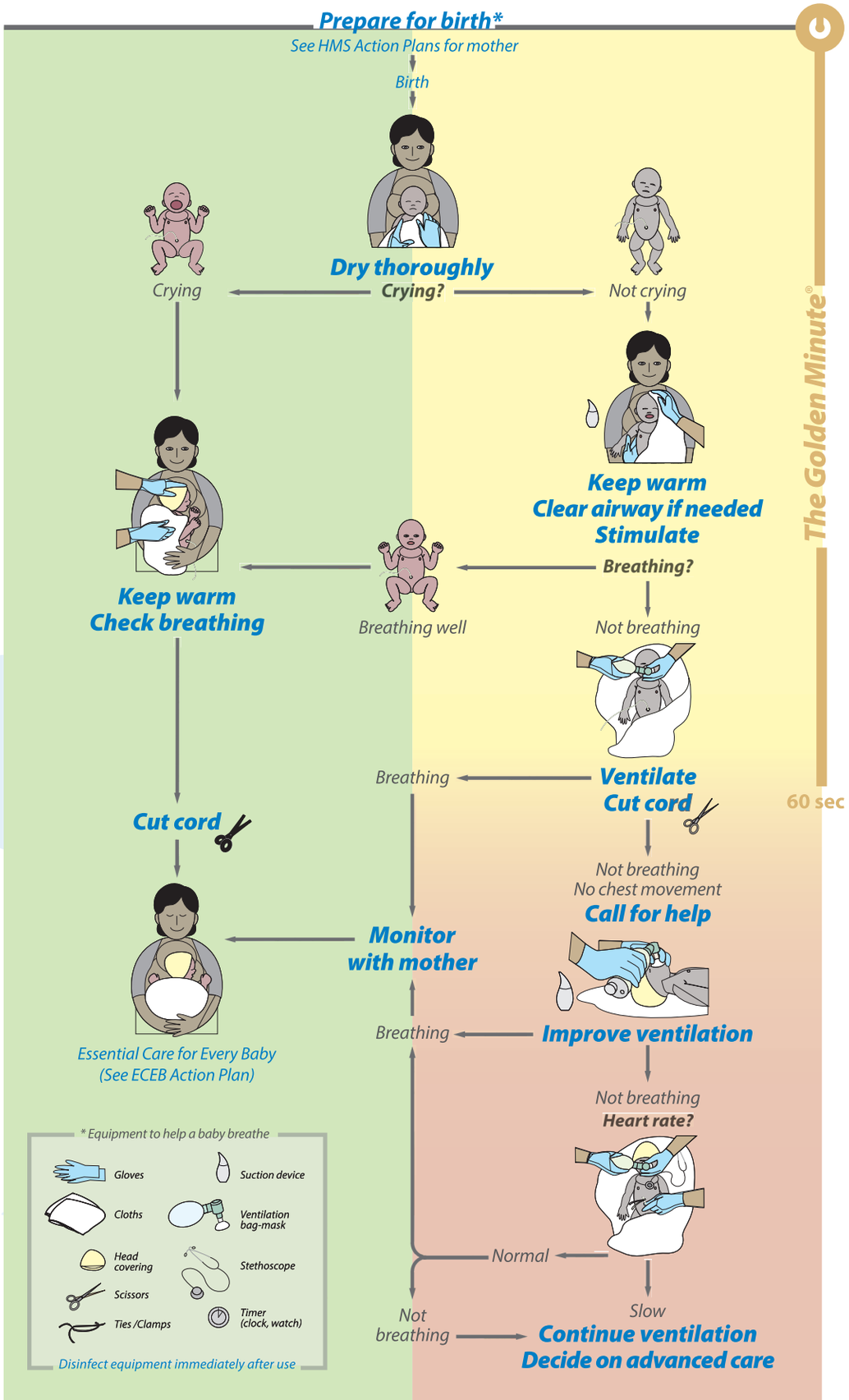
Helping Babies Breathe



Source: American Academy of Pediatrics

National ETAT+ Kangaroo Mother Care Guideline

Stabilise Baby:

- Oxygen/CPAP for respiratory distress
- IV fluids where there are feeding problems
- Correct blood sugar level <2.2mmol/L
- Give antibiotics for suspected sepsis

WHEN BABY STABLE

Weigh Baby

<2kg

>2kg → CONVENTIONAL CARE

- Is the baby NOT breathing well?
- Does the baby have severe respiratory distress?
- Is the baby having only IV fluid?
- Is the mother too unwell to provide kangaroo mother care?

If any answer is yes, the baby is not stable for KMC

Yes → BABY NOT STABLE → CONVENTIONAL CARE

No → BABY STABLE → **Commence Kangaroo Mother Care**

REASSESS: IS BABY NOW STABLE?

Yes → Commence Kangaroo Mother Care

No → CONVENTIONAL CARE

1

- Explain to the mother what is kangaroo care, and the benefits for her baby
- Explain that kangaroo care should be given as near to continuously as possible
- Teach the mother to observe for apnoea and signs of serious illness

2

- Dress the baby in hat, diaper, and socks
- Position the baby between the mother's breasts, using lappa wound around the body to keep the baby in position
- Teach the mother how to move the baby in and out of the lappa
- Begin with a shorter session of kangaroo care (at least one hour) then increase gradually until it is given as near to continuously as possible

3

- The baby can remain in the kangaroo position whilst the mother is sleeping: the mother should be positioned at around 15 degrees from flat
- Twins CAN be given kangaroo care: they should be placed on either side of the chest
- Weigh baby daily; monitor feeding and weight gain

Discharge when:

- The baby is exclusively breastfeeding
- The baby has gained weight every day for the last three days
- The weight is at least 1.5kg
- There are no concerns about sepsis
- The mother is confident in looking after her baby

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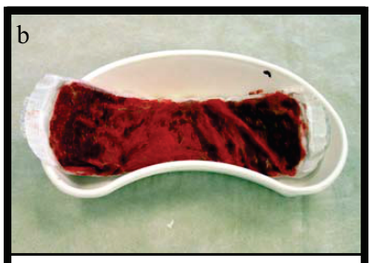
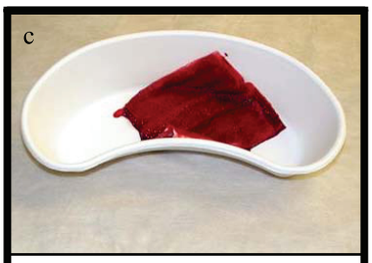
Pictorial Reference Guide to Aid Visual Estimation of Blood Loss at Obstetric Haemorrhage: Accurate Visual Assessment is Associated With Fewer Blood Transfusions

Soiled Sanitary Towel
30ml

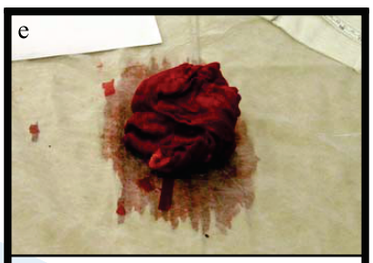


Soaked Sanitary Towel
100ml

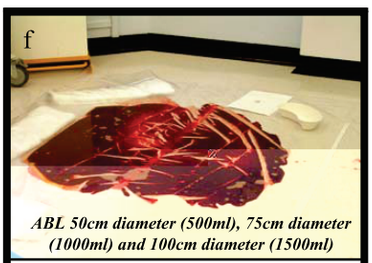


Small Soaked Swab 10x10cm
60ml

Incontinence Pad
250ml



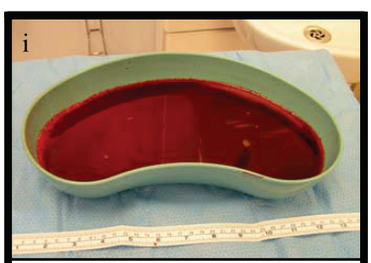
Large Soaked Swab 45x45cm
350ml*



100cm Diameter Floor Spill
1500ml*

PPH on Bed only
1000ml

PPH Spilling to Floor
2000ml



Full Kidney Dish
500ml

***Multidisciplinary observations of estimated blood loss revealed that scenarios (e-f) are grossly underestimated (> 30%)**

For Further Information please contact Miss Sara Paterson-Brown
Delivery suite, Queen Charlottes Hospital, London

Source: Dr Patrick Bose, Dr Fiona Regan, Miss Sara-Paterson Brown

ICD-10 Common Causes of Maternal Death in Sierra Leone

	Medical Condition	ICD-10 Code
1.	Rupture of Uterus	O71.0
2.	Postpartum Hemorrhage secondary to Uterine Atony	O72.1
3.	Postpartum Hemorrhage secondary to Retained Placenta	O72.0
4.	Postpartum Hemorrhage secondary to Laceration of Cervix	O71.3
5.	Morbidly Adherent Placenta (Placenta Accreta)	O43.2
6.	Puerperal Sepsis	O85
7.	Sepsis during Labor	O75.3
8.	Infection of Surgical Wound – Cesarean Section Wound/Perineal Wound	O86.0
9.	Antepartum Hemorrhage	O46
10.	Antepartum Hemorrhage secondary to Abruptio Placenta	O45.9
11.	Antepartum Hemorrhage secondary to Placenta Previa	O44.1
12.	Hemorrhage secondary to Ectopic Pregnancy or Abortion	O08.1
13.	Pre-existing Hypertension (chronic hypertension)	O10
14.	Pre-eclampsia	O14
15.	Eclampsia	O15
16.	Obstetric Embolism (Pulmonary, Amniotic Fluid)	O88
17.	Complications of Anesthesia	O74
18.	Obstetric Death of Unspecified Cause	O95
19.	Intrapartum Hemorrhage	O67
20.	Other Obstructed Labor	O66

ICD-10 COMMON CONTRIBUTORY CAUSES OF MATERNAL DEATH IN SIERRA LEONE		
	Medical Condition	**ICD-10 Code**
1.	Anemia	O99.0
2.	Twin Pregnancy	O30.0
3.	Triplet Pregnancy	O30.1
4.	Malpresentation	O32
5.	Breech Presentation	O32.1
6.	Diabetes	O24
7.	Sickle Cell Disease	O99.1
8.	Tuberculosis	O98.0
9.	HIV/AIDS	O98.7
10.	Malaria	O98.6

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Government of Sierra Leone
Ministry of Health and Sanitation