Recommendations for the clinical practice of emergency obstetric and neonatal care in Africa

A GUIDE FOR HEALTH PRACTITIONERS

Third edition (2018)

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BUREAU RÉGIONAL DE L'Afrique
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LE FONDS FRANÇAIS MUSKOKA
Réduire la mortalité maternelle, néonatale et infantile

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We rely on your support to disseminate the recommendations.

TABLE OF CONTENTS

FOREWORD

Sub-Saharan Africa has the highest maternal mortality rates in the world. According to 2015 World Health Organization (WHO) estimates, the maternal mortality rate was 546 maternal deaths per 100,000 live births.

In response to these high mortality rates, the WHO and its partners working to combat maternal mortality and neonatal mortality have developed the roadmap for expediting the achievement of the Sustainable Development Goals (SDGs) set up in 2015 by the United Nations General Assembly, linked to maternal and neonatal health. One of the objectives of this roadmap is to reduce preventable maternal and neonatal deaths by strengthening the skills of those providing healthcare to mothers and newborns.

Against that backdrop, the WHO, Société Africaine de Gynécologie et d'Obstétrique (SAGO), United Nations Children's Fund (UNICEF) and United Nations Population Fund (UNFPA) developed recommendations for the clinical practice of Emergency Obstetric and Neonatal Care (EmONC). Healthcare practitioners are expected to use these recommendations to improve their obstetrics and neonatal programs.

The themes addressed were selected after analyzing data collected from 18 maternity wards in different countries across Central and West Africa. The themes cover principal causes of maternal and neonatal death in sub-Saharan Africa. To a large extent, the standards and protocols developed in this document derive from those described and recommended by the WHO in the document entitled: "Managing Complications in Pregnancy and Childbirth: A Guide for Midwives and Doctors", and take the realities on the ground into account.

One Objective of the recommendations is to build the capacities of 1staff in healthcare facilities by adapting recommendations to local conditions and helping healthcare providers respond in a more appropriate manner. Another objective of the recommendations is to help health authorities of countries in the region to take steps to facilitate adequate management of obstetric and neonatal emergencies, to harmonize protocols within the countries and to establish the criteria.

The themes addressed in this manual are the principal causes of maternal deaths. They are: complications of the first trimester of pregnancy, hypertension and pregnancy, obstetric haemorrhage, dystocia and febrile illness during pregnancy and post-partum. A sixth chapter can now be added to the five chapters in this manual: that of caring for newborns. Each of these themes will be presented under the following headings: definition, issue, diagnosis and therapeutic management. Supplementary flowcharts will facilitate guided and swift decision-making for emergency cases most frequently encountered in maternity wards in Africa.

ACRONYMS

ABP	:	Arterial blood pressure
ACT	:	Artemisinin-based Combination Therapy
Amp	:	Ampoule
AMTSL	:	Active management of the third stage of labour
ANA	:	Antenatal appointment
ARV	:	Antiretrovirals
BEmOC	:	Basic Emergency Obstetric Care
BEmONC	:	Basic Emergency Obstetric and Newborn Care
BT	:	Bleeding time
CBC	:	Complete blood count
CBEU	:	Cytobacterial examination of urine
CEmOC	:	Comprehensive Emergency Obstetric Care
CEmONC	:	Comprehensive Emergency Obstetric and Newborn Care
cm	:	Centimeter
CRP	:	C-reactive protein
CSF	:	Cerebro-spinal fluid
CT	:	Clotting time
DIC	:	Disseminated intravascular coagulation
Direct IV injection	:	Direct intravenous injection
ECM	:	External cardiac massage
EmOC	:	Emergency Obstetric Care
EmONC	:	Emergency Obstetric and Newborn Care
EP	:	Ectopic pregnancy
FFP	:	Fresh frozen plasma
FH	:	Fundal height
FHB	:	Fetal heart beats
FHR	:	Fetal heart rate
FP	:	Family Planning
G	:	Gramme
GA	:	General anaesthetic
GCP	:	Generally contracted pelvis
Hb	:	Haemoglobin
hCG	:	Human chorionic gonadotropin
HIV	:	Human Immunodeficiency Virus
HR	:	Heart rate
HT	:	Hypertension
IM	:	Intramuscular

INSERM	:	Institut national de la statistique et de la recherche médicale [French National Institute of Health and Medical Research]
IPV	:	Internal podalic version
IU	:	International Unit
IV	:	Intravenous
Kg	:	Kilogram
LIF	:	Left iliac fossa
Mcg	:	Microgram
Mg	:	Milligram
MGMT	:	Management
min	:	Minute
mL	:	Milliliter
Mm	:	Millimeter
mmHg	:	Millimeter of mercury
MVA	:	Manual vacuum aspiration
mvts	:	Movements
NB	:	Newborn
NGT	:	Nasogastric tube
NS	:	Normal saline
NSAID	:	Non-steroidal anti-inflammatory drug
NVP	:	Nevirapine
02	:	Oxygen
RCP	:	Recommendations for clinical practice
RH	:	Reproductive Health
ROM	:	Rupture of membranes
RPH	:	Retroplacental hematoma
SAGO	:	African Society of Gynaecologists and Obstetricians
SP	:	Sulfadoxine-pyrimethamine
STIs	:	Sexually Transmitted Infections
Tabs	:	Tablets
Temp	:	Temperature
TV	:	Tetanus vaccine
UC	:	Uterine contractions
UNFPA	:	United Nations Population Fund
VE	:	Vaginal examination
WA	:	Weeks of amenorrhea
WHO	:	World Health Organization
ZDV	:	Zidovudine

GENERAL PRINCIPLES FOR MANAGING OBSTETRIC AND NEONATAL EMERGENCIES

- Sound the team emergency alarm
- Make an initial, rapid, clinical assessment
- Perform first aid
- Conduct an obstetric examination of the newborn
- Implement emergency treatment
- REFER if indicated

CHAPTER I - COMPLICATIONS IN THE FIRST TRIMESTER OF PREGNANCY

These complications manifest as:
- Abdominal-pelvic pain in the First trimester of the pregnancy
- Bleeding in the first trimester of the pregnancy

1. ABDOMINAL-PELVIC PAIN IN THE FIRST TRIMESTER OF THE PREGNANCY

1.1. Definition
These pains occur in the pelvis and/or abdomen of a pregnant woman during the first 15 weeks of gestation.

1.2. Issue
They may be serious complications during pregnancy, including spontaneous abortion or ectopic pregnancy/extrauterine pregnancy. These pains are often difficult to diagnose and a delay in their management may jeopardize the child's life or the woman's child-bearing potential.

1.3. Diagnosis
1.3.1. Diagnosing extrauterine pregnancies
Consider extrauterine pregnancies, until proven otherwise, for:
- Amenorrhea or menstruation disorders
- Intermittent abdominal-pelvic pains
- Persistent, light vaginal bleeding of blackish (sepia discharge) blood that may appear before the expected date of menstruation or after a delay to menstruation
- Syncope or lipothymia (sometimes)
- Closed cervix, volume of the uterus is slightly increased but is still smaller than that of the presumed gestational age, uterus slightly softened and often latero-deviated
- Oblong latero-uterine mass, sensitive or painful (sometimes).

Confirm diagnosis by:

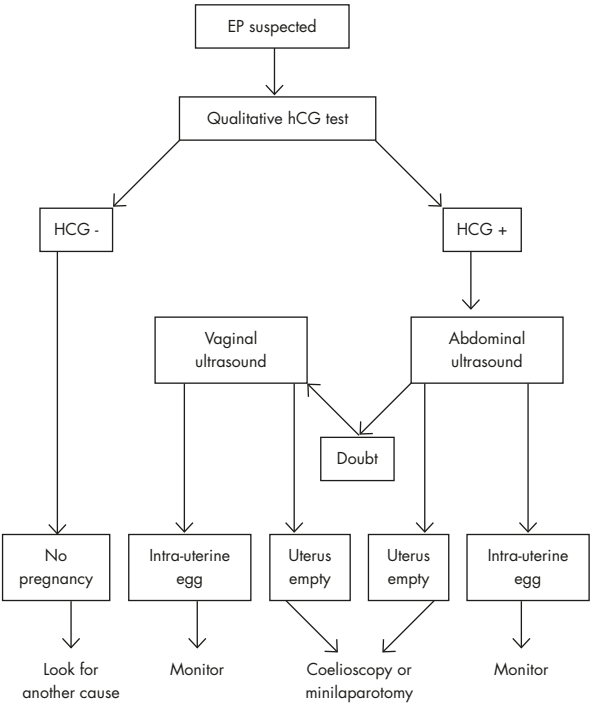
In BEmONC facilities:

Pregnancy test

Puncture pouch of Douglas /(if ruptured EP)

Note!
Refer to CEmONC facility (even in case of doubt)

DIAGNOSING ECTOPIC PREGNANCIES (EPs)



Source: Gynécologie pour le praticien
J. Lansac and Coll (Amended)

In CEmONC facilities:
- Beta-HCG test
- Transvaginal or pelvic ultrasound
- Puncture Pouch of Douglas
- Diagnostic coelioscopy or minilaparotomy

1.3.2. Diagnosing an abortion

Consider an abortion when presented with:
- Intermittent, rhythmic abdominal-pelvic pains
- Vaginal bleeding of bright red blood
- Amenorrhoea

Identifying the stage of development

Threatened abortion
- Light vaginal bleeding coming from the uterine cavity
- Intermittent and rhythmic abdominal-pelvic pains
- Cervix closed/negligible or no change
- Increase in the size of the uterus as gestation progresses, softened uterus
- Positive pregnancy test
- Pelvic ultrasound indicates fetal viability

Inevitable abortion

- Moderate* or heavy vaginal bleeding originating from the uterine cavity
- Intermittent and rhythmic abdominal-pelvic pains (increasing in intensity)
- Shortened and dilated cervix
- Increase in the size of the uterus as gestation progresses, softened uterus
- No discharge of the products of conception

* moderate vaginal bleeding: bleeding of an amount greater than usual in menstruation

Incomplete abortion

- Moderate or heavy vaginal bleeding originating from the uterine cavity
- Intermittent, persistent abdominal-pelvic pains
- Shortened and dilated cervix
- Increase in the size of the uterus compared to the gestational age, relatively softened uterus
- Partial discharge of the products of conception
- Pelvic ultrasound: intracavitary debris

Complete abortion

- Minimal vaginal bleeding emerging from the uterine cavity
- Light abdominal-pelvic pains
- Closed cervix
- Uterus consistency relatively firm, size increased compared to the presumed gestational age
- Ultrasound indicates empty uterus

Recognising molar abortions

- Occasional excessive nausea/vomiting (hyperemesis)
- Intermittent, rhythmic abdominal-pelvic pains occurring and increasing in intensity
- More significant bleeding than occurs usually in menstruation
- Heavy bleeding coming from the uterine cavity
- Expulsion of vesicles
- Dilated cervix
- Increase in the size of the uterus greater than expected for presumed gestational age, uterus softer than normal
- Pelvic ultrasound: "snowflakes" image; possible presence of luteinized cysts.

Identifying possible complications

Septic abortion

- Persistent abdominal-pelvic pains
- Persistent bleeding, minimal or moderate quantity emerging from the uterus
- Foul-smell/purulent leucorrhoea
- Fever
- Rebound tenderness
- Partially closed cervix
- Uterus tender upon movement
- Sensitive/painful pouch of Douglas.

Traumatic injury (vagina/uterus/intestine)

Notion of induced abortion

- Abdominal-pelvic pains
- Nausea/vomiting
- Shoulder pain
- Light vaginal bleeding
- Cessation of gas and defecation
- Fever
- Rebound tenderness
- Rigid (tense and hard) abdomen
- Speculum reveals visible injuries

Note!

Refer immediately to a CEmONC facility

1.3.3. Other causes of pain in the first trimester of pregnancy:

- Acute appendicitis
- Ovarian torsion
- Urinary tract infection (cf. page 98)

1.4. Therapeutic management

Quickly assess the general condition of the patients, in particular

their vital signs (pulse, arterial blood pressure, respiratory rate, temperature)

- **Look for latent or patent signs of shock:**
  - Rapid and thready pulse (⩾ 110 beats/min)
  - Low arterial blood pressure (systolic BP <90 mm Hg)
  - Rapid respiration (⩾ 30 breaths/min)
  - Pallor of conjunctiva and mucous membranes
  - Cold sweats
  - Cooling of the extremities
  - State of consciousness (anxiety, confusion, unconsciousness)
  - Urine output < 30 ml/h

Note!
Cf. data sheet page N° 117 if patient is in a state of shock

1.4.1. EmOC

Treatment is surgical: **life-threatening emergency**
Perform a laparotomy immediately without waiting for the results of requested complementary examinations, or blood:

- Quickly perform haemostasis and a total salpingectomy of the affected tube
- Check the condition of the contralateral tube
- If there is significant bleeding, offset the blood loss through homologous transfusion or autotransfusion (if applicable) or by crystalloids while awaiting the blood (Cf. data sheet N°1 on shock, p. 122)

Before permitting the patient to leave hospital:

- Inform the patient about the prognosis regarding her fertility and provide her with the necessary advice, including with regard to contraception
- Provide her with a method of contraception if she wishes
- Correct anemia with Iron (60 mg of ferrous sulphate or of ferrous

fumarate per day) by mouth for at least 1 month
- Schedule a follow-up visit for 4 weeks after discharge to discuss a hysterosalpingography 3 months later.

1.4.2. Threatened abortion

In general, no medical treatment is required.
- If the woman is in pain, administer a painkiller (1g Paracetamol. Repeat as required. Do not exceed 4g in a 24-hour period)
- Do not administer hormones, tocolytic agents or haemostatic agents because they will not prevent miscarriage
- Advise the patient to avoid strenuous activities and sexual intercourse
- If the bleeding stops, conduct an ultrasound and refer the patient for an antenatal appointment if the pregnancy progresses
- If the bleeding resumes or is persistent, reassess the patient for fetal viability (ultrasound).

1.4.3. Inevitable abortion

- Take the necessary steps to expunge uterine contents by MVA, electric vacuum aspiration or misoprostol administered by vagina (Cf. data sheet N°2, p. 122)
- Remove the product for anatomical pathology
- Ensure pain is managed (Ibuprofen/Paracetamol, provide verbal support, paracervical anaesthetic if necessary)
- Provide antibiotic treatment if there is risk of infection (Cf. endometritis p. 88)
- Perform post-abortion counseling: information regarding the woman's current condition, hygiene measures, future fertility and FP
- Provide contraceptive options if the woman wishes
- Identify other RH services that are needed (TV, STIs,
- cervical cancer screening, infertility) and ensure they are provided

1.4.4. Incomplete abortion

- Prepare to carry out an immediate uterine evacuation (MVA, electric vacuum aspiration or misoprostol (Cf. data sheet N°2, p. 122)
- Remove the product for anatomical pathology
- Ensure pain is managed (ibuprofen/paracetamol, provide verbal support, paracervical anaesthetic if necessary)
- Provide antibiotic treatment if there is risk of infection (Cf. endometritis p. 88) and anti-D serum to prevent alloimmunization if the woman is Rhesus negative
- Perform post-abortion counseling: information regarding the woman's current condition, hygiene measures, future fertility, FP
- Give the woman a contraception method if she wishes
- Identify other RH services that are needed (TV, STIs, cervical cancer screening, infertility) and ensure they are provided

1.4.5. Complete abortion

- Observe the patient and look for bleeding
- Provide antibiotic treatment if there is risk of infection (Cf. endometritis p. 88)
- Remove the product for anatomical pathology
- Perform post-abortion counseling (information regarding the woman's current condition, hygiene measures, future fertility, FP)
- Provide contraception techniques if she wishes
- Identify other RH services that are needed (TV, STIs, cervical cancer screening, infertility) and ensure they are provided

1.4.6. Molar abortion

- Prepare to carry out uterine evacuation immediately by electric vacuum aspiration or by MVA with an infusion of 10 IU of oxytocin in 500ml normal saline or Ringer's lactate (60 drops per min)
- Have 2 to 3 MVA syringes assembled and ready to use because the uterine contents are copious and it is important to evacuate them rapidly

- Remove the product for anatomical pathology
- Ensure the uterus is empty by performing an ultrasound or by monitoring bleeding
- Consider another MVA, if necessary
- Provide a hormonal method of contraception for at least one year
- In BEmONC facilities: refer
- In CEmONC facilities:
  - Test for beta-HCG four weeks after the abortion initially, then 8 weeks and every 8 weeks for at least one year.
  - If the rates of beta-HCG are not zero after 8 weeks or do not increase less than one year after the abortion, start specific treatment with appropriate follow-up.

1.4.7. Septic abortion

- Administer antibiotics as soon as possible before carrying out a uterine evacuation
- Recommend a combination of three antibiotics until 48 hours after the fever has ended:
  - Amoxicillin 1g IV every 6 hours.
  - Gentamicin 160 mg every 24 hours
  - Metronidazole 500 mg every 8 hours
- Perform the uterine evacuation
- Immediately after the start of the antibiotic treatment if the cervix is dilated; and 24 hours later if the cervix is closed
- Perform post-abortion counseling (information regarding the woman's current condition, hygiene measures, future fertility, FP)
- Offer the woman contraception methods if she wishes
- Identify other RH services that are needed (TV, STIs, cervical cancer screening, infertility) and ensure they are provided

1.4.8. Post-abortion traumatic injuries

- Perform the uterine evacuation if necessary
- Repair the injuries using the appropriate techniques

- Administer antibiotic treatment (cf. Endometritis, p. 89)
- Irrigate the vagina if caustic intravaginal substances have been used
- Perform post-abortion counseling: provide information regarding the woman's current condition, hygiene measures, future fertility, FP
- Give the woman a method of contraception if she wishes
- Identify other RH services that are needed (TV, STIs, cervical cancer screening, infertility) and ensure they are provided.

2. BLEEDING IN THE FIRST TRIMESTER OF THE PREGNANCY

2.1. Definition

This is when a pregnant woman suffers blood loss coming from the uterine cavity during the first 15 weeks of amenorrhea

2.2. Issue

It may be a sign of a serious complication of pregnancy: abortion or ectopic pregnancy (EP)/extrauterine pregnancy. Complications from induced abortions cause 13% of maternal deaths. They also cause infertility when care is inadequate.

2.3 Diagnosis

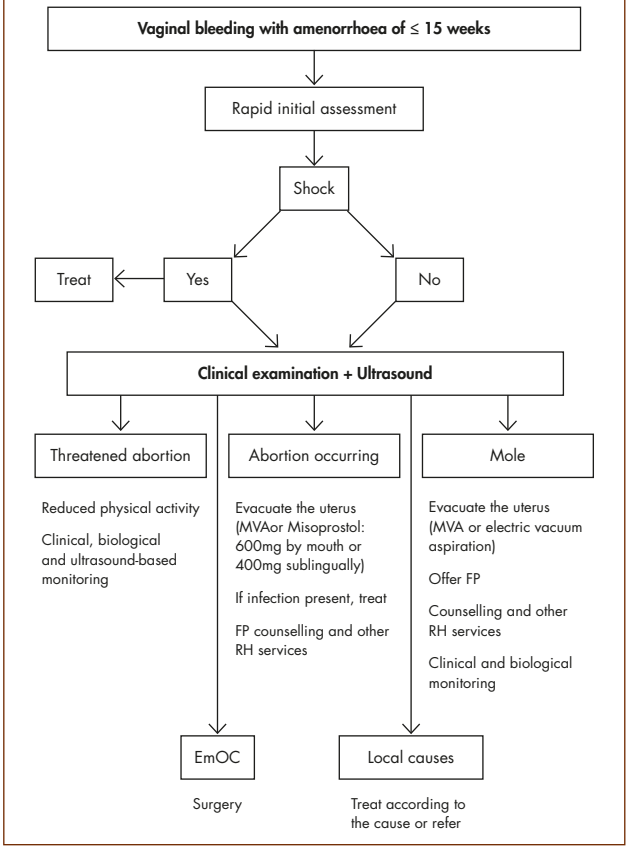
See diagnosing extrauterine pregnancies and abortions above.

2.4. Therapeutic management

See therapeutic management of ectopic pregnancies and abortions above.

Note!
Do not forget anti-D serum for women who are Rhesus negative

MANAGING HARMORRAGES IN THE 1st TRIMESTER OF PREGNANCY



CHAPTER II - HYPERTENSION AND PREGNANCY

Note!
Elevated arterial blood pressure, headaches, vision disorders, spasms, coma = **Signs of severity**

1. Definition

Hypertension in pregnancy is defined as:
Systolic BP ≥ 140 mm Hg and/or
Diastolic BP ≥ 90 mm Hg

Classification
The hypertensive disorders of pregnancy include:

- **Chronic hypertension** existing before the pregnancy or discovered before 20 weeks of amenorrhoea and persisting beyond the 12th week post-partum.

- **Gestational hypertension or hypertension in pregnancy** (linked to the pregnancy): hypertension that occurs beyond 20 weeks of amenorrhoea, during labour and/or in the 48 hours following delivery.

- **Mild pre-eclampsia***
- **Severe pre-eclampsia***
- **Eclampsia***

2. Issue

The combination of high blood pressure and pregnancy renders this serious. In women of reproductive age, the incidence of pregnancy-related hypertension illness is between 11.50 and 11.72% in the

* See page 31

WHO/AFRO region (Dolea and AbuZahr, GBD 2000). In severe form, it can result in maternal or fetal death.
Complications caused by high blood pressure are the 3rd most common cause of maternal deaths.
Headaches, vision problems, convulsions and coma are signs of deterioration and generally appear at the stages of severe pre-eclampsia and eclampsia.
As a result, they constitute an emergency.

Note!

Measuring arterial blood pressure:

- **Measure the arterial blood pressure of the pregnant woman when she has been at rest for 10 minutes, in a seated position, leaning slightly forward with her left arm completely bare and free from any clothing restriction at the top, her elbow at heart level and resting on a support**
- **Correctly-calibrated blood pressure monitor, adapted to the size of the arm**
- **Systolic and diastolic blood pressure must be systematically measured, noted and regularly checked**

3.1. Positive diagnosis (2017 WHO Classification)

Warning signs and other clinical symptoms and signs	**Clinical symptoms and signs often present**	**Probable diagnosis**
Systolic blood pressure (SBP) of 140 mm Hg or more and/or diastolic blood pressure (DBP) of 90 mm Hg or more before 20 weeks of gestation		**Chronic hypertension**

• SBP≥140 mm Hg and/ or DBP≥ 90 mmHg before 20 weeks of gestation After 20 weeks - Proteinuria 2+ on dipstick - Features of pre-eclampsia present		**Chronic hypertension with superimposed pre-eclampsia**
• Two readings of SBP≥ 140 mmHg but lower than 160 mmHg and/ or DBP≥ 90 mmHg but lower than 110 mmHg taken 4 hours apart and after 20 weeks of gestation • No proteinuria • No features of pre-eclampsia		**Gestational hypertension**
• Two readings of SBP≥ 140 mmHg but lower than 160 mmHg and/ or DBP≥ 90 mmHg but lower than 110 mmHg taken 4 hours apart and after 20 weeks of gestation • Proteinuria 2+ on dipstick		**Mild pre-eclampsia**

SBP≥ 160 mmHg and/or DBP≥110 mmHg after 20 weeks of gestation Proteinuria 2+ on the dipstick	• headaches (increasingly frequent, unrelieved by regular analgesics) • blurred vision • oliguria (urine output less than 400 mL in 24 h) • upper abdominal pain (epigastric pain or pain in right upper quadrant) • Pulmonary oedema Nausea and vomiting Hyperreflexia and clonus in facilities with laboratory capacity:	**Severe pre-eclampsia**
Convulsions • SBP≥ 140 mmHg or DBP ≥ 90 mmHg after 20 weeks of gestation	• coma (patient unconscious) • other clinical symptoms and signs of severe pre-eclampsia	**eclampsia**

Note!

The following signs of severe preeclampsyia are frequently premonitory signs of eclampsia:

- **Headaches (all over, of increasing frequency, unrelieved by regular analgesics)**
- **Vision problems**
- **Epigastric or right upper quadrant pain**
- **Brisk deep tendon reflexes**

- **Other complications of hypertension in pregnancy:**
  - Retroplacental haematoma (cf. p. 51)
  - Pulmonary oedema: difficulty breathing, rales on auscultation
  - Kidney failure: urine output < 30 ml per hour
  - Cerebral haemorrhage: headaches, motor deficit and coma. Confirmation by scan or MRI
  - Hellp syndrome (cf. p. 44)

3.2. Differential diagnosis

When presented with convulsions, rule out:

- Epilepsy: previous convulsions, normal blood pressure
- Severe malaria: fever, chills, headaches, anemia, jaundice, coma
- Meningitis: headaches, stiff neck, fever, photophobia
- Tetanus: trismus, spasms of face, neck and trunk, arched back, board-like abdomen.

When presented with headaches and/or vision problems, rule out:

- Uncomplicated malaria: fever, chills, muscle pains, joint pains, rapid diagnostic test or positive thick smear
- Migraine: vomiting
- Meningitis: neck stiffness

4. Milliliter

4.1 Of a patient who is unconscious or convulsing

- Urgently mobilise all available personnel. SHOUT FOR HELP
- Place the patient in the recovery position to prevent her from inhaling secretions, gastric fluid or blood
- Ensure the upper airways are open and prevent the patient from biting their tongue (Guédel airway)
- Start an IV infusion + normal saline or Ringer's lactate
- Stop the convulsion: start the Magnesium sulphate protocol
- Give oxygen (6 litres/minute) by mask
- Aspirate secretions from the mouth and nose
- Self-retaining bladder catheter
- Rapidly assess the general condition of the patient and their vital signs (pulse, blood pressure, respiratory rate, temperature, neck stiffness, measure proteinuria).

If the patient has respiratory problems:

- Check that the airways are clear and intubate if required or use a face mask
- Ventilate using an Ambu bag (4-6 Litres of oxygen per minute)
- Insert a nasogastric tube
- Tell a team-member to monitor and note the parameters of the following conditions: Blood pressure, pulse, temperature, urine output, state of consciousness (monitoring record)
- Ask the parent questions to establish the history of the current illness and the medical history in general.
- If the cause of the convulsions has still not been determined, treat them as indicators of eclampsia until proven otherwise.

4.2 Severe pre-eclampsia and eclampsia:

All cases of severe pre-eclampsia and eclampsia must be actively managed in the same way, except that birth occurs within 12 hours of onset of convulsions in eclampsia.

Anticonvulsant treatment must be a **PRIORITY**.
Depending on the gestational age, there are several options

Gestational age less than 24 weeks (pre-viable foetus):
- Magnesium sulphate (MgSO4), antihypertensive drugs;
- Induce labour.

Gestational age between 24 and 34 weeks:
- MgSO4, antihypertensive drugs, antenatal corticosteroids if the safety conditions are met;
- careful monitoring of the woman and of the foetus; expedite delivery if the condition of the woman and of the foetus is not stable.

Gestational age between 34 weeks and 36 weeks and 6 days:
- Same management as for 24-34 weeks but without antenatal
- corticosteroids.

Gestational age 37 0/7 weeks and over:
- MgSO4, antihypertensive drugs; expedite delivery.

Source: WHO MCPC 2017

PROTOCOL FOR USING MAGNESIUM SULPHATE

Intramuscular regimen

Loading dose

- Give 4g of 20% Magnesium sulphate solution IV over 5 minutes.
- Follow promptly with 10 g of 50% magnesium sulfate solution: give 5 g in each buttock as a deep IM injection with 1 mL of 2% lignocaine in the same syringe. Ensure aseptic technique. Warn the woman that a feeling of warmth will be felt when the injection is given.
- **If convulsions recur after 15 minutes**, give 2 g of 50% magnesium sulfate solution IV over five minutes.

Maintenance dose

- Give 5 g of 50% magnesium sulphate solution with 1 mL of 2% lignocaine by IM injection into alternate buttocks every four hours. Continue treatment for 24 hours after delivery or the last convulsion, whichever occurs last.

By intravenous route

Intravenous administration can be considered, preferably using an infusion pump, if available.

Loading dose:

- Give 4g of 50% Magnesium sulphate solution IV
- If convulsions recur after 15 minutes, give 2 g of magnesium sulfate solution IV over five minutes.

Maintenance dose (IV):

- Infuse 1 g/hour. Continue treatment for 24 hours after childbirth or the last convulsion, whichever occurs last.

MONITOR CLOSELY FOR SIGNS OF TOXICITY

Before repeat administration, ensure that:
- Respiratory rate is at least 16 per minute;
- Patellar reflexes are present;
- Urinary output is at least 30 mL per hour over four hours.

WITHHOLD OR DELAY TREATMENT IF:
- Respiratory rate falls below 16 per minute;
- Patellar reflexes are absent;
- Urinary output falls below 30 mL per hour over preceding four hours.

Keep antidote ready
- In case of respiratory arrest:
  - Assist ventilation (mask and bag, anaesthesia apparatus or intubation);
  - Give calcium gluconate 1 g (10 mL of 10% solution) IV slowly until respiration begins to counteract the effect of magnesium sulphate.

NB : If the woman has to be referred, administer the loading dose of the Magnesium sulphate and make a note on the referral form.

Monitoring the mother
- Monitoring proteinuria and urine output
- If urine output is less than 30ml per hour, withhold the magnesium sulphate and give Ringer's Lactate
- Look for signs of pulmonary oedema
- Monitor the mother's vital signs, patellar reflexes
- Minimum biological assessment: creatinemia, uricemia, 24 hour protein test, transaminases, platelets, Hb, BT and CT values
- Monitoring fetal condition (FHR, ultrasound, etc.)

4.3. Post-partum follow-up

- Continue anti-convulsive therapy for 24 hours after childbirth or the last convulsion (whichever occurs last)
- Continue antihypertensive treatment as long as the diastolic blood pressure is 110 mmHg or higher or the systolic blood pressure is 160 mmHg or higher
- Continue replacing fluids with Ringer's lactate and normal saline for at least 48 hours
- Monitor urine output (> 30 ml/h).

Refer or request the opinion of a specialist if:

- There is persistent oliguria for 24 hours after delivery
- Bleeding disorders or HELLP syndrome
- Prolonged coma (more than 24 hours after convulsions)

USING ANTIHYPERTENSIVE MEDICATION

- If the systolic BP is ⩾160 mmHg and/or the diastolic BP is ⩾110 mmHg, administer hypertensives according to the following protocols to maintain the systolic BP between 140 and 150 mmHg and the diastolic BP between 90 and 100 mmHg in order to prevent hypertension complications (without allowing the diastolic BP to fall below 90 mmHg).

Table I. Antihypertensive medications and dosing options for acute treatment of severe hypertension (WHO MCPC 2nd edition 2017)

Antihypertensive options	Dosing
Hydralazine	**Intravenous treatment:** • Slowly administer 5mg IV (risk of maternal hypotension, carefully monitor blood pressure); • repeat every five minutes until the blood pressure goal has been achieved; • repeat hourly as needed or give 12.5 mg IM every two hours as needed; • the maximum dose is 20 mg per 24 hours.
Labetalol	**Oral treatment:** • Administer 200 mg; • repeat dose after one hour until the treatment goal is achieved; • the maximum dose is 1200 mg in 24 hours. **Intravenous treatment:** • Administer 10 mg IV; • if response is inadequate after 10 minutes, administer 20 mg IV; • the dose can be doubled to 40 mg and then 80 mg with 10-minute intervals between each increased dose until blood pressure is lowered below threshold; • the maximum total dose is 300 mg; then switch to oral treatment.

Nifédipine (immediate-release capsule)	**Oral treatment:** • Administer 5 to 10 mg orally; • repeat dose after 30 minutes if response is inadequate until optimal blood pressure is reached; • the maximum total dose is 30 mg in the acute treatment setting
Alpha-methyldopa	**Oral treatment:** • Administer 750 mg orally; • repeat dose after three hours until the treatment goal is achieved; • the maximum dose is 3 g in 24 hours.

Note!

Do not use magnesium sulphate and Nicardipine or Nifedipine at the same time because of an increased risk of hypotension.

Mild pre-eclampsia
Management depends on gestational age

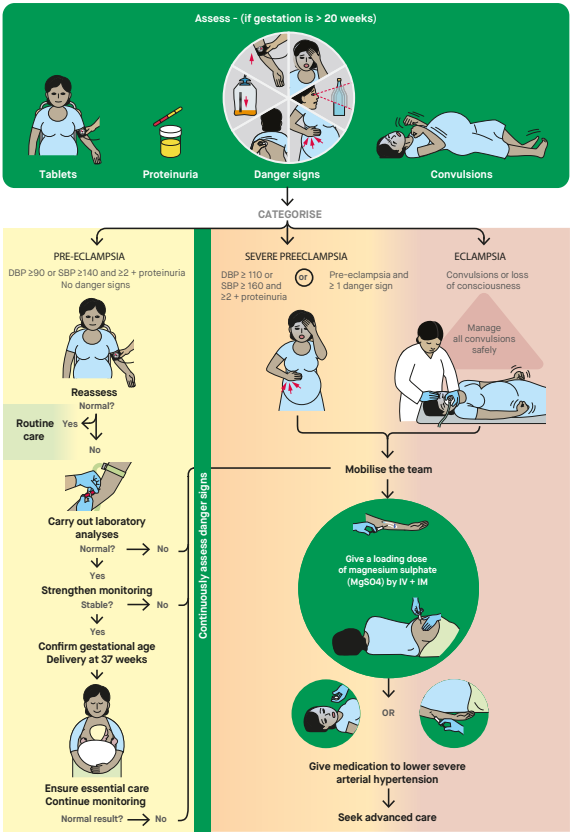
Gestational age less than 37 weeks:
As long as the well-being of the mother and fetus remains stable, the goal is for the woman to reach 37 weeks of gestation while monitoring of maternal and fetal status continues.
However, it is important to **remain vigilant** because pre-eclampsia **may progress rapidly** to severe pre-eclampsia.
The condition of the woman and the foetus must be closely monitored, with the woman's blood pressure being measured regularly and potential danger signs assessed. Outpatient care: if blood pressure and signs of pre-eclampsia remain unchanged or normalised, follow up with the woman as an outpatient twice a week; If follow-up as an outpatient is not possible, admit the woman to the hospital for close monitoring, including of blood pressure and danger signs.

Gestation at 37 weeks or more: induce labour/delivery.

Source: WHO MCPC 2017

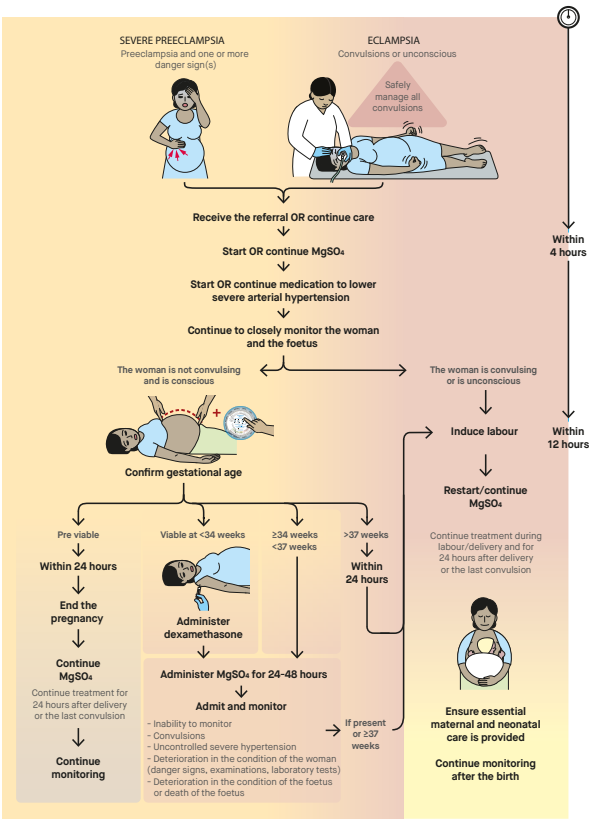
PREECLAMPSIA AND ECLAMPSIA

ACTION PLAN 1 – FIRST AID

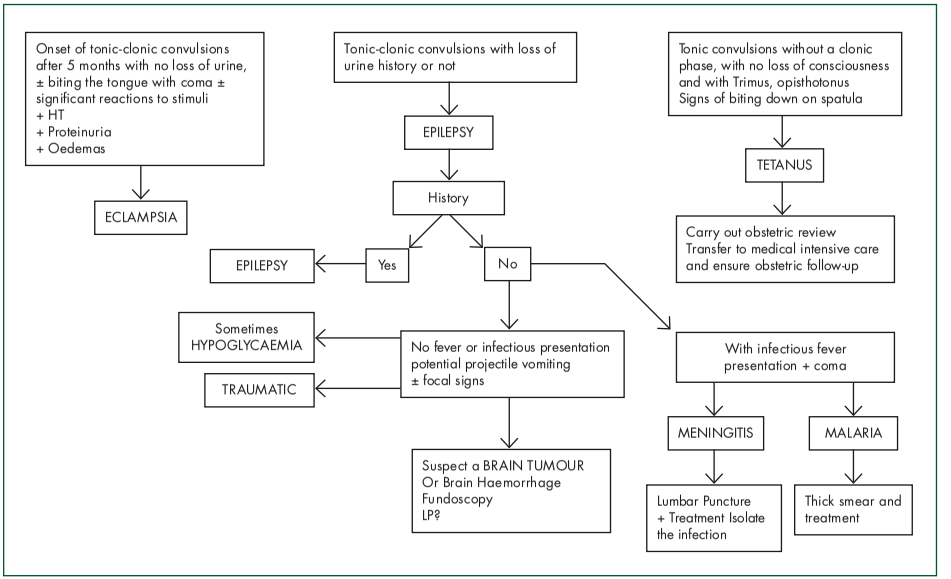


PREECLAMPSIA / ECLAMPSIA

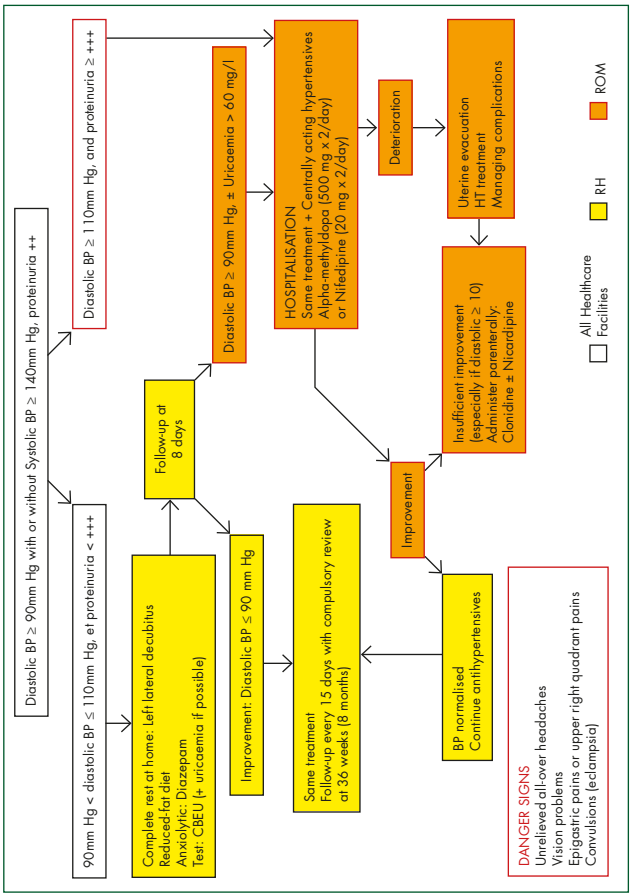
ACTION PLAN 2 – ADVANCED CARE



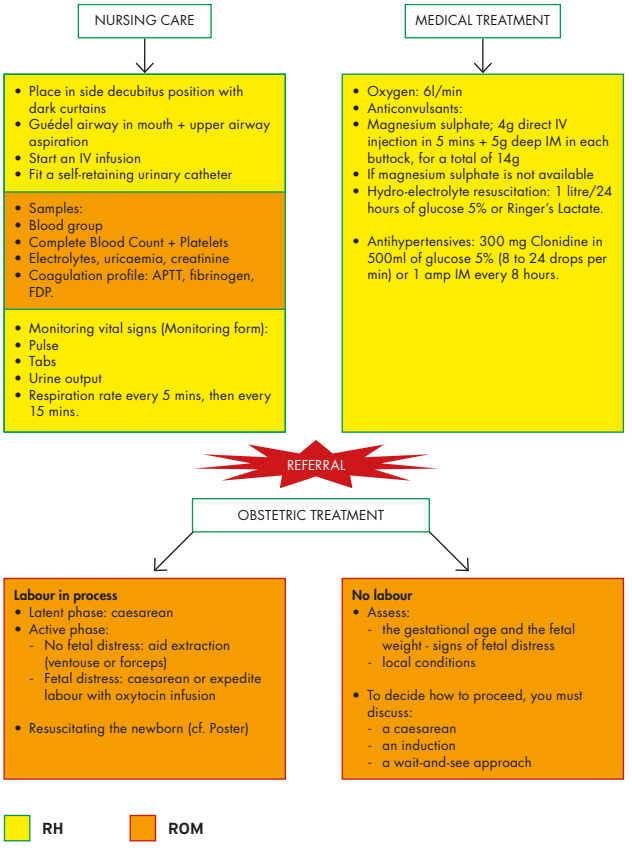
AETIOLOGICAL DIAGNOSIS OF CONVULSIONS



ACTION TO TAKE FOR PRE-ECLAMPSIA



ACTION TO TAKE FOR ECLAMPSIA



ASSESSMENT OF CERVIX FOR INDUCTION OF LABOUR WHO MCPC 2015

	0	1	2	3
Length of cervix	>4 cm	3-4 cm	1-2 cm	<1 cm
Dilation of the cervix	0	1 -2 cm	3 -4 cm	more than 5
Position of the cervix	posterior	mid	anterior	N/A
Consistency of the cervix	firm	average	soft	N/A

To be used when inducing labour when woman has pre-eclampsia.

Score ⩽ 5 : unfavourable cervix, ripen the cervix
Score ⩾ 6 : favourable cervix, induction possible with oxytocin alone

Chronic Arterial Hypertension

If the woman was on anti-hypertensive medication before pregnancy and the disease is well-controlled, continue the same medication, if acceptable, or switch to medication that can be safely used in pregnancy.

Note: It is not necessary to lower the blood pressure readings to their pre-pregnancy values.

With SBP ⩾ **160 mmHg or DBP ⩾ 110 mmHg, anti-hypertensive medication should be administered**

- If proteinuria or other symptoms or signs of **pre-eclampsia appear, treat as superimposed pre-eclampsia**

- Monitor fetal growth and condition
- If there are no complications, deliver at term

- If intrauterine growth restriction is severe and pregnancy dating is accurate, assess the cervix and induce labor
- Observe for complications including abruptio placentae and superimposed pre-eclampsia

Pregnancy-induced hypertension without proteinuria

- Counsel the woman and her family about warning signs of pre-eclampsia or eclampsia
- Monitor blood pressure, urine and fetal condition weekly on an outpatient basis for at least one month
- If blood pressure worsens or if the woman develops signs of pre-eclampsia, manage as pre-eclampsia
- If there are signs of in utero growth restriction or fetal compromise, admit the woman to the hospital and consider expedited delivery
- If blood pressure remains stable and there is no indication of proteinuria, continue monitoring on an outpatient basis until 37 weeks of gestation in accordance with the antenatal consultations calendar.

4.4. Treating maternal complications

HELLP syndrome

- Occurs towards the end of the Second or the start of the Third trimester and is associated with haemolysis, elevated hepatic transaminases and thrombocytopenia
- If epigastric pain is present, consider a subcapsular haematoma of the liver which may rupture
- If platelets drop below 100,000 per mm3:
- Promptly extract the foetus
- Perform a transfusion of blood products (red blood cell concentrates, fresh plasma, or platelets)
- Transfer to intensive care.

- **Acute pulmonary oedema**
  - Half-sitting position
  - Oxygen therapy - 6 to 8 litres/min (non-invasive artificial ventilation)
  - Furosemide 20 mg amp: 1 ampoule every hour as long as the clinical signs of acute pulmonary oedema persist
  - Refer/transfer to a specialist unit

- **Acute renal failure**

  In particular for those with pre-eclampsia with pre-pregnancy hypertension,
  - do a trial of moderate replacement; 250ml - 500ml Ringer's
  - Lactate IV over 30 minutes if there are no signs of acute pulmonary oedema.
  - Furosemide 20 mg amp: 2 amp direct IV injection; repeat after 30 mins if response is inadequate
  - Refer/transfer to a specialist unit.

CHAPTER III - OBSTETRIC HAEMORRHAGE

Haemorrhage during the last trimester of pregnancy and labour.
Immediate post-partum haemorrhages
Delayed post-partum haemorrhages

A. HAEMORRHAGE IN THE LAST TRIMESTER OF PREGNANCY AND LABOUR

Definition
This is when a pregnant woman suffers blood loss from her genitals from the 28th week of amenorrhoea up till labor.

Issue
They constitute an obstetric emergency and require immediate and appropriate treatment.
Often, they cannot be predicted. They remain the primary cause of maternal deaths. Hemorrhage accounts for twenty-seven percent (27%) of maternal deaths.
Haemorrhage during the last trimester of pregnancy and labour encompasses:

- Placenta praevia
- Retroplacental haematoma
- Uterine rupture
- Benckiser's haemorrhage (rare)
- Post-partum haemorrhage

1. PLACENTA PRAEVIA

1.1. Definition
Complete or partial implantation of the placenta on the lower segment of the uterus with haemorrhaging.

1.2. Diagnosis

During pregnancy: Consider placenta praevia when the patient presents the following signs:

- Unexpected and painless haemorrhaging of bright, red blood, originating from the uterine cavity, recurring, often triggered by sexual activity or vaginal examination
- Pallor of conjunctiva and mucous membranes
- Occasional Signs of shock
- High presentation, often off-centre and abnormal
- FHBs present
- Speculum: bleeding of endo-uterine origin
- VE: PROSCRIBED due to risk of haemorrhaging
- Complementary examinations:
- Blood group/rhesus and a complete blood count
- Carry out an ultrasound

During labour: Consider placenta praevia when the patient presents the following signs:

- Unexpected haemorrhaging of bright red blood, originating from the uterine cavity, tending to recur, sometimes triggered by vaginal examination
- Pallor of conjunctiva and mucous membranes
- Signs of shock (sometimes)
- High presentation, often off-centre and abnormal
- Uterus soft outside of labour contractions
- FHBs present
- Speculum: Bright red blood
- Cautious VE: cervix lateral deviation on the side opposite the implanted placenta

Note!

Avoid VEs, except in a surgical environment (CEmONC maternity wards)

Refer/transfer to a specialist unit.
Complementary examinations

- Blood group/rhesus and a complete blood count
- Carry out an ultrasound examination if there is an ultrasound available in the labor ward

Note!
The ultrasound must not delay treatment

1.4. Treatment

1.4.1. General measures

Immediate treatment:

- Start 16 or 18G IV catheter
- Start Ringer's lactate or isotonic normal saline and adapt the flow to the haemodynamic condition
- Insert a self-retaining bladder catheter (urine flow)
- Monitor, note and check vital signs (pulse, BP, respiratory rate, temperature, state of consciousness) every 15 mins.

1.4.2. Obstetric actions

During the pregnancy

- Major haemorrhage
- If haemorrhaging continues, perform a caesarean irrespective of the gestational age
- If the haemorrhaging stops, monitor the progress of the pregnancy;
- If haemorrhaging resumes, perform a caesarean
- Minor haemorrhaging
- Hospitalise the patient and monitor the progress of the pregnancy until the onset of labour
- Correct anemia if necessary
- Ensure there is blood available in case a transfusion becomes necessary

During labour

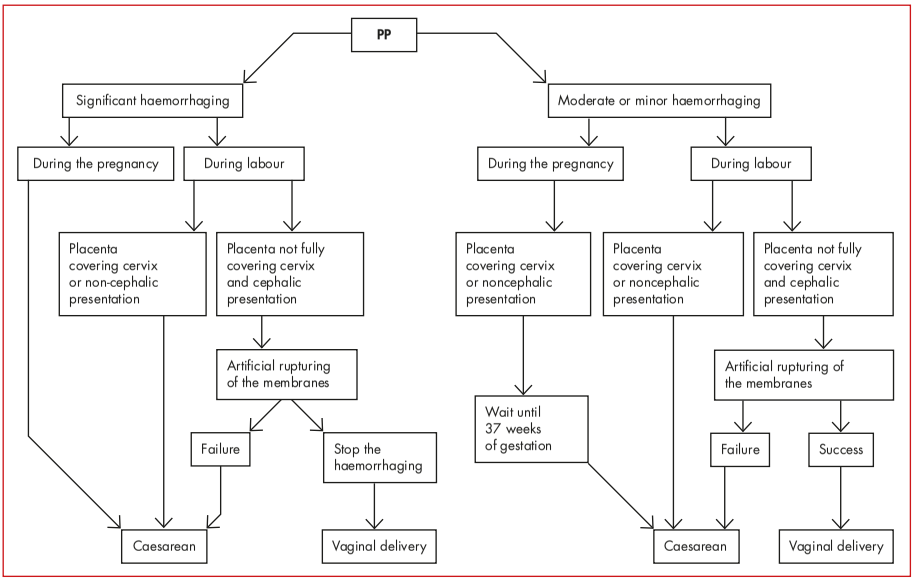
- Major haemorrhage
- If the waters have broken or membranes are not accessible perform a caesarean.
- If the waters are accessible: rupture the membranes.
- If the haemhorraging stops after the membranes are ruptured, then monitor the labor
- If haemorrhaging persists, perform a caesarean
- Minor haemorrhaging
- If the placenta covers the cervix: perform a caesarean
- If the placenta is not covering the cervix: break the waters
- If haemorrhaging stops: monitor the progress of the labor
- If haemorrhaging persists: perform a caesarean.

After a caesarean is carried out due to placenta praevia, placenta accreta may occur. This can lead to a haemostatic hysterectomy.

1.4.3. Other actions

- Give a transfusion if the haemoglobin level is less than 7g/dl and/or there are signs of intolerance (tachycardia, polypnoea, a drop in blood pressure and disturbances of consciousness)
- Consider antibiotic treatment
- Prescribe iron treatment (ferrous sulphate or fumerate at the rate of 120mg/day for at least one month)
- Refer the newborn to neonatology/paediatrics.

ACTION TO TAKE FOR PLACENTA PRAEVIA (PP)



2. RETROPLACENTAL HAEMATOMA (RPH)

2.1. Definition

The premature detachment of a normally-implanted placenta before the delivery of the foetus.

2.2. Diagnosis

Consider RPH when the woman has the following symptoms:

- Light bleeding of dark blood associated with a violent, stabbing pain that occurs without warning
- Pallor of conjunctiva and mucous membranes
- Signs of shock contrasting with the level of haemorrhaging
- Continuous uterine contracture or board-like uterus
- Contracture of the lower segment
- Possible increase in the FH from one examination to another
- FHBs altered, often absent
- Presence of a retro-placental cupule (can be confirmed after delivery)

ACTIONS TO TAKE WHEN WOMAN PRESENTS WITH A RETRO-PLACENTAL HAEMATOMA

General management	Medical treatment	Obstetric treatment
• **IV: 1 or 2** • **Blood samples:** - CBC, fibrinogen platelets - Activated partial thromboplastin time - Prothrombin time - Fibrin degradation products • **Bedside coagulation test** • **Urinary catheter** • **Documented monitoring** - pulse, blood - pressure every ¼ hour - urine output hourly, - volume of haemorrhages (weigh please) • **Bedside coagulation test**	• **Combatting hypovolaemia** - macromolecules or crystalloids while waiting: volume <1l - fresh or stored blood if necessary • **Combatting coagulation disorders:** - Fibrinogen 3 to 6g - Fresh frozen plasma, Iniprol 1 000 000 U, I.V. repeated 4 hours after	• **Evacuate the uterus** - Living foetus: caesarean or vaginal delivery if labour imminent, forceps or ventouse - Fetus deceased: - Artificial rupturing of the membranes, Oxytocin: 5 à 10 mIU/min, - Uterine exploration + examination of the cervix and the vagina, - Caesarean if the condition of the woman is very serious or if vaginal delivery is not successful after 6 hours.

Adapted from: Pratique de l'accouchement - J. LANSAC et Coll. 4ème éd. 2006 Masson

Other complementary examinations
Perform an ultrasound if haemodynamically stable (diagnosis and fetal viability).

Note!
The ultrasound must not delay treatment

2.3. Management
2.3.1. General measures
- Cf. placenta praevia (p. 47) et
- Assess the quality of the coagulation by carrying out a bedside coagulation test (cf. bleeding disorders p. 57)

2.3.2. Obstetric actions
If the foetus is alive:
Perform a Caesarean unless labour is advanced (full dilation, engaged presentation).
If fetus is deceased:
- In unstable haemodynamic state: stabilize and perform a caesarean
- Stable haemodynamic state:
  - Perform artificial rupturing of the membranes
  - Perform Injectable Tramadol: Slowly inject 1 Ampoule of 100 mg IV for 2-3 minutes.
  - Directed labour
  - If delivery has not occurred after 6 hours, perform a caesarean.
  - Any changes to the condition of the woman should trigger a caesarean to save her life

3. UTERINE RUPTURE

A. BEFORE UTERINE RUPTURE

Signs

- Painful uterine contractions with no uterine relaxation between 2 uterine contractions
- Deformed uterus in shape of an hourglass or peanut shell
- Painful tension in the round ligaments
- Changes to the fetal heart beats

B. UTERINE RUPTURE

3.1. Definition

Interruption that generally occurs in the uterus during labour and delivery.

3.2. Causes

It is generally the result of an unknown dystocia; lack of, or inadequate, monitoring of labour, the misuse of oxytocics or the inappropriate performance of certain obstetric maneuvres.

3.3. Diagnosis

Consider a uterine rupture when the woman has the following signs:

- Vaginal bleeding of variable abundance coming from the uterine cavity during labour and delivery
- Strong spontaneous abdominal pain, with sharp pain preceding the bleeding and which can reduce or disappear after the rupture
- Irregular uterine contours
- Abdomen sensitive upon palpation
- Fetal parts easily palpable under the skin of the abdomen (if the fetus is outside of the uterine cavity)
- Disappearance of fetal movements and FHBs
- Lack of perception of the presentation in the pelvis or elevation

of the presentation
- Pallor of conjunctiva and mucus membranes (anemia)
- State of shock

3.4. Therapeutic management

3.4.1. General measures

- IV, preferably two
- restore blood volume by infusing normal saline or Ringer's lactate before the intervention.
- Blood transfusion if necessary
- Urinary catheter
- Documented monitoring

3.4.2. Surgical treatment

- Perform a laparotomy as soon as the patient has stabilized to extract the child and the placenta
- Repair the uterine injury if the edges are not necrotic.
- Undertake a subtotal hysterectomy if it is not possible to repair the edges (necrotic)
- Undertake a total hysterectomy if the injuries extend to the cervix and vagina

Administer antibiotic treatment

- Amoxicillin 1g IV every 6 hours with 160mg/day of Gentamicin IM
- Metronidazole 500 mg by infusion every 12 hours.

3.4.3. Before permitting the patient to leave hospital:

- Inform the patient about the prognosis regarding her fertility and advise a, including contraception measures
- Give her contraception methods if necessary
- Since there will be more rupture in subsequent pregnancies, discuss the patient the possibility of having permanent contraception if the patient is multiparous

- Address anemia by orally administering Iron (60 mg of ferrous sulphate or of ferrous fumarate per day) for at least 1 month
- Schedule a follow-up visit for 4 weeks after discharge.

4. BLEEDING DISORDERS

4.1. Definition

Set of biological disturbances resulting in the bleeding of incoagulable blood.

4.2. Diagnosis

Consider bleeding disorders when the patient presents with persistent obstetric haemorrhage (liquid blood with little or no clotting) despite the causes having been found and treated.
Perform a rapid diagnostic test using the bedside coagulation test:

- Collect 2ml of venous blood in a clean and dry glass test tube
- Hold the tube firmly in a closed fist to keep it warm
- f, after 4 mins, a clot forms and the blood in the tube clots. The tube can be completely turned over and there is no bleeding disorder.
- Failure of a clot to form after 7 minutes or a soft clot that breaks down easily suggests coagulopathy.
- Carry out laboratory examinations: haematocrit, haemoglobin, plasma, level of fibrinogen.

4.3. Milliliter

4.3.1. General measures

Cf placenta praevia (p. 48)

4.3.2. Specific measures

- Early administration of Tranexamic Acid (1g in 50 CC normal saline over 15 mins or 30 mins, then 1g in 500 CC normal saline over 8 hours).

Do not exceed a total dose of 2g

- Transfusion of iso-group iso-rhesus blood

- Transfusion of fresh frozen plasma (15 ml/kg)
- Transfusion of cryoprecipitate to replace the fibrinogen
- Transfusion of platelet concentrates if thrombocytopoenia less than 20,000 platelets per ml

Note!

This is the emergency of all emergencies! Death can occur within 2 hours. A woman giving birth should not bleed; in the event of haemorrhaging, life-saving action must be taken in the 30 mins following the onset of bleeding.

Recognising hypovolemia

Circulatory blood volume lost	Signs
Up to 500 ml (1 bottle)	No symptoms or signs
1.5 l (3 bottles)	Increased pulse and respiratory rate, cooling of the extremities, cold, pale
2 l (4 bottles)	Increase in the pulse and respiration, hypotension (drop in systolic pressure), cold extremities, cold sweat or clammy skin, agitation
More than 2 l (>4 bottles)	Rapid pulse and respiratory rate, weak blood pressure, cooling, cold sweat, confusion, agitation, aggression

1. Definition

This is bleeding, coming from the genital tract, of more than 500 ml and/or which has an effect on the mother. Its onset occurs within 24 hours of delivery. It could be:

- Post-partum haemorrhage (uterine atony, retained placenta, bleeding disorders, uterine inversion)
- Uterine rupture
- Cervical-vaginal-perineal tears
- Peri-genital haematomas (thrombus)

2. Diagnosis

When faced with bleeding in the immediate post-partum period:

- **Look for the cause**

  By clinical examination:
  - Ensure that the bladder is empty
  - Check the integrity of the placenta
  - Assess the quality of the contraction of the uterus (well retracted or not, soft)
  - Carry out an examination to look for injuries to the birth canal
  - Explore the uterus for signs of rupture
  - Assess features of the haemorrhage: blood appearance, quantity and ability to coagulate

- **Consider post-partum haemorrhage when faced with:**
  - A non-expelled placenta (retained placenta)
  - Incomplete placenta (retained placenta)
  - Uncontracted uterus (uterine atony)
  - A visible inversion of the uterus
  - Ongoing bleeding with no apparent cause

- **Consider a uterine rupture when faced with:**
  - Painful abdominal palpation
  - Abdominal effusion (puddle sign)

- A uterus that is poorly contracted upon abdominal palpation
- An interruption to uterine exploration

▪ **Consider cervical-vaginal-perineal tears when presented with:**
- Visible injuries upon examination with retractors
- Significant vulvo-perineal swelling

3. Milliliter
3.1. Post-partum haemorrhaging

Administer tranexamic acid in all cases

Note!
Prevention: active management of the third stage of labour (AMTSL) Cf. data sheet N°10 p. 175

If placenta is fully retained
- Perform manual removal of placenta
- Administer oxytocin (10 IU in IV)

If placenta is incomplete
- Perform a uterine exploration
- Administer 10 IU of oxytocin in IV
- Give 2g Amoxicillin

If there is uterine atony
- Massage the uterus
- Perform bimanual compression of the uterus
- Give oxytocin 10 IU in IV + 10 IU in 500 ml of isotonic glucose solution or
- Give 2g Amoxicillin
- Condom uterine tamponade if haemorrhaging persists

If the uterus is inverted

- Perform manual reduction
- Administer oxytocin (10 IU in IV)
- Give 2g Amoxicillin IV
- If fails: laparotomy

- **If post-partum haemorrhage persists**
  - Compress the aorta until the bleeding is under control
  - Apply downward pressure with a closed fist over the abdominal aorta through the abdominal wall just above the umbilicus, and slightly to the left

  - **If it fails** suture the uterus using the B-Lynch technique or vascular ligation; triple ligation or hypogastric artery ligation
  - **If it fails:** haemostatic hysterectomy

3.2. Managing cervical tears

- If the apex of the cervical tear is accessible, suture the injury vaginally
- If the apex of the cervical tear has extended beyond the vaginal vault, perform a laparotomy to suture the injury.

3.3. Managing perineal and vaginal tears

Suture one layer at a time

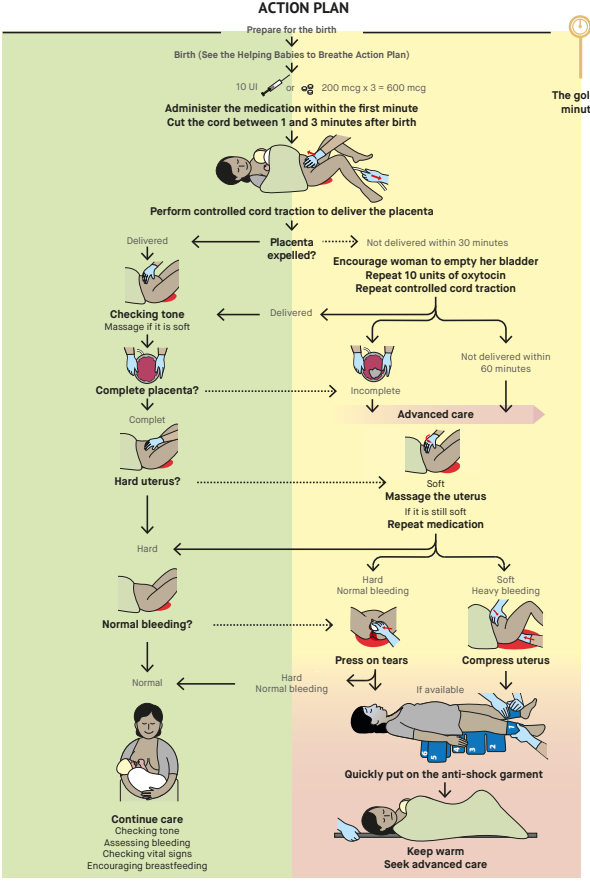
3.4. Managing peri-genital haematomas

- If the haematoma is stable, observe
- If the haematoma increases in size, then evacuate the clot and perform ligation on the bleeding vessel(s)
- Administer analgesic and antibiotic

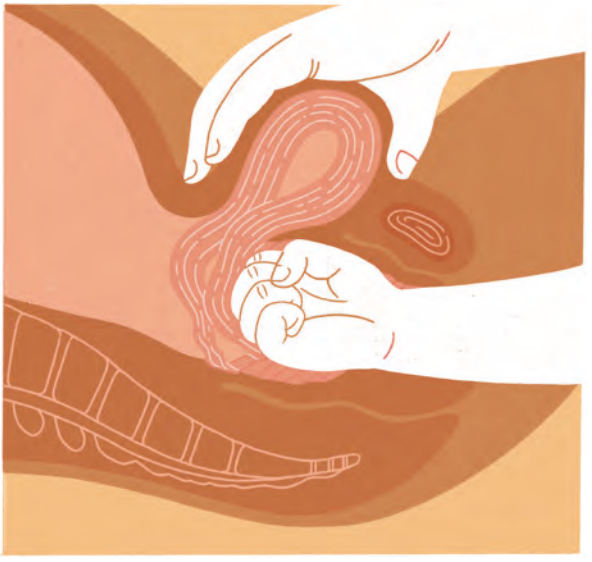
Helping mothers to survive

BLEEDING AFTER BIRTH

ACTION PLAN

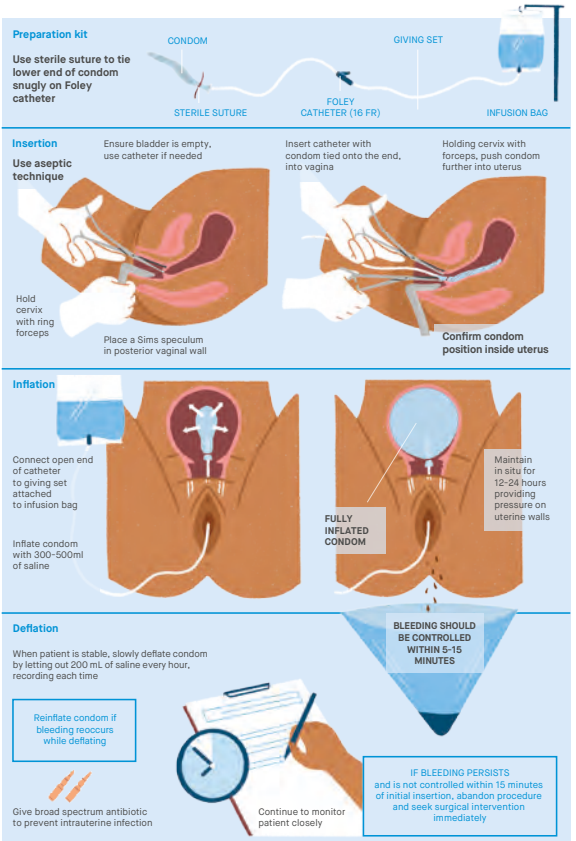


Bimanual compression of the uterus

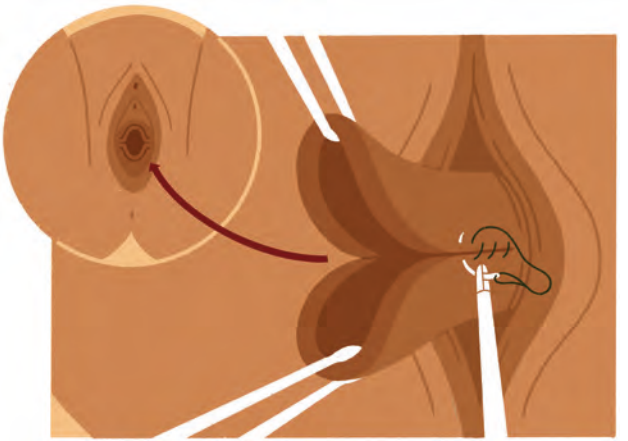


Source: C.B Lynch 05

Intrauterine Balloon Tamponade in the Treatment of Post-Partum Haemorrhage



Cervical tears: Expose the tear, identify its edges and repair it



Source: HMS BAB, Jhpiego

C. DELAYED POST-PARTUM HAEMORRHAGE

1.Definition

Delayed Post-partum Hemorrhage is bleeding that occurs between 24 hours and 45 days after delivery. It is connected to the following pathological entities:

- Endometritis (see p. 89)
- Partial retention of the placenta or the cotyledon: see Chapter on post-partum haemorrhage (p. 68)
- Bleeding disorders: see p. 57

2. Issue

Although not very common, the onset of this type of haemorrhage mostly occurs after the woman has returned home. It can be serious even if the bleeding is minimal

3. Diagnosis

- Clinical: haemorrhaging of more than 500 ml or less with onset after 24 hours or persistent or which reappears within 45 days of delivery
- Paraclinical: bedside coagulation test, prothrombin time, APTT, level of fibrinogen, CBC and platelets, FDP, D-dimers, pelvic ultrasound

4. Therapeutic management

This is dictated by the aetiology, the presence of clinical and technical facilities

CHAPTER IV - DYSTOCIA

1. Definition

Dystocia (obstructed labor) is the slow dilation of the cervix or descent of the fetus during active labor leading to entrapment of the fetal shoulders after the child's head has been delivered.

2. Issue

Dystocia can lead to, inter alia:

- Acute fetal distress which can lead to intrapartum fetal death
- Uterine rupture in the case of mechanical dystocia with risk of maternal death
- Obstetric fistula

This chapter covers:

- Prolonged labour
- Shoulder dystocia
- Presentation-related dystocia: transverse, brow and face
- Labour with a scarred uterus
- Prolapsed cord

1. PROLONGED LABOUR

1.1. Definition

The duration of the active phase (from 5cm to full dilation) exceeds 12 hours for first deliveries and 10 hours for subsequent deliveries

1.2. Issue

Prolonged labour is the cause of high perinatal mortality rates and many traumatic injuries to fetuses and mothers. These outcomes are reduced by rigorous monitoring of foetal-maternal parameters.

1.3. Diagnosis

Diagnosed using a partograph when the duration of the active phase is greater than 10 to 12 hours.

1.4. Treatment

- **If dilation has stalled and the waters have not broken:** if the foetus presentation is not one associated with dystocia, there is no praevia obstacle or fetal distress, consider a dynamic dystocia and:
  - Rupture the membranes.
  - If progress has not been made after two hours, infuse oxytocin and observe for one hour
  - If there is progress one hour after the oxytocin has been infused, proceed with vaginal delivery,
  - Otherwise, perform a caesarean.

- **If dilation has stalled and the waters have broken:** if the fetus presentation is not one associated with dystocia, there is no praevia obstacle or fetal distress, consider a dynamic dystocia:
  - Infuse oxytocin (5 IU in 500 ml of Glucose 5% isotonic solution) at a rate of 32 drops per minute maximum, starting with 8 drops per minute and increasing by 4 drops every 15 mins
  - After one hour, if dilation has not progressed, perform a caesarean.

- If dilation is complete, the waters have broken and presentation is cephalic and unengaged: monitor for 2 hours unless caesarean is immediately indicated
- If the head has not engaged after 2 hours, infuse oxytocin unless has already been done
- If the head has not engaged after one hour of oxytocin infusion, perform a caesarean

- **If dilation is complete, the waters have broken and the head is not engaged in a parturient woman receiving oxytocin infusion, observe for one hour:**
  - If the head engages, proceed with vaginal delivery
  - If the head has not engaged after one hour, perform a caesarean.

Note!

To differentiate between true and false labour: give intramuscularly a mix of a half-ampoule of diazepam and a half-ampoule of butylscopolamine and wait for two hours. If, after two hours, there are no regular uterine contractions and the cervix has not changed, conclude that it is false labour and permit the woman to go home.

2. SHOULDER DYSTOCIA

2.1. Definition

Shoulder dystocia is when the fetal head has been delivered, but the shoulders are stuck against the maternal symphysis. More maneuvers are required to deliver the fetus after the normal gentle downward traction has failed.

2.2. Issue

This complication is often unpredictable. In general, it occurs in cases of fetal macrosomia and often causes serious complications in the fetus, including traumatic injuries, neurological injuries and death. In the mother, it may also cause traumatic injuries of the genital tract and bladder,rectum and may result in fistulas. It requires prompt and effective action on the part of the obstetrician and his/her team.

2.3. Diagnosis

- The head remains tightly in the vulva
- The retracted chin depresses the perineum
- Rotation and traction on the head fails to deliver the anterior shoulder, caught behind the symphysis pubis.

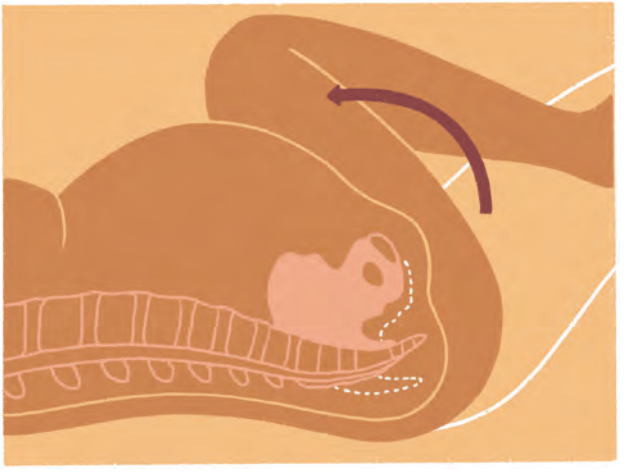
2.4 Management

- Ask for help
- Make an adequate episiotomy
- McRoberts manoeuvre: Lay the patient on her back, with her legs in hyperflexion. Ask two people to hold her legs while pushing the knees towards the chest.
- Resnik's manoeuvre: Have a colleague exert suprapubic pressure to reduce the bisacromial diameter and facilitate engagement of the anterior shoulder
- Jacquemier's manoeuvre: Add lubricant to a gloved hand and insert it into the vagina. Try to lower the anterior shoulder

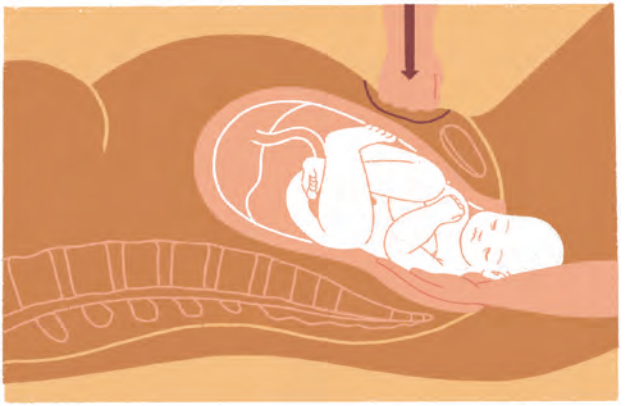
forward or bring the posterior shoulder forward, towards the fetal chest. These manoeuvres tend to reduce the bisacromial diameter, thereby facilitating delivery of the shoulder

Note!

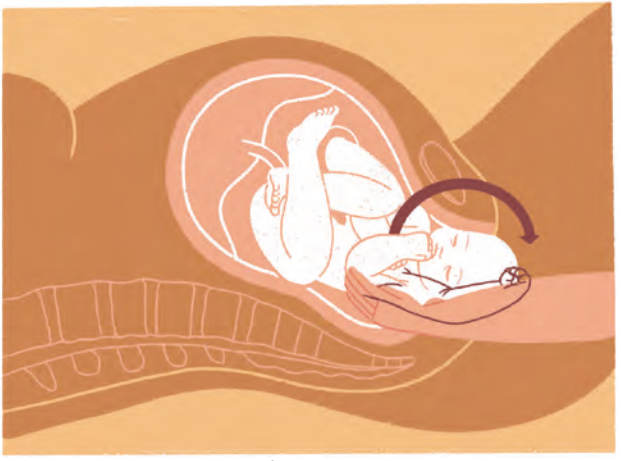
Carry out the actions in the chronological order outlined above and perform the next manoeuvre if one fails. Examine the newborn and refer him/her to neonatology/paediatrics.



McRobert's manoeuvre



Resnik's manoeuvre



Jacquemier's manoeuvre

3. PROLAPSED CORD

3.1. Definition

A prolapsed cord is when the waters have broken and the umbilical cord is in the birth canal in front of the fetal presenting part.

3.2. Issue

This complication can lead to fetal death caused by the cessation of fetal circulation. It constitutes an obstetric emergency.
The prognosis is worse if the cord is desiccated, so that must be prevented.

3.3. Diagnosis

Signs

- Umbilical cord in front of the fetal presenting part is detected during a vaginal examination or inspection of the vulva
- Usually there are fetal heartbeat anomalies
- There is often meconium in the amniotic fluid

3.4. Management

3.4.1 If the fetus is alive

BEmONC maternity unit: refer, while ensuring to:

- Insert an IV catheter (16G, 18G)
- Protect the umbilical cord with compresses soaked in normal saline
- Place the woman in the Trendelenburg position
- Hold back presentation and keep it above the pelvic inlet throughout the journey

CEmONC maternity unit:

- If dilation <8 cm
- Hold back presentation and keep it above the pelvic inllet
- Place the woman in the Trendelenburg position
- Perform a caesarean

- If dilation >8 cm
- Place the woman in the left lateral decubitus position
- Oxygenate at a rate of 3l/min
- End delivery by using a forceps or ventouse with oxytocin infused
- Anticipate a need to resuscitate the newborn

3.4.2. If foetus is deceased,

let the situation progress and act according to the obstetric situation.

4. TRANSVERSE LIE

4.1. Definition

The fetus is in a transverse position when the long axis of its spine is perpendicular to the axis of the spine of the mother.

4.2. Issue

This position is greatly associated with dystocia, and is life-threatening to the mother and foetus. Not identifying transverse position, or delaying its management often leads to neglected shoulder and uterine rupture.

4.3. Diagnosis

Clinical examination: presence of the fetal head in one of the sides of the mother.
X-ray of the uterine contents: spine of the fetus perpendicular to that of the mother.
An obstetric ultrasound confirms the position of the fetal head in one of the sides of the mother.

4.4. Management in a CEmONC facility

If the foetus is alive:

- Gestational age >28 weeks: routine caesarean
- Gestational age <28 weeks: allow to develop while monitoring

If foetus is deceased:

In a primipara, perform a caesarean. In a multipara:

- If the waters are intact, allow the labor to progress until dilation is completed, and perform IPV under GA and end delivery by total breech extraction If this fails, perform a caesarean
- If the waters have broken and dilation is <8 cm, perform a caesarean
- If the waters are broken and dilation is advanced (≥ 8 cm), allow the labor to progress until dilation is completed, and perform IPV under GA and end delivery by total breech extraction with complete dilation. If this fails, perform a caesarean

Note!

If a second twin is in the transverse lie: break the waters and perform IPV followed by total breech extraction immediately after the delivery of the first twin.

If contracted pelvis, scarred uterus, macrosomia or incomplete dilation are identified, DO NOT PERFORM IPV

5. FACE PRESENTATION

5.1. Definition

Presentation with head hyperextended

5.2. Issue

If the chin is in a posterior position, it becomes impacted; this is a highly dystocic situation.

5.3. Diagnosis

Chin identified in vaginal examination (easier if cervix dilation is >3cm and waters have broken)

5.4. Milliliter

- Associated unfavourable factors (large fetus, waters broken prematurely, associated maternal pathology) = routine caesarean.
- If there are no unfavourable factors, monitor labor:
- if the chin is anterior: vaginal delivery
- if the chin is posterior: caesarean.

6. BROW PRESENTATION

6.1. Definition

Presentation with head in an intermediate position.

6.2. Issue

Differentiating the true brow from the bregma.

6.3. Diagnosis

VE: nose at one end of pelvis.

6.4. Management (CEmONC maternity ward only)

Brow set: caesarean
Bregma: cf. face presentation.

Note!

Vaginal delivery of a term foetus of normal weight in brow presentation is impossible

7. LABOUR WITH A SCARRED UTERUS

Note!
Routine delivery in CEmONC maternity wards

7.1. Definition
Any labour involving a parturient woman with a scarred uterus.

7.2. Issue
The risk of the scar reopening and causing a uterine rupture; the consequences of which can be fatal for the mother and/or the fetus.

7.3. Diagnosis
- **Presence of an abdominal scar**
- Questions:
  - Inquire about the intervention(s) on the uterus
  - Inquire about post-operation effects
  - Find out the date of the last intervention

Assessing the uterine scar

- **Types of hysterotomy:**
  - Gynaecological hysterotomies (myomectomies) are usually robust; there have not yet been enough studies with regard to scars from myomectomies via coelioscopies
  - Vertical or horizontal segment obstetric hysterotomies are usually robust
  - There is a high risk of uterine rupture with corporeal obstetric hysterotomies (about 12%).

- **Paraclinical assessment**
  - Ultrasound: recommended for
    - measuring the thickness of the lower segment at around 37 weeks' gestation (≥3.5 mm), which may be a factor in whether a vaginal delivery can take place

- Locating the position of the placenta. An anterior placenta may suggest placenta praevia and/or placenta accreta
- Hysterosalpingography and X-ray pelvimetry are not recommended

7.4. Management

- Proscribe the use of oxytocics and Misoprostol for inducing labor because of the high risk of uterine rupture
- Use oxytocics with caution during labour while respecting the standard contraindications.
- Having a cardiotocograph available is highly recommended.
- If there is a permanent indication for a caesarean (Generally contracted pelvis, narrow pelvis), perform a caesarean.

▪ **If there is one scar in the uterus and it is of good quality**

- Consider a trial of labor unless:
  - there is a pelvic anomaly (Generally contracted pelvis, narrow pelvis)
  - macrosomia (fundal height ⩾ 36 cm),
  - Breech presentation
  - malpresentations,
- If an anomaly arises during the trial of labor, perform a caesarean.
- If the waters have not broken, break them and continue monitoring. If there is fetal distress, dynamic dystocia, excruciating pain along the scar, suprapubic oedema or vaginal bleeding: perform a caesarean.

Note!

a uterine exploration after a vaginal delivery is not obligatory; it should be performed on symptomatic patients or those at high risk of uterine rupture, in adherence with strict aseptic procedures.

▪ **If the uterus has more than one scar: routinely perform a caesarean.**

CHAPTER V- FEBRILE ILLNESS DURING PREGNANCY AND POST-PARTUM

Introduction

While numerous infectious and parasitic illnesses can occur in women who are pregnant and post-partum, we have decided to address only the most commonly-encountered illnesses in Africa with pregnancy characteristics.

Accordingly, only the following pathologies are addressed:

- malaria,
- urinary tract infection,
- chorioamnionitis,
- endometritis
- mastitis and
- breast abscesses.

While febrile illnesses during pregnancy and post-partum are usually infectious or parasitic in origin, other, more rare, illnesses can have clinical or paraclinical manifestations that make diagnosing them more difficult. These include appendicitis, cholecystitis and aseptic necrobiosis of uterine fibroids.

Note!

When a woman presents with hyperthermia during pregnancy, during labour or post-partum, a detailed clinical examination must be undertaken to look for a source of infection.

All febrile illnesses during pregnancy are strongly associated with neonatal morbidity.

The onset of an infection in the mother between 15 days and 1 month before the birth exposes the newborn to a neonatal infection.

1. MALARIA

1.1. Definition

A parasitic disease transmitted by anopheles mosquitoes. Serious forms of the disease are often caused by plasmodium falciparum.

1.2. Issue

This is an illness which has serious, even lethal, consequences for the mother and the child. It is the primary cause of morbidity in pregnant woman in the African region. Resistance to Chloroquine has led to various national protocols being amended and the use of combination therapies being recommended.

Note!

Any febrile episode in a pregnant woman should be considered to be malaria until proven otherwise. All cases of malaria in a pregnant woman should be considered to be severe malaria.

Figure XX: The most common causes of fever during pregnancy and labour WHO MCPC 2017

Warning signs and other clinical symptoms and signs typically present	Clinical symptoms and signs sometimes present	Probable diagnosis
Dysuria Increased frequency and Urgency of urination	Retropubic/suprapubic pain Abdominal pain Fever infrequently present	Cystitis
Spiking fever Chills	Retropubic/suprapubic pain Loin pain Tenderness in rib cage Anorexia Nausea/vomiting	Acute pyelonephritis
Fever/chills Maternal tachycardia Abdominal pain Fetal tachycardia	History of loss of fluid Foul-smelling, watery discharge after 22 weeks Tender uterus Light vaginal bleeding	Amnionitis
Fever Chills Headaches Muscle/joint pain	Enlarged spleen	Uncomplicated malaria
Symptoms and signs of uncomplicated malaria Coma Anemia	Convulsions Jaundice	Severe malaria

C1.3 Diagnosis

1.3.1. Clinical diagnosis

- **Uncomplicated malaria:**

Fever, chills, headaches, vomiting, arthralgia, asthenia, anorexia, abdominal pain associated with uterine contractions, decreased fetal movements, pallor of conjunctiva, etc.

Severe malaria:

- defined by the presence of sexual forms of plasmodium falciparum in the blood and of one or more of the following manifestations:
  - Cerebral malaria: coma stages 2 and higher; generalised and repeated convulsions
  - Severe anemia: haemogloblin level < 6 g/100 ml and/or haematocrit level < 20%
  - Kidney failure: urine output < 400 ml/24h; creatinine values >265 micromoles/l
  - Pulmonary oedema
  - Hypoglycaemia
  - Circulatory collapse
  - Diffuse haemorrhage or DIC
  - Haemoglobinuria
  - Acidosis: blood pH < 7.25
  - Convulsions
  - Hyperthermia (temperature > 39°)
  - Jaundice
  - Elevated parasitaemia

1.3.2. Paraclinical diagnosis

Confirmation of the diagnosis by:

- Thick smear
- Blood smear
- Rapid tests

Note!

Do not wait for a confirmed diagnosis before starting presumptive treatment.

1.3.3. Differential diagnosis

- It is worthwhile discussing other illnesses:
- Acute pyelonephritis
- Typhoid fever
- Meningitis, encephalitis
- Acute hepatitis
- Septicaemia
- Acute appendicitis
- Eclampsia, etc.

1.4. Therapeutic management

1.4.1. Uncomplicated malaria

- **In the first trimester (<16 weeks):**
  - Quinine orally at a rate of 10 mg/kg of quinine base every 8 hours for 7 days. Parentereal administration can be considered if there is significant vomiting:
  - Quinine: 25 mg/kg/day distributed in 3 infusions of 500 ml of glucose 10% over 4 hours each (42 drops/min)
  - Change to quinine by oral route as soon as possible.
  - Total duration of treatment: 7 days

- **Symptomatic treatment:**
  - Any fever ≥ 38°C must be promptly treated with an antipyretic; paracetamol: 60 mg/kg/day
  - Antiemetic treatment if vomiting metoclopramide: 10 mg x 3/day or metopimazine 10 mg x 3/day).

- **From the 2nd trimester (≥ 16 weeks' gestation)**
  - Quinine (same regimen as above); or
  - Artesunate (200 mg) + Amodiaquine (600 mg) for 3 days; or
  - Arthemeter in one IM injection (3.2 mg/kg the first day then 1.6 mg/kg/day from day 2 to day 6 inclusive). Change to oral route as soon as possible; or
  - Artemether and lumefantrine (oral combination)
  - Symptomatic treatment (cf. above)

1.4.2.Severe malaria

- **Antimalarial treatment:**

  Injectable quinine by infusion (cf. above but replace glucose 5% with glucose 10%).
- **Accompanying measures:**
  - Central venous catheter. If that is not possible, two peripheral IVs.
  - Self-retaining urinary catheter
  - Oxygenation: 6l/min (if needed, artificial ventilation)
  - Electrolyte replacement: Ringer's lactate or
  - Normal saline depending on the haemodynamic and ionic condition (as well as the quinine infusion)
  - Antipyretics (cf. above)
  - Anticonvulsants, if there are convulsions: Magnesium sulphate (cf. protocol, p. 32)
  - Blood transfusion if severe anemia present
  - Treatment for acute kidney failure: diuretics (furosemide: 20 mg, 3 time per day to start, without exceeding 500 mg/day), even dialysis
  - Tocolytics if there are uterine contractions: an initial dose of 20 mg orally followed by 10 to 20 mg every 4 to 8 hours until the transfer has been completed or up to 48 hours if the transfer does not take place in that timeframe (2015 WHO Recommendations).

Note!

Intermittent preventive treatment should be continued after the episode has been resolved: 3 sulfadoxine-pyrimethamine tablets at once; can be first taken from 13th week of gestation

+ antispasmodics (Phloroglucinol: 1 ampoule direct IV injection every 8 hours then every 12 hours). Change to oral route as soon as possible.
- Physical protection measures should be recommended, including the use of insecticide-treated mosquito nets
- Take urine sample for CBEU before starting treatment
- Caring for the newborn if the mother is suffering from malaria
- Look for prematurity/low birth weight
- Rule out bacterial infection
- Look for congenital malaria (thick smear, RDTs of newborn).

2. URINARY TRACT INFECTIONS

2.1. Definition

An infection of the urinary tract that could manifest as cystitis (low infection) or pyelonephritis (high infection).

2.2. Issue

The most serious type is pyelonephritis, it can be life-threatening for the mother. Urinary tract infections, whether symptomatic or not, can result in preterm labor, abortion or fetal death.
The onset of a urinary tract infection in the mother 15 days before the birth exposes the newborn to an infection

2.3. Diagnosis

Clinical:

- Febrile cystitis: dysuria, increased frequency of urination, increased urgency of urination, urinary burning, fever

- Pyelonephritis: back pain usually on the right, vomiting, nausea, fever

Paraclinical:

- Routine screening with urine test strip (testing nitrites, leukocytes, etc.)
- CBEU mandatory with antibiotic sensitivity testing.

Note!

Take urine sample for CBEU before starting treatment.

2.4. Therapeutic management

Febrile cystitis:

- Amoxicillin: 500 mg orally every 8 hours for 3 days, then adapt according to the results of the antibiotic sensitivity test
- Nitrofurantoin: 100 mg orally, every 8 hours a day for 3 days. Avoid taking it at the end of pregnancy due to risk of fetal haemolysis
- Acute pyelonephritis
- First-line treatment: Ceftriaxone 1g every 12 hours or Cefotaxime 1g every 8 hours
- Second-line treatment: Amoxicillin 1g every 6 hours + Gentamicin 3mg/kg IM daily or clavulanic acid 1g every 8 hours orally Adapt antibiotic treatment based on the results of the CBEU and the antibiotic sensitivity testing.

Duration of treatment: ≥15 days (stop gentamicin after 5 days of treatment).

3. AMNIONITIS

3.1. Definition

Bacterial colonisation of the egg occurring most often after a prolonged rupture of the membranes (more than 6 hours).

3.2. Issue

It causes serious maternal and fetal complications:

- In the child: fetal death, pneumopathies, septicaemia, meningitis, etc.
- In the mother: septicaemia, septic shock, endometritis, peritonitis..

Note!

This is an obstetric emergency with uterine evacuation indicated.

3.3. Diagnosis

Clinical:

- Foul-smelling vaginal discharge, light vaginal bleeding
- Fever, chills and maternal tachycardia
- Abdominal pains and tender uterus
- Fetal tachycardia.

Paraclinical:

- Bacteriological test of amniotic fluid and antibiotic sensitivity testing
- CBC, CRP
- Haemoculture

3.4. Therapeutic management

Medical treatment:

Antibiotic treatment until labour

- Ampicillin 2g every 6 hours in IV plus
- Gentamicin 5mg/Kg IM or IV

If the woman is giving birth vaginally, continue the antibiotics up to 24-48 hours after the symptoms and signs have disappeared. If the woman is giving birth by caesarean, the vagina must be washed with Povidone-iodine before the procedure.

Adapt the antibiotic treatment based on the results of the bacteriological test of amniotic fluid and the antibiotic sensitivity testing. Duration of treatment: ⩾15 days.

Obstetric treatment: preference for vaginal delivery.

Note!

The newborn must be transferred to neonatology.

4. ENDOMETRITIS

4.1. Definition

An infection of the uterine lining observed after a delivery or an abortion.

4.2. Issue

It is often linked to conditions for childbirth. As it progresses, the infection can lead to serious, even lethal, complications.
It can lead to sequelae such as secondary infertility.

4.3. Diagnosis

Clinical :

- Fever, chills
- Abdominal pains
- Infected and foul-smelling lochia
- Abdominal distension
- Uterus tender upon movement
- Poor uterine involution
- Vaginal bleeding

Paraclinical :

- Kg
- cm
- Bacteriological examination of lochia
- Hemoculture, if possible

4.4. Therapeutic management

- Administer a combination of antibiotics until up to 24-48 hours after the symptoms and signs have disappeared
- Clindamycin 600 mg IV every 8 hours;
- PLUS gentamicin 5 mg/kg IV every 24 hours.
- If clindamycin is not available, give:
- Ampicillin 2g IV every 6 hours;
- PLUS gentamicin 5 mg/kg IV every 24 hours.
- Perform a transfusion if necessary

Note!

Rule out a partially retained placenta

Adapt the antibiotic treatment based on the results of the bacteriological test of lochia and the antibiotic sensitivity testing

Note!

To minimise the risk of endometritis, routinely use sterile gloves as soon as the premature rupture of the membranes is suspected and strictly apply all infection-prevention measures.

5. MILK DUCT ECTASIA

5.1. Definition

infection-related inflammation of the milk ducts.

5.2. Issue

This is a common pathology, which has a considerable impact on the newborn's feeding (the pain can bother the mother and make her stop breastfeeding).

5.3. Diagnosis

- Clinical: signs of inflammation (fever, pain, rash, warmth, swelling, Budin's sign (expressed milk on the compress: the pus remains on the compress, leaving a yellowish stain)
- Paraclinical: germs at issue are highlighted.

5.4. Therapeutic management

- Stop breastfeeding, empty the breast and discard the milk until recovered
- Cloxacillin 500 mg in four divided doses daily by mouth for 7 to 10 days or Erythromycin: 500 mg orally 3 times per day for 10 days
- Acetylsalicylic acid: 1 g, 3 times per day

6. BREAST ABSCESS

6.1. Definition

A build-up of pus at the mammary gland.

> **Note!**
> **Express the milk from the affected breast and continue breastfeeding with the unaffected breast**

6.2. Issue

Relatively common complications, especially during breastfeeding. It is often the culmination of milk duct ectasia.

6.3. Diagnosis

is clinical:

- Stabbing pain, warmth
- Fever
- Fluctuation (when the build-up is not deep).
- Sometimes spontaneous fistulation with oozing pus from an external orifice.

6.4. Therapeutic management

Medical treatment:

- Cloxacillin 500 mg in four divided doses daily by mouth for 7 to 10 days or Erythromycin: 500 mg orally 3 times per day for 10 days
- Acetylsalicylic acid: 1 g, 3 times per day
- Surgical treatment:
- Incise and/or drain the abscess and pack with gauze.

> **Note!**
> **Do not combine Erythromycin and ergot-type derivatives (Ergometrine).**

CHAPTER VI - CARING FOR NEWBORNS

1. ESSENTIAL CARE FOR NEWBORNS

1.1. IMMEDIATE CARE

Definition: care given to all newborns from the moment of birth to optimise chances of survival.

Issue: this is accessible and cheap care that must be provided at all levels of the healthcare pyramid. Significant levels of death and disability take place when this care is not provided.

Components of immediate newborn care

Stage 1: Dry and stimulate

- Wrap the baby in a clean and warm towel
- Immediately dry all of the baby's body and do not forget the head and limbs
- stimulate the baby by rubbing his/her back
- Change the wet towel.

Stage 2: Assessing the newborn (cry and respiration)

- If the newborn cries and breathes: continue immediate care
- If the newborn does not cry or breathe on its own: clamp and cut the cord, then start neonatal resuscitation (refer to chapter II on asphyxia and neonatal resuscitation).

Stage 3: Place the newborn in skin-to-skin contact to keep him/her warm

- Cover the head of the newborn with a hat
- Wrap the mother and newborn in a clean towel.

Stage 4: Perform delayed cord clamping 1 to 3 mins after birth and apply Chlorhexidine 7.1% gel once a day for a week or Chlorhexidine aqueous solution 7.1% and allow fresh air to reach the cord. Another option is to not apply anything to the cord and allow the fresh air to reach it.

Stage 5: Initiate early breastfeeding within one hour of birth (see figure)

- Help the mother to breastfeed in the preferred position
- If the child is born to a mother who is HIV+, practise protected breastfeeding (refer to the national guide on feeding newborns exposed to HIV).

Stage 6: Perform eye care:

- Wipe the eyes with clean compress or cloth and apply antiseptic eyewash (for example, 2.5% povidone-iodine) or antibiotic ointment (for example: Tetracycline 1%) in a single dose in each eye.

Stage 7: Give the newborn vitamin K1 in an IM injection to the antero-external side of the leg to prevent hemorrhagic disease. The recommended dose should be:

- 1 mg for newborns weighing more than 1500 g
- 0.5 mg for newborns weighing less than 1500 g.

Stage 8: Identify the newborn by attaching a bracelet bearing the name of the mother and the sex of the child.

Stage 9: Weigh the newborn, measure the size and head circumference of the newborn and record the results in the maternity card.

Stage 10: Register the data.

Stage 11: Vaccinate the newborn in accordance with national recommendations (BCG, Polio 0 and Hepatitis B).

Note!

It is vital that the newborn consumes colostrum. Defer the weighing for at least 6 hours and the warm bath for 24 hours except for newborns whose mothers are HIV-seropositive; they should be bathed within 6 hours. Keep Vitamin K1 away from light and heat (at least 25°C).

If a caesarean has been performed: place the newborn in skin-to-skin contact with his/her mother as soon as the condition of the mother is stable.

Good (left) and bad (right) positioning of the baby for breastfeeding

Good (left) and bad (right) positioning of the infant at the breast.

Infant latching on well (left) and infant latching on badly (right) sagittal view of the breast and of the infant.

1.2. ONGOING POSTNATAL CARE:

systematic assessment, advice and identification of danger signs. Immediate postnatal care is provided in the first 24 hours before discharge from the maternity ward.

This care is for the mother and the newborn

Systematic assessment of the newborn. This will include:

- analysing the mother's health card to look for any potential risk factors
- monitoring the newborn by assessing his/her temperature, respiration rate, heart rate or pulses of the cord
- performing the anthropometry (weight, size, head circumference)
- looking for congenital defects by examining the newborn from head to toe on the anterior side followed by the posterior side
- examining the cord
- looking for danger signs (see box).

Provide advice regarding feeding: exclusively breastfeeding until 6 months

- Provide advice regarding vaccinations: administer the BCG and Polio 0 vaccines at birth as well as, if possible, the Hepatitis B vaccine to prevent neonatal hepatitis. Advise the mother about complying with the vaccination schedule.

Support for mothers and families

- Schedule postnatal consultations in line with national recommendations: 48 -72 hrs (consultation 1) -7th to 14th day (consultation 2)-16th to 42nd day (consultation 3).
- Advise regarding family planning.

Search for danger signs

The mother/family should be taught about danger signs. These signs may indicate that the newborn has a serious illness. They are the following:

Note!

Tell the mother/family to bring the newborn to the healthcare facility immediately if even only one of these danger signs is present. The healthcare staff should initiate early treatment if possible and immediately refer to the healthcare referral facility

DANGERS SIGNS TO WATCH OUT FOR IN A NEWBORN

- abnormal respiration: rapid respiration (> 60 movements/ min) or respiration that is too slow (< 30 mouvements/min), severe intercostal and subcostal indrawing and/or grunting
- elevated temperature (>37°5 C) or lowered temperature (< 36°5 C)
- refusal to breastfeed
- red or purulent umbilicus
- lethargy or alterations of consciousness
- more than 10 cutaneous pustules
- paleness or cyanosis
- Jaundice
- Abdominal bloating
- convulsions
- a bulging fontanelle

2- ASPHYXIA AND RESUSCITATION IN THE DELIVERY ROOM

DEFINITION:

Asphyxia: The absence of crying and establishment of respiratory autonomy at birth.

Neonatal resuscitation: A set of emergency measures to help the newborn adapt to extrauterine life.

ISSUE

- Greater risk of death, serious neurosensory sequelae and disability
- These risks can be averted through the provision of care using simple measures with a customised algorithm.

PREPARING FOR NEONATAL RESUSCITATION

The first minute is the key to the survival of the newborn.

Good preparation includes the ability to identify risk factors, have the resuscitation equipment in place and the team ready. However, all deliveries are risky. Always be ready to perform resuscitation during a delivery that seems to be progressing normally.

- **Ensuring that the neonatal resuscitation equipment is available, clean and functional:**
  - a table with a heat source or a newborn's unit with adapted heat source
  - towels for drying the newborn (at least two towels or clean, dry cloths)
  - a hat and a pair of socks
  - a "pear" or a "penguin" for aspiration, preferably a aspirator
  - bag and mask ventilation with 2 masks; size 0 and 1
  - a stopwatch
  - a membrane stethoscope
  - a pair of sterile scissors or a scalpel
  - two pairs of sterile gloves
  - ties (tie wire) or clamps
  - suction catheters n° 6, 8 and 10

For complex resuscitation of newborns being performed in referral facilities, add:

- laryngoscope (blade 00 for preterm newborns, 0 for term newborns and 1 for macrosomic newborns)
- Endotracheal tubes (2.5 for preterm newborns, 3 for term and 3.5 for macrosomic newborns)
- Magill forceps
- Umbilical catheter kit or umbilical catheter tube or feeding tube n° 6
- adrenaline: 1 mg ampoules
- 2cc, 5cc, 10cc syringes
- glucose 10%, normal saline.

- **Strictly adhere to asepsis rules:** Hand-washing (use water and soap or hydroalcoholic solution).
- **Apply the correct technique for ventilation** (see box).
- **Ensure effective post-resuscitation monitoring** (respiratory rate, heart rate, temperature, sucking reflex).

POSSIBLE SCENARIOS

- meconium in the amniotic fluid
- No crying or autonomous respiration at birth.

PERFORMING RESUSCITATION

- **If there is meconium in the amniotic fluid:** assess and decide
  - First scenario: the newborn is energetic, breathing and with a good tonus. Aspirate the oral cavity and the nostrils and continue with immediate care
  - Second scenario: the newborn is not energetic, has not breathed and the tonus is not good: Aspirate the mouth, and aspirate under laryngoscope
  - Third scenario: the newborn is not energetic, has not breathed and the tonus is not good but the medical practitioner does not know how to intubate. Begin by aspirating the oral cavity and the nostrils, then start bag valve mask ventilation immediately.
- **If there is no meconium in the amniotic fluid** clamp and cut the umbilical cord
  - Dry and stimulate,
  - Position the newborn on the newborn resuscitation area. The newborn must be in the dorsal decubitus position with the head in a neutral position (moderate extension of the neck). First suction the oral cavity in under 5 seconds, followed by the nasal cavities once or twice only and, upon removal of the tube (otherwise there is a risk of traumatic oedema of the nasal cavities).
  - Then, assess respiration if the newborn is not breathing, start bag and mask ventilation.

Mask ventilation technique

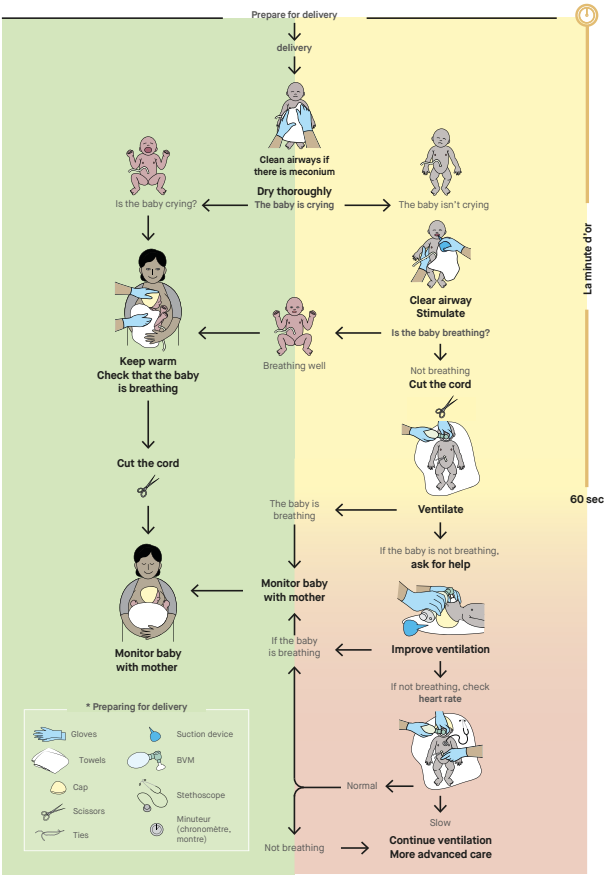
- Ensure the head is moderately extended (sniffing position or in neutral position while supporting the chin
- Choose the appropriate mask (0 for preterm/low birth weight; 1 for term newborn or normal birth weight)
- Apply the lower edge of the mask to the tip of the chin, then place the mask over the mouth and nose
- Ensure the mask forms a hermetic seal over the face, covering the mouth and nose
- Hold the mask on the face by putting the thumb and index finger on the top of the mask. Use the middle finger to hold the chin close to the mask.
- Use the 4th and 5th fingers to hold the jaw forward and help to leave the respiratory tract open.
- Apply firmly by pressing lightly on the top of the mask and gently holding the chin up to the mask.
- If the mask is not hermetically sealed, it will be impossible to transport air to the lungs by pressing on the bag. The air will flow out from under the edge of the mask.
- Do not press the mask to the face too hard. Doing so could change the position of the head and disrupt the air penetrating the lungs.
- Press the bag to cause a slight lifting of the chest, as if the newborn were breathing easily. Ensure there is no leakage between the mask and the face of the newborn. Press the bag more firmly if you want to insufflate more air.
- Give 40 breaths per minute, counting out loud: "one, two, three, one two, three". If you press the bag at the same time as you say "one", and you release at the same time as you say "two, three", you can ventilate at a rhythm that enables the air to penetrate and leave the lungs.

After 30 seconds of well-performed ventilation, assess respiration:

- If the newborn is breathing with a heart rate of > 100 beats/min, continue with immediate care (see essential care)
- If the newborn is not breathing, request help while continuing ventilation and implement the resuscitation program: external cardiac massage combined with ventilation, the administration of adrenaline, endotracheal intubation and ventilation with a tube.

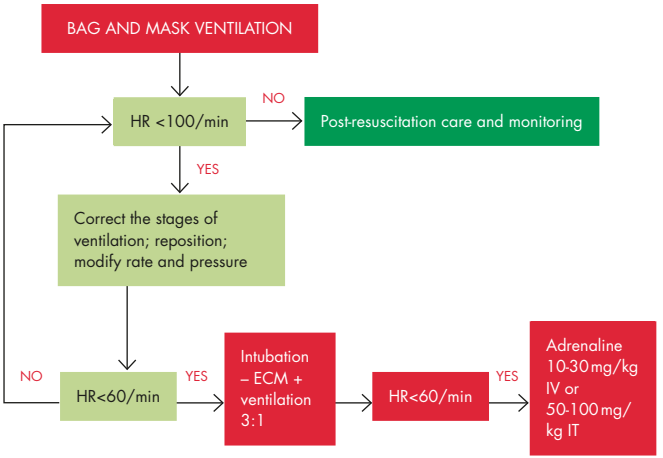
ACTION PLAN

HELPING BABIES BREATHE



Nb: In labour: Help not needed in 90% of cases; help needed in 10% of cases with help for heart issues needed in 1% of cases.

ALGORITHM FOR COMPLETE NEONATAL RESUSCITATION



In BEmONC facilities use HBB
In CEmONC facilities use complete resuscitation
External cardiac massage (ECM) always combined with bag and mask ventilation

Indication: Heart rate less than 60 beats/min after 30 seconds of effective mask ventilation

Technique:

- Position of 2 operators
  - Operator performing ventilation at the head
  - Operator performing ECM to the side
- Types of technique

- Two-thumb technique (the easiest to perform and the recommended technique): Thorax held with 2 hands, with the thumbs placed either one on top of the other or side-by-side under the inter-mamillary line
- 2-finger technique: Place 2 fingertips of the same hand on the lower third of the newborn's sternum at a right angle to the chest, with the other hand holding the back.

- Compression rate: 3 pressions/1 insufflation = heart rate: 120/min

Assessing the effectiveness of the ECM:

- Improvement in heart rate
- Peripheral pulse detected (femoral, umbilical cord vessels)

Images of external cardiac massage (RCP/EmONC) 113

External cardiac massage: 2-thumb technique Two-finger technique.

Intubation

- Indications: need to prolong manual ventilation or ineffectiveness of mask ventilation

– Equipment

- Tubes depending on the weight of the newborn (< 2,500 g: n° 2.5; 2500 - 3500 g: n° 3; >3500 g: n° 3.5)
- Marker most often on nasal ala: 7 cm + 1 cm/kg and the mouth. Position of the newborn: dorsal decubitus with neck arcing down slightly.

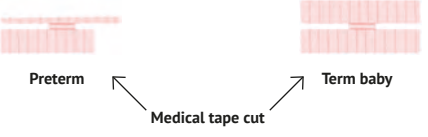
– Technique :

- Introduce the tracheal intubation tube into one of the nostrils and slide it like with a suction probe
- Put the laryngoscope in place via the mouth. Hold the laryngoscope in the left hand, push the tongue to the left to see the uvula
- Lift the epiglottis: to expose the glottis.

Using the Magill forceps and holding the end of the probe, press on the vocal cords

- Remove the laryngoscope; keep the tube at nose level
- Place the tube at the corresponding marker (7 + 1 cm/kg)
- Attach with medical tape (see photo)
- Auscultate the lung fields to verify it is in the correct position: hear symmetrical breath sounds

Technique for attaching the tube



Artificial ventilation with tube
With a self-inflating Ambu bag for babies (manual)
A respirator should be used while transferring to the neonatology unit

Insertion of an umbilical venous catheter
Rigorous aseptic procedures required ++ with disinfection of the periumbilical region

– Equipment:
- Sterile gloves
- Sterile aperture drape
- Surgical instruments

– Techniques
- Identify the vein (which is wider than the 2 arteries), using a forceps
- Introduce the catheter until the blood freely returns; if there is resistance, stop and try again
- Ensure there is good reflux
- Attach with a suture thread
- Infuse Glucose 10% (3 ml Kg/h in continuous drip): Indication = prevention or treatment of hypoglycaemia

– Drugs
- Adrenaline 1 mg = 1 cc + 9 cc normal saline solution = 10 cc
- Adrenaline 0.5 mg = 1 cc + 4cc normal saline solution = 5 cc
- Adrenaline 0.25 mg = 1 cc + 1.5 cc = 2.5 cc
- Dosing: 0.1 to 0.3 ml/Kg IV through umbilical or intratracheal catheter every 5 mins
- Indications: heart rate < 60/min

Note!

Never 30% Glucose (osmolarity++)
Conditions for use of Bicarbonate 42 per 1000: newborn on respirator and monitored and blood gas available

WHEN DO I STOP RESUSCITATING?
After 10 minutes of well-performed ventilation.
POST-RESUSCITATION care:

- Monitor the newborn every 15 mins for 2 hours: suction, respiratory rate, heart rate, temperature, capillary refill time (CRT)
- Transfer any newborn not in a stable condition or who has undergone intense resuscitation to the neonatal unit. (See data sheet on transferring newborns)

3. PRETERM AND TERM NEWBORNS WITH LOW BIRTH WEIGHT

3.1. Definition and classification:

LOW BIRTH WEIGHT
Definition: a newborn with a birth weight of less than 2500 g. The newborn can be preterm or term.
Low Birth Rate Classification

- Extremely low birth weight: between 500 and 999 g inclusive
- Very low birth weight: between 1000 and 1499 g inclusive
- Low birth weight: between 1500 and 2499 g inclusive

PRETERM
Definition: a birth that occurs before the 37th week of gestation

Preterm classification:

- Extremely preterm: born between 22 and 26 weeks of gestation
- Extremely preterm: born between 26 and 28 weeks of gestation
- Very preterm: born between 28 and 32 weeks of gestation

- Moderate preterm: born between 32 and 34 weeks of gestation
- Late preterm: born between 34 and 37 weeks of gestation

3.2. Issue

- This is the primary cause of neonatal mortality and of neurosensory sequelae and disability.
- Elevated risk of complications.
- Importance of Kangaroo mother care in preventing hypothermia.

3.3. Diagnosis

- Term < 37 weeks of gestation: anamnestic criteria: Date of last menstruation and early ultrasound before 12 weeks of gestation
- Morphological and neurological criteria (see box)

Features	Very preterm	Preterm	Term
Lanugo	Absent	Abundant	Absent
Plantar creases	None	Some on the anterior third of the soles of the feet	Covering the soles of the feet
External genital organs	Smooth scrotum; undescended gonads; small protruding labia	In boys: scrotum with some creases; gonads situated high in the canal; in girls: labia minora are the same size as the labia majora	In boys: scrotum has numerous creases; gonads have descended into the scrotum; in girls: the labia majora cover the labia minora
Nipple diameter	Flat areola	<10 mm	>=10mm diameter

Pinna	Can crease and do not return to initial form; very thin or absent cartilage	Can crease and slowly return to initial form;	Cartilage all over the edge of the ear that returns to its initial form
Skin	thin, almost translucent, venules visible	thin, venules less visible	Thick
Posture	hyperextended limbs	Lower limbs flexed and upper limbs extended	Four limbs flexed
			

3.4. Therapeutic management

3.4.1. Preventing and treating hypothermia with Kangaroo Mother Care (KMC):

KMC is skin-to-skin contact with the mother or another family member. It is safe, effective and humane. Eligibility criteria: newborn weighs less than 2000g and is stable (in respiratory, circulatory and neurological terms)

Description of the Technique

- Strict hygiene (the mother or person who will hold the baby must wash themselves twice a day and carefully wash their hands with water and soap before touching the newborn)
- The newborn should wear only a hat, socks and a nappy
- Vertical prone position "like a frog" on the mother's chest;
- In direct contact with the skin;
- Between the two (2) breasts of the mother, day or night;
- Kangaroo pouch to support the baby; if not available, use a clean towel
- Newborn wrapped in the clothes of the mother.

Elements to monitor: temperature, weight, suction, colouring, respiratory rate, heart rate.

3.4.2. Feeding: Prioritize breastfeeding. If this is not possible, give milk adapted to preterm babies. Manual extraction of breast milk for preterm newborns having difficulty breastfeeding

Manual expression of breastmilk
Hold the areola with the thumb and index finger and squeeze towards the thoracic cavity.
a. Hold the breast between the thumb and the index finger and press behind the areola.
b. Press around all the edges to empty the breast.

a. **b**. **c**.

3.4.3. Identifying complications and referring
(see referral data sheet)

Note!

Systematically wash hands with clean water and soap before and after touching preterm and term newborns.

4. EARLY-ONSET NEONATAL INFECTION

4.1. Definition: manifestations resulting from infectious agents in a newborn aged between 0 and 7 days.

4.2. Issue:

- One of the main causes of death in newborns;
- Can lead to neurological sequelae if located in the meninges;
- The bacteria are becoming more resistant to antibiotics;
- Prevention is key and is achieved by implementing asepsis measures during labor and the neonatal period.

4.3. Diagnosis

Anamnestic arguments:

- Maternal infection in the last trimester of pregnancy that was not treated or mistreated
- Premature rupturing of the membranes of more than 12 hours
- Prolonged labor of more than 12 hours
- Stained and foul-smelling or purulent amniotic fluid
- Maternal fever of 38° C or higher during labor
- Unexplained prematurity
- Infection or maceration of one twin
- Home birth
- Neonatal asphyxia of unknown cause
- Difficult instrumental delivery
- Septic handling of the cord.

Clinical arguments:

Any newborn who is unwell should be suspected of having an infection until proven otherwise:

- Hypothermia
- Hyperthermia
- Neurological disorders: inability to breastfeed, hypotonia, adynamia, convulsions, abnormal movements

- Respiratory disorders: bradypnoea, polypnoea, apnoea, respiratory pause, signs of struggle (beaten nose alae, intercostal indrawing, funnel chest or pectus excavatum, grunting, paradoxical respiration), cyanosis
- Digestive disorders: diarrhoea, vomiting, abdominal meteorism
- Jaundice
- Rash and/or purulent discharge at the cord
- Skin lesions: macules, papules, pustules, blisters…

Paraclinical arguments:
Bacteriological samples: before any antibiotic treatment
- Peripheral samples (of use only in the first 6 hours of life): gastric fluid, cutaneous pustules if present and two other peripheral samples (external auditory canal, nostrils, anus)
- Central samples: CSF, hemoculture, CBEU

Biochemical samples: CRP>10 -20mg/l (of use after 12 hours of life). Take into account the laboratory's normal values when interpreting: Procalcitonin > 0.20 ng/ml can be done from H0
Samples for haematology: look for leukopoenia (WBC<5000/ml) or hyperleukocytosis with WBC > 25 000/ml; thrombocytopoenia with platelet count of < 150 000/ml. Therapeutic management

4.4. Preventive measures:
- Apply standard infection-prevention precautions and hygiene rules during the pregnancy, during the labour and involving the newborn;
- Ensure the pregnant woman is correctly screened and treated for infections.

4.5. Curative treatment:
Anamnestic arguments without obvious clinical signs: infectious risk

- ampicillin or injectable amoxicillin: 100 mg/kg/day IM in 2 doses with gentamicin 5 mg/kg in a single dose for 2 days, then assess CRP, haematology and bacteriology if available; if the result is positive, consider it to be a patent infection;

Anamnestic arguments with clinical signs: patent infection
- Give a first dose of antibiotic IM. Refer to the referral healthcare facility while adhering to the correct transfer criteria.

- Administer the antibiotics while respecting doses and duration if it is not possible to refer or if there are permissible conditions in your facility:
- **First line: injectable ampicillin or amoxicillin:**
  200mg/kg/day IV ideally, otherwise IM in 2 doses with gentamicin 5 mg/kg in one dose for 5 days slow IV over 30 minutes, otherwise IM
- **Second line: cefotaxime:**
  200 mg/kg/day in 2 injections, otherwise ceftriaxone 100 mg/kg in 1 injection (to be avoided if jaundice present) IV ideally, otherwise IM with Gentamicin 5 mg/kg in one dose slow IV over 30 minutes, otherwise IM

- **If pustules, abscesses or omphalitis present:**
  cloxacillin 200mg/ kg/day IV ideally, otherwise IM with Gentamicin 5 mg/kg in one dose for 5 days slow IV over 30 minutes, otherwise IM

- **The treatment duration is 10 days if meninges are not affected.**
  Up to 21 days, if meninges are affected

5. NEWBORNS OF MOTHERS SUFFERING FROM SPECIFIC PATHOLOGIES (HIV, VIRAL HEPATITIS B)

5.1. Newborn of a mother who is HIV-positive (PMTCT)

Note!

The newborn of a HIV-positive mother should be bathed soon after birth (before the 6th hour of life). Lukewarm water should be used, along with soap or 7.1% Chlorhexidine aqueous solution.

Do not suction the newborn unless absolutely necessary (secretions present in a newborn who is not crying or breathing spontaneously after drying and stimulation). The suction must be non-traumatic.

I. Option of Antiretrovirals (ARV) for a newborn of a mother receiving ARV treatment and has chosen to breastfeed (protected breastfeeding)

<table>
<tr><th></th><th></th><th>Mother:
Option B+ for life</th><th>Newborn</th></tr>
<tr><td rowspan="2">HIV 1</td><td>Morning</td><td>No treatment</td><td rowspan="2">NVP syrup from birth until six weeks:
- If weight < 2000 g: 2 mg/kg/day
- If weight = 2000 to 2499 g: 10 mg once a day
- If weight > 2500 g: 15 mg once a day</td></tr>
<tr><td>Evening</td><td>TDF 300mg + 3TC150mg + EFV
600 mg* as soon as the woman is diagnosed</td></tr>
<tr><td rowspan="2">HIV 2 or HIV 1 and 2</td><td>Morning</td><td>LPV/r 400/100mg (2 tablets)</td><td rowspan="2">AZT syrup from birth until six weeks
- If weight < 2000 g: 2mg/kg/day
- If weight = 2000 to 2499 g: 10 mg twice a day
- If weight > 2500g: 15 mg twice a day</td></tr>
<tr><td>Evening</td><td>TDF 300mg + 3TC150mg + (1 tablet) + LPV/r 400/100mg (2 tablets)</td></tr>
</table>

*Efavirenz is recommended for the evening because of the side effects which affect the Central Nervous System (CNS),
namely: dizziness, difficulty concentrating, drowsiness during the day. Breastfeeding shall be exclusive up to 6 months with cessation at 12 months if the child has a negative PCR and at 24 months if the PCR is positive. Supplemental food can be introduced from 6 months.
2. If the mother chooses Breast Milk Substitute, ensure that the following conditions are met: the food is acceptable, feasible, affordable, sustainable and safe (AFASS). The newborn must receive a prophylaxis by administration of NVP once a day

If the serological status of the mother is unknown: carry out a double screening test for HIV and syphilis
1. If the mother is HIV positive: give her ARVs
2. If the mother is positive for syphilis: treat the mother (see gynaecological protocol)
1. For asymptomatic newborns: Benzathine benzyl peni 50 000 IU/kg in 1 injection IM
2. For symptomatic newborns: Aqueous Benzylpenicillin (Peni G) 100,000 to 150,000 IU/kg/day in 2- 3 infusions for 10-15 days or Procaine penicillin 50 000 IU/kg in one dose IM for 10 to 15 days.

NB: Proscribe mixed feeding (breast milk + breast milk substitute) for newborns of HIV positive mothers

Arrange an appointment for 6 weeks after birth for vaccination, the PCR and starting the infant of the HIV positive mother on cotrimoxazole.

If the mother has HIV1 for four to six weeks or AZT twice a day for four to six weeks; if the mother has HIV2; if the mother tested positive for syphilis during the pregnancy and was treated and if the newborn is asymptomatic: Monitor the newborn

If the mother tested positive for Syphilis during the pregnancy and was not treated: Treat the mother and the newborn (see protocol below).

5.2. Newborn of mothers positive for HBs antigen

- It is now strongly recommended that the First of the vaccine against hepatitis B be administered at birth in the Expanded Programs on Immunisation.

- If this does not happen, and if the mother carries the HBs antigen, administer one dose of the hepatitis B vaccine within 24 hours of birth to prevent perinatal transmission, which gives rise to a risk of chronic hepatitis and liver cancer.

6. JAUNDICE IN NEWBORNS

6.1. Definition

- Yellow colouration of the teguments and mucous membranes due to hyperbilirubinaemia
- High frequency at 50% of term newborns and 80% of preterms with risk of nuclear jaundice or hyper bilirubin encephalopathy.

6.2. Early detection

- Yellow colouration of skin and mucous membranes
- Clinical assessment in the first 24 hours of life, then continue to examine it at least once a day.
- Quantitative analysis of conjugated and unconjugated bilirubin and determine the phototherapy zone on the curve.

6.3. Identifying the cause

Is it only jaundice? Is there an underlying problem?

- Jaundice is isolated, not intense and appears after 48 hours of life
- Fetal-maternal incompatibility with haemolysis: group and Rhesus (mother and newborn)
- G6PD deficiency
- Hematomas caused by trauma at birth (hematoma, subcutaneous haematoma, cephalohematoma)
- Infection: Sepsis, congenital infections (TORCH)
- Biliary atresia

6.4. Early and appropriate treatment

Phototherapy

- The primary treatment of jaundice in newborns: simple, safe, effective
- Helps to reduce levels of free bilirubin in the blood and prevent any increase beyond dangerous thresholds
- Equipment: conventional/intensive phototherapy device, protective glasses, nappy, phototherapy curve.

- Conditions of use: baby naked, eyes and gonads protected, distance of 20 to 30 cm between the newborn and the light
- Newborn sufficiently hydrated (increase breast feeds)
- Do not use if conjugated bilirubin is predominant
- Stop the phototherapy when the bilirubinemia is below the phototherapy zone on the curve. Otherwise, stop when the bilirubinemia is < 50 mmol/l or 3 mg/dl.

Specific treatment of the cause

- Antibiotics if there is an infection (see early neonatal infection)
- Avoid medications that may increase the level of free bilirubin (ceftriaxone)
- Exchange transfusion in the event of foetal-maternal incompatibility
- Surgery for biliary atresia

Exchange transfusion

- Procedure that can be performed in referral facilities,
- High-risk procedure (mortality ⩾ 1%); limit it as much as possible and opt for intensive phototherapy (Tunnel)

6.5. Prevention

- Administer anti-D gamma globulin to a Rhesus negative mother who has given birth to a Rhesus positive newborn before 72 hours of life
- Early and exclusive breastfeeding
- Research risk factors: ABO or Rh incompatibility, G6PD, preterm or low birth weight, infection, insufficient nutrition, traumatic delivery, cephalohematoma, history of jaundice in siblings of newborn.

Data sheet on emergency obstetric care

DATA SHEET N° 1: SHOCK

Note!
EXTREME EMERGENCY - DO NOT DELAY TREATMENT

Definition

Imbalance, reversible or not between the blood vessels and the blood volume: "There is not enough liquid in the blood vessels". This results in a lack of inflow of blood, and oxygen to the tissues which, if damaged, releases toxic substances, in particular acids (acidosis).

Types of shock:

1- Hypovolemic shock: loss of liquids (diarrhoea, vomiting, dehydration) or loss of blood (internal or external haemorrhaging: haemorrhagic shock)
2- Anaphylactic shock: the vessels do not contract and remain dilated: this is vasoplegic shock.
3- Cardiogenic shock: the heart fails and cannot mobilize blood volume (decompensated heart failure, linked to infarctus).
4- Septic shock: several mechanisms combine: vasoplegia (see 2 above), hypovolemia (1), decompensated heart failure (3).

Signs of shock:

ABP	**Collapsed (< 80/60 mm Hg)**
Pulse	**Thready and rapid (⩾ 110 pls/mn)**
Urine output	**Decreased to nothing (<30 ml/h)**
Respiration	**Rapid and superficial (>30 mvts/mn)**
Skin	**Perspiration and clamminess**
Extremities	**Cold and cyanotic**
General condition	**Altered**
Digestive problems	**Nausea, vomiting, intense thirst**
Disturbances of consciousness	**Agitation, anguish, somnolence even coma**

Comment
Complementary examinations must not delay management.

Managing and treating shock

Note!
EXTREME EMERGENCY - DO NOT DELAY TREATMENT

In BEmONC facilities:
1- Clear the airways if necessary
2- IV Insertion of 2 G16 or G18 catheters 3-Raise the patient's legs (except in cases of cardiogenic shock)
3 - Quickly (500cc in 15 minutes) infuse macromolecule or Ringer's lactate or 9‰ normal saline (except in cases of cardiogenic shock)

4 - Monitor:
- pulse, ABP (every 15 mins)
- temperature (3 times per day)
- Respiratory rate (every 15 mins)
- state of consciousness (every 15 mins)
- urine output (every hour)
- fetal heartbeats (every 15 mins)
- uterine contractions, if necessary 6- Organise referral

In CEmONC facilities:

General rules:
- Mobilize all available staff as a matter of urgency
- Monitor vital signs
- Place the patient in the lateral decubitus position to limit the risk of inhalation should vomiting occur and clear the respiratory tract
- Cover the patient to prevent her from getting cold
- Raise the legs of the patient to facilitate venous return
- Start two IV infusions with 16 or 18 G catheters or needles and take samples for emergency tests (blood group, CBC, CRP, compatibility test); if not possible, perform a venous cutdown
- Quickly infuse normal saline or Ringer's lactate; at least two litres during the first hour, with the first litre having to be administered in 15 to 20 minutes
- In the event of shock resulting from a haemorrhage, the flow of the infusion must be quicker in order to replace two to three times the estimated volume of blood lost
- Give 6 to 8 litres of oxygen per minute with a mask or a nasal tube
- Continue to monitor the vital signs and blood loss every 15 minutes
- Monitor urine flow (hourly diuresis) with a urinary catheter.

1- Call the doctor and apply the above procedure (BEmONC)

2- Oxygenate

3- Insert a self-retaining bladder

4- Replace fluids with:

- blood and blood derivatives
- macromolecules
- solutions (Ringer's lactate, normal saline 9 ‰)
- bicarbonate 14 ‰ to correct acidosis

5- Administer infusion of 0.5 mg Adrenaline

6- Administer 1g Paracetamol IV slowly if necessary (Dafalgan)

7- Administer antibiotic treatment if appropriate

8- Treat the cause

9- Monitor as in BEmONC (5).

10- Monitor the infusion: Continue quick infusion as long as the ABP and the pulse remain stationary or diuresis remains < 0.5cc/kg/hour.

- If the ABP rises (maximum 100 mmHg), the pulse slows down (< 100/min) and diuresis starts (reaching 0.5 to 1cc/kg/h), bring the flow back to 16 drops per minute.
- Watch out for the occurrence of congestion-related pulmonary rales, and adjust input if necessary. Should they occur, stop fluid replacement, administer furosemide (40 mg IV) and call a doctor.

DATA SHEET N° 2: Misoprostol in the treatment of incomplete abortions

Eligibility criteria

Misoprostol can be used for uncomplicated incomplete abortion at an early stage under the following conditions:

- Open cervix
- Vaginal bleeding or history of vaginal bleeding during this pregnancy
- Uterine size of 12 weeks of gestation or fewer Contraindications
- A known allergy to misoprostol or another prostaglandin
- Suspected extra-uterine pregnancy
- Signs of pelvic infection and/or septicaemia
- Haemodynamic instability or shock

Dosing

- Orally: a dose of 600 microgrammes
- Sublingually: a dose of 400 microgrammes. The woman must keep the tablet under her tongue for around 30 minutes. Any remaining fragments may be swallowed with water.
- Vaginally: a dose of 400 to 800 microgrammes

Side effects

	Description	Action to take
Pain/cramps	Cramps often occur in the first few hours but can start as soon as 30 minutes after the misoprostol is administered. The pain can be stronger than that usually experienced during menstruation.	> Position seated or lying down comfortably > Hot water bottle or heating pad > Paracetamol/ acetaminophen > Non-steroidal anti-inflammatory drugs (NSAIDS) such as Ibuprofen
Chills/fever	Chills are a short-lived, but common, side effect of misoprostol. Fever is less common and does not necessarily indicate an infection. Generally, the increase in temperature does not last longer than a few hours. Although infection is rare, fever or chills that last for more than 24 hours could indicate an infection.	> Reassure the woman that chills and fever are common side effects of misoprostol > Antipyretics if needed > If the fever or chills last for more than 24 hours or begin more than one day after the misoprostol is taken, the woman should be urged to contact a medical provider

	Description	Action to take
Bleeding	Generally, vaginal bleeding begins within an hour of the misoprostol being administered. Bleeding often lasts for 5 to 8 days on average (but may continue for up to two weeks). Spotting may persist until the next menstruation.	> Provide the woman with information regarding the expected volume of bleeding > The woman should be urged to inform a medical provider if she experiences the following: • Saturation of more than 2 very large (or local equivalent) sanitary towels each hour for more than 2 consecutive hours • Sudden heavy bleeding after bleeding had reduced or stopped for several days • Continuous bleeding for several weeks with dizziness or lightheadedness

	Description	Action to take
Heavy bleeding	Heavy and/or prolonged bleeding which significantly changes the haemoglobin level is not common. Some women will present with heavy bleeding according to the guidelines above.	> Surgical intervention to end the abortion if bleeding is heavy or prolonged > Administration of intravenous liquids if haemodynamic compromise manifests > A transfusion should take place only in cases where it is clearly medically indicated
Nausea/ vomiting	Nausea and vomiting can occur and often stop within 2 to 6 hours.	> Reassure the woman that the nausea and vomiting are potential side effects > An antiemetic can be administered if necessary
Diarrhoea	Diarrhoea is a common, short- lived side effect of misoprostol and should stop within one day.	> Reassure the woman that misoprostol sometimes causes diarrhoea and that it stops quickly

	Description	Action to take
Infection	An established endometrial and/or Pelvic infection is rare. Infection is generally treated with oral antibiotics.	> If an infection is suspected, the woman should be assessed > If there are signs of septicaemia or serious infection, the woman should immediately undergo a surgical evacuation and receive antibiotic cover > Serious infections could require hospitalisation and parenteral antibiotics

Taken from: Misoprostol for Treatment of Incomplete Abortion: An Introductory Guidebook. Gynuity Health Projects

Follow-up visit

- 7 days after it is taken
- Side effects?
- Examination: bleeding, size of uterus
- If there is doubt regarding uterine vacuity:
  - Either a check one week later
  - or Manual Vacuum Aspiration
- Counselling for family planning
- Offer of other Reproductive Health services

DATA SHEET N° 3:
ORGANIZING THE REFERRAL

Defining the concepts

A referral: the mechanism by which a maternity ward directs a patient with needs outside of its scope of competence to a more specialised and better-equipped facility (a hospital, generally), for adequate treatment.

Counter-referral: the mechanism by which a more specialised and better-equipped facility directs a patient, having treated the patient, to the maternity ward that had referred them, to ensure continuity of care and post-hospitalisation follow-up.

The referral/counter-referral system: the set of measures taken to ensure back and forth movement of patients between healthcare facilities of differing levels of competence, to provide the patients with the care that they need in the right place and at the right time.

Evacuation: conventionally, this term is used to denote a referral made in an emergency situation. This applies to emergency obstetric and neonatal care (EmONC).

Feedback: the response of the referral facility to the healthcare facility that referred the patient to them. Includes information regarding the admittance of the patient, the diagnosis arrived at, the treatment administered and prescriptions for continuing treatment.

Issue

The need for referrals/evacuations is linked to how the health system is organized. Insufficient resources, both human and material, give rise to several levels of care; three or four depending in the country. In the context of EmONC, it is sufficient to consider two levels: peripheral health facilities and reference facilities.
The peripheral health facilities deliver basic emergency obstetric

and neonatal care (BEmONC) that comprises the following seven interventions:

- Parenteral administration of antibiotics
- Parenteral administration of oxytocics
- Parenteral administration of anticonvulsants
- Manual extraction of the placenta (manual removal and uterine examination)
- evacuation of the remains of the abortion by digital curettage, instrumental curettage, manual vacuum aspiration (MVA) or electric vacuum aspiration
- forceps- or ventouse-assisted vaginal delivery (instrumental delivery).
- neonatal resuscitation

Reference facilities are hospitals, including district hospitals. They provide comprehensive emergency obstetric and neonatal care (CEmONC) which includes, in addition to the seven aforementioned elements:

- blood transfusions and
- caesareans

Referrals and counter referrals define the patient pathway between the two levels of the functional unit of the health system, the health district.

Elements of a referral

Information on the referral should include:

- preparation regarding the obstetric emergency by the referring maternity ward
- the mode of transport for transporting referred patients
- Emergency reception at reference facility

The referral conditions are met if:

- a standardised reference form is used
- the reference facility is alerted by landline, mobile phone
- medical transport is used (ambulance, qualified staff and appropriate first aid kit)
- the service protocols and flowcharts for treating patients are

implemented at the peripheral facility and the reference facility
- first aid or emergency kits are available
- there is communication between the centres as well as effective feedback on the newborns; a basic principle is that the best mobile incubator is the mother's stomach. In other words, it is better to refer to at-risk pregnancies than to children after birth.

The evacuation of the newborn should take place in the same conditions as above, but you must ensure that there is competent staff and equipment appropriate for the newborn present.

DATA SHEET N° 4:
CARRYING OUT BLOOD TRANSFUSIONS

Indications for transfusion

A transfusion of blood or blood derivatives is generally indicated when:

- there has been a decrease in the production of blood or some of its elements
- there has been an increase in use caused by destruction or loss of some elements of the blood
- a specific component of the blood has malfunctioned (red blood cells, platelets or coagulation factors)
- There is serious haemorrhaging.

Blood group and compatibility

ABO system:

Blood groups are categorised under the ABO system by the presence of surface antigens on the red blood cells and/or of antibodies in the plasma of an individual.
Red blood cells carry zero, one or two of the possible antigens, A and B. Plasma contains zero, one or two of the possible antibodies, which are anti-A and anti-B. If an individual has an antigen on his/her red blood cells, he/she does not have the opposing antibody in his/her plasma. That determines the 4 possible groups in the ABO system, with each group bearing the name of the antigen(s) present on the surface of its red blood cells.

The 4 groups are:

- group A (has anti-B antibody in the plasma)
- group B (has anti-A antibody in the plasma)
- group AB (neither anti-A, nor anti-B) is the so-called "universal recipient"
- group O (neither A, nor B) is the so-called "universal donor"

To study compatibility, we directly mix the plasma of a patient with the red blood cells of the donor to check that haemolysis due to an

undetected antibody does not occur (see "compatibility test", p. 157).

The Rhesus system:

Rh surface antigens determine the rhesus negative (absence of Rh antigen) and rhesus positive (presence of Rh antigen) groups. Rh- individuals will produce anti-Rh antibodies when exposed to Rh+ blood. This does not pose a problem upon first exposure but the circulating antibodies will cause haemolysis to occur upon subsequent exposures. This can happen during the pregnancy: the Rh- mother can produce anti-Rh+ antibodies if the foetus is Rh+. When a Rh- mother produces anti-Rh antibodies, the antibodies cross the placenta to the foetus and massive fetal haemolysis will occur. This can be fatal for the foetus.
Administering anti-Rh antibodies prevents the Rh- patient from producing anti-Rh antibodies. The anti-Rh antibodies must be administered to Rh- individuals receiving Rh+ blood, or to Rh- mothers giving birth to a Rh+ newborn (fetal red blood cells enter the mother's circulatory system during delivery). The recommended dosage is one dose (300µg/vial) per 15 ml of transfused Rh+ blood.

Complications of transfusions

Transfusion reactions

Acute haemolysis

- **Signs:** anxiety, agitation, chest pains, lumbago, headaches, dyspnoea, chills, fever.

Action to take

1- Stop the transfusion
2- Send the transfused blood and the blood of the patient to the laboratory to re-check compatibility
3- Treat the hypotension with replacement fluids and vasopressors, if necessary
4- Consider administering corticosteroids
5- Preserve renal function by maintaining abundant diuresis (replacement fluids, Furosemide, Mannitol). If this fails, consider

haemodialysis
6- Watch out for possible Disseminated Intravascular Coagulation (DIC).

Non-haemolytic transfusion reactions

Signs: anxiety, pruritus, moderate dyspnoea
Action to take:
1- Stop the transfusion 2- If there is urticaria:
- Slow down the transfusion
- give antipyretics and corticosteroids

3- If there is a history of post-transfusion fever or allergic reactions: give antipyretics (paracetamol 500mg) and an antihistamine before the transfusion.

- **Metabolic complications of blood transfusions:**

Hypocalcaemia

Caused by the citrate used as an anticoagulant (to preserve blood) binding with calcium.
Action to take: after 2 vials of blood, slowly give one ampoule of calcium IV.
- Post-transfusion infection-related complications:
- Viral Hepatitis B or C
- WHO
- Bacterial infections
- Post-transfusion malaria

BEDSIDE BLOOD COMPATIBILITY TEST (BEFORE TRANSFUSION)

- Wash your hands thoroughly or wear gloves
- Prepare a sheet (or Bristol card) and a needle cap
- Deposit 2 drops of the patient's serum on it, with the serum coming from blood that was taken using a dry tube
- Add one drop of the blood to be transfused
- Mix them together
- Ensure you have good light
- Sway it in your hands to check for agglutination
- Leave it to rest (for 5 mins) and review
- Note on Bristol card:
  - The surname and first name of the patient
  - The number of the transfused vial
  - The group of the transfused vial
  - The initials of the transfusion specialist
  - The date of the transfusion
  - Leave to dry and attach the Bristol card to the file
  - Note the expiry date of the vial in the patient's file
  - Monitor the patient once the transfusion starts and look for the presence or absence of localised pruritus, urticaria, pains, chills.

Outcomes:

- Agglutination = incompatibility: do not connect and send the vial back to the blood bank
- No agglutination at all = blood assumed compatible:
- connect without forgetting to monitor
- Doubt = redo the test.

** Agglutination: the formation of an immune complex of antigens and antibodies. This complex is visible to the naked eye in the form of precipitate clusters.*

DATA SHEET N° 5:
MANUAL VACUUM ASPIRATION (MVA)

Equipment
1- Sterile aspiration kit
2- Sterile Pozzi forceps
3- Sterile speculum
4- Sterile uterine sound
5- Set of sterile Heggar dilators
6- Antiseptic solution
7- Soap solution
8- Sterile compresses
9- Sterile gloves
10- Ringed forceps
11- 10cc sterile syringe
12- Extra sterile suction syringe
13- Sterile bladder catheter
14- Source of light
15- Vial containing Formol 10%

Preparing the patient
1- Provide the patient with information, reassurance and explanations about the procedure and its various stages, without worrying the patient
2- Put the patient in the lithotomy position
3- Empty the bladder
4- Clean the vulvo-perineal area

The preparation of the operator
1- Wear a gown
2- Surgically scrub hands
3- Wear gloves

Procedure
1- Administer paracervical anaesthetic

2- Smear the perineum with Betadine
3- Arrange the sterile aperture drape
4- Put the speculum in place
5- Disinfect the cervix and the vagina with an antiseptic solution
6- Inject 2 ml of 2% lidocaine into the cervical tissue at the 12 o'clock site
7- Place the Pozzi forceps on the anterior labia of the cervix, horizontally
8- Perform hysterometry
9- Complete the paracervical block with 2% lidocaine: 2ml at 3 o'clock; 2ml at 5 o'clock; 2ml at 7 o'clock; 2ml at 9 o'clock
10- Dilate the cervix with the Heggar dilator, if necessary
11- Adapt the cannula to the source of aspiration. Verify the syringe can seal hermetically, create the vacuum in the syringe
12- Insert the cannula into the uterus until it reaches the uterine fundus
13- Start the aspiration mechanism
14- Perform aspiration by shaving each side of the uterine cavity with the cannula, using in-and-out and rotational movements, while guiding the opening of the cannula towards the uterine wall
15- Continue the procedure until the aspirator no longer finds any debris; foam appears in the aspirator
16- Remove the cannula and then the Pozzi forceps (one jaw at a time)
17- Monitor residual blood flow until it dries
18- Disinfect the cervix and the vagina with an antiseptic solution
19- Remove the speculum
20- Insert a sterile sanitary towel
21- Put the patient in a comfortable position
22- Administer a uterotonic and antibiotic treatment
23- Send the product to anatomical pathology (vial with formol 10%)
24- Decontaminate the equipment after the procedure

Note!

Perform the aspiration only at less than twelve weeks' gestation.

Post-procedure counselling

1- Counselling regarding choice of contraceptive method
2- Counselling regarding warning signs of complications:
- Persistent pelvic pains
- Heavy and persistent bleeding
- Fever
- Foul-smelling discharge

3- Make an appointment

DATA SHEET N° 6:
MANUAL REMOVAL OF PLACENTA/UTERINE EXAMINATION

DEfinitions
1- Manual removal of the placenta: manual extraction of the placenta to outside of the uterus
2- Uterine exploration: checking the uterine vacuity and integrity

Indications
1- Haemorrhaging during delivery with the placenta partially detached from, retained in or stuck in the uterus
2- The placenta has not yet been expelled 30 minutes after delivery
3- Failed active management of the third stage of labour

Equipment
1- Sterile tray
2- Plastic examination gloves
3- Sterile latex examination gloves
4- Antiseptics
5- Antibiotics
6- Uterotonics
7- Sterile compresses
8- Equipment for vulval wash

Operational protocol
BEmONC maternity ward:
1- Prepare the patient psychologically (reassure and give her confidence)
2- Put the patient in the lithotomy position
3- Apply an analgesic - Pethidine (Dolosal) or slowly give 10mg Diazepam IV to sedate
4- Give 2g Ampicillin IV
5- Adhere to aseptic technique; wear sterile gloves
6- Insert hands into the genital tract following the path of the cord
7- With the other hand, take hold of the uterine fundus and lower it

towards the pubis
8 - Identify where placenta inserts
9 - Detach the placenta with the ulnar side of the hand
10 - Bring the detached placenta to the vagina in one movement
11- Conclude with a uterine exploration:
- Explore the bottom, sides and edges of the uterus
- Check uterine vacuity and integrity
- Administer a uterotonic

12 - Clean the perineum and the vagina with Betadine
13 - Draw up a monitoring form and initiate monitoring (ABP, pulse, mucous membranes, blood flow, temperature, uterine features)
14 - Depending on how the monitored elements progress, arrange the referral.

Note!

Do not persist if placenta accreta is present (the placenta cannot be detached; it is embedded in the muscle)

CEmONC maternity ward

1- Adopt the same procedure as for a BEmONC maternity ward but perform the delivery under general anaesthetic if there is no contraindication
2- Order blood depending on the patient's condition
3- Perform a transfusion depending on how her general condition develops
4- Take note of the referral sheet
5- Inform the obstetrician
6- Verify the haemostasis parameters
7- Conduct an examination with retractors
8- Perform an MVA if the cervix is closed
9- Perform complementary examinations
10- Send the product for anataomical pathology examination
11- Draw up a monitoring form

DATA SHEET N° 7: VENTOUSE

Definition

A vacuum suction device (vacuum cup) used to extract the fetus, which is presenting head-first, when it is time for delivery. This instrument uses suction to attach a plastic or metal cup to the baby's head.

Indications

- Fetus in distress with head at vulva
- Stop progression of presentation upon full dilation
- Presentation must be cephalic, with flexed head (vertex)
- Insufficient expulsion efforts (maternal fatigue)

Conditions for extraction by ventouse

- The presentation must be vertex with flexed and engaged head
- Dilation must be complete
- The membranes must be ruptured
- The bladder must be empty

Contraindications

- Prematurity
- Presentations: face, brow, breech
- Caput succedaneum

Technique

- Prepare the equipment
- Perform aseptic hand-washing technique
- Empty the bladder
- Wear sterile gloves
- Aseptic vulva/vagina
- Verify the exact position of the presentation
- Slide a sterile drape under the buttocks of the parturient
- Protect the vulva with a sterile aperture drape

- Spread the labia of the vulva
- Insert and apply the largest suction cup that can be used easily on the head of the fetus (bone) while avoiding fontanelle
- Place your finger around the suction cup to prevent soft maternal elements being taken
- Start the pump
- Wait for one minute so that the hold is robust
- Perform tractions during contractions following normal delivery
- Deliver the fetal head
- Stop the suction
- Finish delivery
- If an episiotomy was performed, or there are tears: repair

Incidents/Accidents

- Visible imprint
- Scalp injuries
- Caput succedaneum
- Cephalohematoma
- Subarachnoid hemorrhage
- Cranial vault fracture

DATA SHEET N° 8:
ACTIVE MANAGEMENT OF THE THIRD STAGE OF LABOR (AMTSL)

Objectives of AMTSL

1- To expedite placental separation
2- To reduce blood loss by reducing physiological retroplacental haematomas
3- To encourage uterine contraction so that the uterine vessels can collapse quickly.

AMTSL techniques

1 - Injection of a uterotonic
- Immediately after the baby has been extracted, and after ensuring that there is no other fetus, inject 10 units of oxytocin IM.

2 - Controlled cord traction
- Wait 1-3 minutes and clamp the cord with a forceps.
- Stabilize the uterus by exerting light pressure upwards
- Wait for a uterine contraction
- Pull the cord very gently downwards while applying upwards pressure to the uterus
- Gather the placenta in 2 hands and place on a tray

3 - Palpate the uterus to ensure it is contracted

4 - If the uterus has not contracted, or has contracted poorly, perform uterine massage

- Immediately massage the uterine fundus through the abdominal wall until the uterus contracts.
- Ensure that the uterus remains well contracted by palpating it from time to time

5 - Additional AMTSL actions
- Examining the placenta
- Examining the genital tract for tears
- Treating injuries
- Ensuring strict monitoring is carried out in the post-partum period:

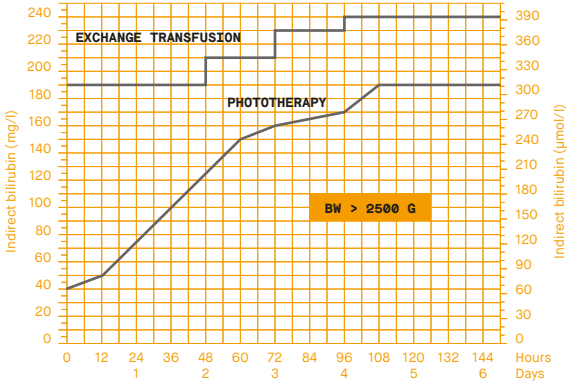
- Constants: pulse, arterial blood pressure
- Uterine fundus
- Vaginal bleeding
- Condition of the parturient

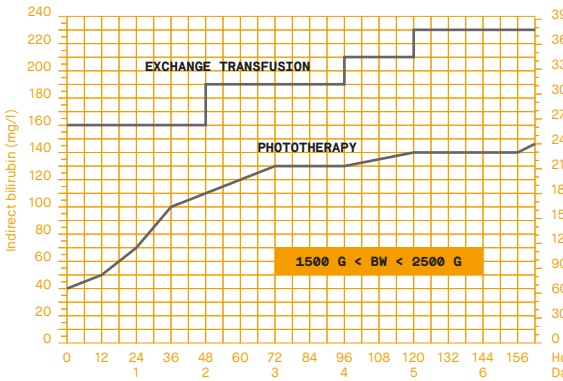
DATA SHEET N° 9
ROBSON CLASSIFICATION OF CAESAREAN SECTIONS

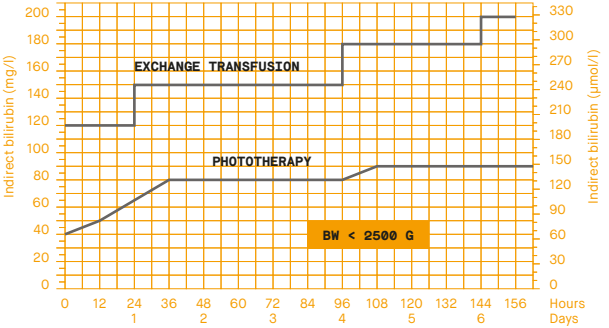
GROUP 1		Nulliparous, single cephalic, ≥ 37 weeks, in spontaneous labour	GROUP 6		All nulliparous with a single breech
GROUP 2		Nulliparous, single cephalic, ≥ 37 weeks, induced or CS before labour	GROUP 7		All multiparous with a single breech, including previous caesarean section
GROUP 3		Multiparous (excluding previous caesarean section), singleton, cephalic, ≥ 37 weeks' gestation, in spontaneous labor	GROUP 8		All multiple pregnancies (including previous cesarean section)
GROUP 4		Multiparous without a previous uterine scar, with singleton, cephalic pregnancy, ≥ 37 weeks' gestation, induced or caesarean section before labour	GROUP 9		All women with a single pregnancy in transverse or oblique lie (including those with previous caesarean section)
GROUP 5		Previous cesarean section, singleton, cephalic, ≥ 37 weeks' gestation	GROUP 10		All singleton, cephalic, < 37 weeks' gestation pregnancies (including previous cesarean section)

Source WHO 2015

DATA SHEET N° 10:
EXCHANGE TRANSFUSION AND PHOTOTHERAPY







Note!

A patient being treated for jaundice should not be exposed to sunlight!!!

DATA SHEET N° 11
Levels of hyperbilirubinemia in term and preterm newborns that determine whether treatment is by phototherapy or exchange transfusion.

Age	Phototherapy		Exchange transfusion	
	Newborns ⩾35 WA	Newborns <35 WA	Newborns ⩾35 WA	Newborns <35 WA
Day 1	All visible jaundice		260 mmol/l (15mg/dl)	220 mmol/l (10mg/dl)
Day 2	260 mmol/l (15mg/dl)	170 mmol/l (10mg/dl)	425 mmol/l (25mg/dl)	260 mmol/l (15mg/dl)
Day 3	310 mmol/L (18mg/dL)	250mmol/L (15mg/dL)	425 mmol/L (25mg/dL)	340 mmol/L (20mg/dL)

DATA SHEET N° 12
TRANSFERRING A NEWBORN

It is often necessary to transfer a newborn from a peripheral facility to a referral facility if the environment (equipment, staff, level of care) is not conducive to the situation being addressed. The transfer must be in accordance with standardized norms that help prevent the death of the newborn.

1. Indications

- The newborn in a life-threatening situation, regardless of the cause
- Newborn premature with pathology, in particular respiratory distress
- Newborn after intense resuscitation at birth
- Bacterial infection, documented or suspected
- Newborn at metabolic risk, in particular hypoglycemia
- Malformation

2. Components

- **Communications**

Make a phone call to ensure that the referral facility can receive the newborn. Never transfer the newborn without being sure that the newborn can be admitted.
Write a letter or complete the referral form, providing as much information as possible about pre-, peri- and post-treatment and the treatment initially administered.

- **Thermoregulation**

Prevent the newborn becoming cold during the transfer: put the newborn in "skin-to-skin" contact wearing a hat and socks preferably, or else well wrapped up and wearing a hat and socks.

- **Regulating intake of carbohydrates**

Preventing a drop in blood sugar (hypoglycaemia) that could damage

the brain, by giving the low birth weight newborn, if possible and regularly, small quantities of breast milk with a small syringe, a small spoon or an orogastric tube, especially if the transfer is long.

- **Respiration**

Aspirate periodically with the "penguin" or the "pear" if the newborn is congested

3. In practice

- Treatment before and during the transfer
  - Clear the airways by aspiration
  - Get them warm: dress the newborn warmly or put the newborn in skin-to-skin contact with the mother or another family member
  - Infuse glucose 5% or give 10cc of glucose 5% by gastric tube or cup or have the newborn breastfeed if possible
  - Observe aseptic techniques
  - First dose of antibiotic if infection is suspected
  - Oxygenate, if possible
- Prerequisites
  - Inform the parents and the referral facility,
  - Organize transport,
  - Complete Write up the referral form
  - Favor transfer in utero

4. Transfer in utero

Orient pregnant women for labor based on the type of maternity ward in the event of known risk: obstetric, fetal or maternal.

Recommendations for the clinical practice of emergency obstetric and neonatal care in Africa