CAESAREAN SECTION
(intra- and post- operative care)

Caesarean section is only a small part of comprehensive obstetrical care and needs to be integrated in it.

Except in case of absolute maternal indications, the risk / benefit ratio for the setting and the patient should be determined prior to performing a Caesarean section. In low-resourced settings with difficult access to services and high fertility rates the risks (immediate but also at mid and long term) to the mother (including death, infection, future rupture of the uterus, future placenta accrete, etc.) usually outweighs the potential benefit for the child.

Absolute maternal indications (1-2% of all deliveries) for Caesarean sections are:

- Significant* ante-partum haemorrhage due to abruption or placenta praevia.
- Malpresentation (e.g. transverse lie or brow presentation or face with posterior chin).
- Cephalopelvic disproportion: as per a partograph demonstrating failure to progress (in active phase with adequate uterine activity), unable to do instrumental delivery or ruptured uterus.
- > 2 previous Caesarean sections.

**Significant: maternal cardiac insufficiency (e.g. tachycardia, hypotension).*

Recommendations:

The standards for surgical services should be followed:

- Appropriate surgical human resources: obstetrician, surgeon or medical doctor with specific training for Caesarean section.
- Appropriate anaesthesia human resources: anaesthesiologist or nurse anaesthetist.
- Appropriate structure: OT, sterilization, recovery room.
- Appropriate equipment: c.f. surgical recommendations.
- Appropriate care: postoperative surveillance, pain management, etc.

Where there are several Caesarean sections being performed (e.g. 5-10 / month), a midwife, obstetrician gynaecologist or medical person with obstetric experience is an **essential component of the team** to ensure implementation of **comprehensive** quality obstetric care and to help determine the indication and the risk / benefit of a Caesarean section. Where there are frequent Caesarean sections (>10 / month) an obstetrician must be considered.
NB: technical ability to perform Caesarean section is only one small part of obstetrical skills required to provide comprehensive obstetrical care

Pre-operative assessment:

- Appropriate indication: ideally the indication is decided by an obstetrician or medical doctor with obstetric skills, after proposal of the midwife.
- When there is no doctor with obstetrical skills, a midwife is the most qualified person to propose a Caesarean section.
- Classical pre-anaesthesia assessment.
- Systematic prophylaxis of acid aspiration: effervescent Cimetidine 200 mg, in 30 ml of water, per os, ideally 20 minutes before surgery.

General Methodology:

- If possible, use a transverse cutaneous incision.
- Where appropriate use a lower uterine segment transverse uterine incision except in case of transverse presentation with shoulder presentation, lower segment with significant adhesions, or presence of a large fibroma in the lower segment. Pay attention in patients with prolonged obstructed labour to enter above the cervix.
- **Document the procedure (as for any surgical intervention).**
- Give the patient a certificate at discharge including the indication for the Caesarean section and type of uterine incision (vertical "classical" or lower uterine segment transverse) to allow decision for mode of delivery in subsequent pregnancies.

Antibiotic therapy:

See protocol antibiotic therapy in surgery.

For any Caesarean section: antibiotic prophylaxis – systematically: single dose Cefazolin 2g IV during anaesthesia induction and before surgical incision.

According to the context: curative antibiotic treatment may be indicated:

- In case of prolonged rupture of membranes (>12 hours) without fever:
  If the patient has not already received 2 doses of antibiotics during labour give a short term oral course of antibiotics Amoxicillin / Clavulanic acid 1 gr x 2 / day PO or Amoxicillin 500 mg x 3 / day + Metronidazole 500 mg x 3 / day PO, for 5 days maximum.

- In case of maternal fever (exclude other causes of fever: e.g. dehydration, malaria):
  Amoxicillin / Clavulanic acid 1 gr IV (or Ampicillin 2 gr + Metronidazole 500 mg IV) every **6** to 8 hours.
  Then after 48 hours without fever:
  Change to oral route Amoxicillin / Clavulanic acid 1 gr x 3 / day PO or Amoxicillin 1 gr x 3 / day + Metronidazole 500 mg x 3 / day PO to complete 5 days of treatment.

- In case of severe chorioamnionitis (prolonged high fever, foul smelling amniotic fluid, abdominal pain), peritonitis, prolonged or infected uterine rupture, or septic shock :
  Amoxicillin / Clavulanic acid 1 gr IV (or Ampicillin 2 gr + Metronidazole 500 mg IV) every **6** to 8 hours + Gentamicin 3 mg / kg IV in one single injection daily.
  Then after 48 hours without fever, change to oral route Amoxicillin / Clavulanic acid 1 gr x 3 / day PO or Amoxicillin 1 gr x 3 / day + Metronidazole 500 mg x 3 / day PO to complete 10 days of treatment.

- In case of allergy, replace Cefazolin by Erythromycin

TYPE OF PROCEDURE	ANTIBIOTHERAPY /ANTIBIOPROPHYLAXIS
Clean minor surgery, Type 1 Episiotomy, cervix-vaginal tear, vulva tear	No antibiotics
Clean major surgery, Type 1 Planned Caesarean section	**Cefazolin** 2 gr IV
Clean emergency surgery, Type 2 Emergency Caesarean section Caesarean section during labour Hysterectomy, new uterine rupture In case of prolonged rupture of membranes (>12 hours) without fever and without 2 doses of ATB during labour If maternal fever (irrespective of duration of rupture of membranes)	 **Cefazolin** 2 gr IV **Cefazolin** 2 gr IV *Post-Op* **Amoxicillin** / **Clavulanic acid** 1gr x 2 / day PO (or Amoxicillin 500 mg x 3 / day + Metronidazole 500 mg x 3 / day PO), for 5 days maximum **Cefazolin** 2 gr IV + **Metronidazole** 500 mg IV *Post-Op:* **Amoxicillin** / **Clavulanic acid** 1 gr IV (or Ampicillin 2 gr + Metronidazole 500 mg IV) every **6** to 8 hours. After 48 hours without fever, change to oral route Amoxicillin / Clavulanic acid 1 gr x 3 / day PO (or Amoxicillin 1 gr x 3 / day + Metronidazole 500 mg x 3 / day PO) to complete 5 days of treatment
Contaminated surgery, Type 3 Caesarean section with: - chorioamnionitis - peritonitis - prolonged (>6 hours) or infected uterine rupture - septic shock	Curative antibiotics: **Amoxicillin** / **Clavulanic acid** 1 gr (or Ampicillin 2 gr + Metronidazole 500 mg IV) every **6** -8 hours + **Gentamicin**: 3 mg/kg daily (IV in 30 min) *Post-Op:* After 48 hours without fever, change to oral route **Amoxicillin** / **Clavulanic acid** 1 gr x 3 / day PO (or Amoxicillin 1 gr x 3 / day + Metronidazole 500 mg x 3 / day PO) to complete 10 days of treatment

Intra uterine foetal death, meconium stained amniotic fluid, and an initial attempt at instrumental vaginal delivery, are NOT indications for antibiotic treatment.

Oxytocin (Syntocinon®):

Systematically 10 IU IV after cord clamping, and continue with 20 IU in Ringer Lactate 1 L over 2 hours (can be continued up to a maximum of 60 IU if ongoing loss).

Recovery room:

All Caesarean section should go through a Recovery room for closer surveillance (vital signs, bleeding, analgesia, etc.) and should be discharged to the ward only after the approval of the anaesthetist.

Analgesia:

See protocol post-operative analgesia.
- Compulsory use of auto evaluation scale.
- Systematic prescription of analgesics (at fixed time).
- Oral route as much as possible.
- Avoid NSAID in case of risk of renal function disturbance and impaired coagulation (sepsis, pre eclampsia).
    - D0 – D5 : Paracetamol: 1 g / 6 h
    - D0 – D3 : NSAID Ibuprofen: 400 mg / 8 h
    - D0 – D1 : Tramadol: 50 mg / 8 h

  Adapt according to a systematic and regular auto evaluation of the pain. If necessary, Morphine 10 mg every 4 hours could be added.
- Finally, infiltration of the scar by the surgeon at the end of the procedure with Levobupivacaine 0,5% (max. dose 2 mg / kg; max. 150 mg or max. 30 ml), can provide analgesia in the initial 4 to 8 hours.

Feeding:

- Spinal anaesthesia: can start drinking 2 hours post operatively.
- General anaesthesia: can start drinking 4 hours post operatively.
- In case of uncomplicated Caesarean section (no hysterectomy, no peritonitis): light feeding is possible after 6 hours (<u>it is not necessary to await presence of bowel sounds</u>).

Urinary catheter:

Remove urinary catheter at D1. Except if:
- Urine is not clear or bloody urine persisting longer than 24 hours.
- < 500 ml of urine in 24 h.
- Intra- or post- operative complication.
- Surgeon or anaesthetist advises otherwise.

Infusion:

In case of uncomplicated Caesarean Section:
- Day 0: 1 L of Glucose 5% and 1 L of Ringer's lactate / 24 h.
- Day 1: Remove IV line and catheter.
- Compensate extra losses with Ringer's lactate (loss volume times 2).

Mobilisation:

- Day 0 : Start mobilization 6 hours post-operative.
- Day 1 : Patient can mobilise normally.

Thromboprophylaxis:

- Uncomplicated Caesarean section: no systematic thromboprophylaxis.
- Caesarean section with risks factors of venous thromboembolism: Nadroparin.

Dressing and removal of sutures:

- Remove 1st dressing at D5 (may be reinforced before if necessary).
- Subsequently may be left open or with a 2nd dressing until removal of sutures.
- Removal of skin sutures (if non absorbable) D 7-10.

Hygiene:

- Simple shower
- No vaginal douche necessary

Newborn care:

- Resuscitation
- Immediate care (cord care, vitamin K 1 mg IM stat, tetracycline eye ointment stat).
- Breastfeeding as soon as possible (pay attention in case of administration of Morphine).
- Vaccinations pre discharge (BCG, polio, +/- HBV).
- If chorioamnionitis, newborn should receive antibiotic treatment.