

## Recommendations and Guidelines for Obstetric Anesthesia in Belgium

These guidelines have been elaborated by the Obstetric Anesthesia Working Group of the Belgian Association for Regional Anesthesia (BARA)\*

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This paper is accompanied by an Editorial. To be sure understanding all the information contained in the following guidelines, please first read this editorial.

### GUIDELINE 1 : PRE-OPERATIVE SCREENING

#### *Assessment (grade D)*

- An evaluation of the parturient is recommended before any anesthetic or analgesic procedure.
- An anesthesiologist or anesthesia resident performs this evaluation.
- The entire parturient file must be available in due time to the attending anesthesiologist.
- If the parturient has no significant medical (ASA Physical Status Classification 1 or 2), surgical or obstetrical history, the pre-anesthetic evaluation, including a history and a physical examination, may be performed on the day of the analgesic or anesthetic procedure.
- If the parturient has a significant medical, surgical or obstetrical history, information of the anesthesia team by the obstetrician is recommended, as early as possible. In these cases, a planned pre-operative consultation is recommended for the patient.

#### *Laboratory tests (grade D)*

- In the absence of any significant medical (ASA 1 or 2), surgical, or obstetrical history, and in the absence of a history of coagulation disorder, no routine platelet count or other coagulation tests are required.

- For patients with preeclampsia or other known or suspected hemostasis disorder, a platelet count, liver function test, and coagulation screening tests are recommended.
- In case of anticipated hemorrhagic complications or suggestive history of previous allo-immunization, a blood type and screen is recommended.

#### *Informed consent (grade D)*

- During the antenatal period, objective information, including benefits and risks, regarding obstetric anesthesia and analgesia must be available to the parturient. The parturient should be offered the possibility to receive more in depth information from an anesthesiologist. This information should ideally be available in a written form.

### GUIDELINE 2 : EQUIPMENT

- A labor and delivery ward includes labor rooms (for the first stage of labor), and delivery rooms (for the second stage of labor). Labor and delivery rooms can be combined.
- An operating room must be available around the clock for caesarean sections, and obstetric emergencies. It must be possible to deliver the baby within a reasonable amount of time from the decision to perform a Caesarean section (Grade 1, D).

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- Labor and/or delivery rooms are equipped with (Grade 1, D) :
  - Oxygen wall outlets (at least two in the delivery room).
  - Suctioning systems.
  - Emergency call system to summon an attending general practitioner.
  - Adequate lighting.
  - Electric power points.
- Each labor and delivery room is equipped with electronic fetal heart rate (FHR) monitoring. For maternal monitoring, a non-invasive blood pressure monitor is available in each labor and delivery room. Additional maternal monitoring in the labor and delivery ward must include readily available continuous pulse oximeter and heart rate monitor (Grade 1, D).
- Any operating room used for Cesarean sections is equipped with the same quality of anesthetic equipment as available in operating rooms. The quality of such equipment is detailed in the most recent Belgian Standards for Patient Safety in Anesthesia (see below in 'Literature sources') (1, 2) : this includes appropriate equipment to deal with difficult intubation (Grade D).
- Postoperative care after Cesarean section should be performed according to the Belgian Safety First standards (1, 2) and should include appropriate monitoring.
- A fully-equipped resuscitation cart must be readily available on the labor and delivery ward. Uterine displacement equipment, to induce left lateral tilt, must also be readily available (Grade 1, D).
- Emergency drugs must be checked and replaced daily, and equipment must be checked and replaced whenever necessary.
- Routine control and maintenance of the technical equipment in the delivery suite is performed similarly to that of a standard operating room (Grade 1, D).
- Laboratory for hematology and biochemistry must be available around the clock, as well as pharmacy services and blood banking services.
- Blood gas analysis and facility for rapid hemoglobin estimation must be available.
- If anesthesia needs to be performed at the delivery suite, appropriate equipment and monitoring should be available according to the Belgian Safety First standards (1, 2).
- Intralipid for the provision of lipid rescue in case of local anesthetic agent toxicity must be available in the labor and delivery room, and a written

protocol for Intralipid administration must be available on the ward.

- All the above recommendations are grade 1, D.

#### GUIDELINE 3 : STERILE TECHNIQUE

- To perform a central neural blockade, the parturient back is prepared with an alcohol based chlorhexidine (Grade 1, A) antiseptic solution that should be left to dry for at least two minutes.
- Antiseptic solutions should not be present on the regional anesthesia tray (Grade 1, D).
- It is recommended that all injectable solutions are identified by the anesthesiologist who performs the block, and are aspirated from the original bottle in a sterile manner (Grade 1, B).
- The anesthesiologist wears a new facemask and a cap (Grade 1, B), washes or disinfects his/her hands with an alcohol-based antiseptic solution or soap (Grade 1, A) and wears sterile gloves (Grade 1, D).
- Sterile drapes delineate a sterile field (Grade 1, D).
- It is recommended that the nurse, midwife or any other skilled person helping the anesthesiologist wear a mask and a cap (Grade 1, B).
- It is suggested to use commercially supplied epidural solutions or solutions prepared by the pharmacy. It is suggested to minimize the breaking of a closed pump infusion system.
- The use of appropriate transparent semi-permeable dressings to inspect the insertion point of the catheter is suggested.
- It is a recommended option to use disposable equipment only (Grade 1, D).
- The hospital guidelines for hand hygiene must be strictly respected with removal of watches, jewelry, rings, and artificial nails before performing a neuraxial block (Grade 1, B).

#### GUIDELINE 4 : STAFFING

- Obstetric anesthesia is performed by an anesthesiologist.
- We recommend that in training specialists be supervised by such a person, according to their level of training and proficiency (Grade 1, D).

#### *Regional analgesia*

- We recommend the availability of an epidural labor analgesia service 24 hours a day (Grade 1,

D); we suggest that a regional block be performed within 30 minutes after being called (Grade 2, D).

- Following initiation of regional analgesia, it is recommended that an anesthesiologist remains available for at least 30 minutes (Grade 1, D).
- After initiation of labor analgesia or after administration of subsequent top-ups, the anesthesiologist stays in the near proximity of the parturient until she is relieved from her pain, maternal vital parameters are stable and fetal heart rate remains reassuring.
- In case of continuous infusion or Patient-Controlled Epidural Analgesia (PCEA), the parturient is visited and checked hourly. This task can be delegated to a skilled person (including midwife) having experience in labor analgesia. During these visits, the intensity of motor blockade and quality of analgesia are assessed and recorded on the parturient chart. Visiting the parturient only when called is not enough.
- The parturient should not be moved to the operating theatre to initiate labor analgesia (Grade 2, B).
- Neuraxial analgesia should not be withheld on the basis of an arbitrary cervical dilation. Clear evidence is available that early neuraxial labor analgesia does not affect the outcome of labor (Grade 1, A). Early initiation of neuraxial analgesia is advised for obstetric (e.g. twin gestation, preeclampsia...) or anesthetic indications (e.g. anticipated difficult airway, obesity,...). Late initiation of neuraxial analgesia (cervical dilation > 8 cm) is not contraindicated and should be considered in case of dystocia.
- The anesthesiologist assumes the responsibility of the strategies to relieve maternal pain only if they were initiated by him/her. When epidural analgesia is initiated, additional forms of labor pain relief are only started following an explicit order of the attending anesthesiologist.

#### *Caesarean section*

- To be ready for an urgent Caesarean section, at any time, an anesthesiologist and appropriate staffing must be readily available. The delivery of the fetus must always be possible within a reasonable amount of time from being called (Grade D).
- Communication between the anesthesiologist and the obstetrician about urgency of the Caesarean section is compulsory. The use of an emergency classification is suggested (derived from

the paper of Lucas and Yentis, see below) (3) :

Grade	Definition	
1	Emergency.	Immediate threat to life of woman or fetus
2	Urgent.	Maternal or fetal compromise, which is not immediately life-threatening
3	Unplanned.	Early delivery is needed without any maternal or fetal compromise
4	Elective.	At a time to suit the parturient and the maternity team

- For Caesarean section, the same standards and guidelines should be applied as those existing for any operative procedure under anesthesia, as detailed in the most recent Belgian Standards for Patient Safety in Anesthesia (1, 2).

#### *Emergency*

- When, in case of an emergency maternal or fetal problem, the anesthesiologist is already involved in another procedure, he/she will designate a skilled person who will ensure the surveillance of one of the two patients, to the exclusion of any other activity during his/her absence. This surveillance remains the sole responsibility of the anesthesiologist in charge of the patient.

#### GUIDELINE 5 : MIDWIFERY TASKS

##### *Education of midwives*

- Pain is naturally a part of childbirth. Anesthesia is its modern counterpart. The 'raison d'être' of midwifery is to accompany childbirth. Therefore, an understanding the mechanisms and treatment of pain, and their practice, is a part of modern midwifery knowledge. Obstetric anesthesia and analgesia must be part of their formal education, training, and continuous postgraduate education.
- Guidelines should be available to midwives (and obstetricians) on conditions requiring antenatal referral to the anesthesiologist, to ensure that such women are seen and assessed by an anesthesiologist within a suitable time frame (Grade 1, D).
- Midwives being knowledgeable about pain management techniques should be supportive of the patient's decision to use them and develop the

most appropriate response to any request for analgesia (Grade 1, D).

- Midwives assist anesthesiologists on a regular basis to ensure maintenance of their competence (Grade 1, D).
- Quality of anesthesia care on an obstetric service is monitored on a regular basis, and the guidelines concerning midwife's acts, involving anesthesia care, are regularly evaluated and updated (Grade 1, D).

### *Analgesia*

- Midwives and anesthesiologists should agree on a hospital policy for the maintenance of epidural analgesia, and publish it as a written procedure defining the anesthesia care acts that can be delegated to midwives. This text must regularly be updated, and must be available to all concerned individuals (Grade 1, D).
- Midwives assist the anesthesiologist in preparing and performing the block. Midwives provide continuous care and monitoring of mother and fetus, during the central neural blockade (Grade 1, D).
- Midwives and obstetricians remain responsible for monitoring fetal well-being, prior, during, and after the initiation of regional block (Grade 1, D).
- Midwives monitor maternal blood pressure and heart rate, as well as fetal heart rate prior to and after the initiation of regional analgesia
- It is part of the specific midwife expertise to monitor the course of analgesia hourly, including the assessment of the spread and quality of analgesia, the assessment of motor block, the detection of adverse reactions, and the initiation of their treatment, according to existing protocols. They should also monitor the vital signs of both the parturient and fetus. All recorded data must be stored in the patient's file.
- Midwives are allowed to prepare and administer maintenance doses of analgesia medications through a catheter that was previously placed by the anesthesiologist. This must be done on the condition that a clear, written, and individualized medical prescription is kept in the patient's file. The initial loading dose to initiate analgesia is given by the anesthesiologist.
- The anesthesiologist administers the test and/or the initial bolus dose of the analgesia medications, and initiates the maintenance regimen (see below the legal technical acts of midwives in Belgium). Clear, written, and individualized

medical prescriptions contain the composition of the analgesia solution and dose per unit of time, and are inserted in the patient's file, which contains orders to the midwife.

- On explicit medical prescription by the anesthesiologist, midwives can remove the epidural catheter.
- Obstetric anesthesia/analgesia guidelines that are evidence-based and referenced should always be available on the delivery suite. If possible, these guidelines should also be posted on the hospital Intranet.

### *Anesthesia*

- If midwives have to assist, on a routine basis, Caesarean sections, they must be trained to help the anesthesiologist in administering regional and general anesthesia for that procedure.
- During surgery, the midwifery staff should be available to help or assist the anesthesiologist.
- Midwives should also prepare the willing partner of the parturient to assist the delivery, both psychologically and practically.
- Supervising a parturient in the early postoperative phase and evaluating discharge criteria to the ward are also part of the normal tasks delegated to the midwife.

### GUIDELINE 6 : MAINTENANCE OF ANALGESIA

#### *Before initiation of regional analgesia*

- Prior to the initiation of the regional block, a midwife or an obstetrician should record fetal heart rate. This recording is examined and found satisfactory by the midwife or the obstetrician.
- An intravenous infusion must be initiated prior to the initiation of regional analgesia.
- Maternal blood pressure and heart rate must be measured and recorded at least once less than 30 minutes before establishing analgesia (Grade 1, D).
- While performing the neuraxial blockade, fetal heart rate monitoring may be interrupted, providing that the midwife or the obstetrician agree (Grade 1, D).

#### *After the initiation of regional analgesia*

- Maternal vital signs (at least blood pressure and heart rate) are monitored non-invasively and recorded at least every 5 minutes for at least

30 minutes, until these parameters are stable (Grade 1, D).

- Fetal heart rate is monitored and recorded continuously for at least 30 minutes following the initiation of regional blockade (Grade 1, D).
- A skilled person (obstetrician or midwife) monitors fetal heart rate either in the labor room (if central monitoring is absent) or in the labor and delivery area (if central monitoring is present) (Grade 1, D).
- The lateral position is encouraged during labor.

#### *Maintenance of analgesia*

- If an epidural continuous infusion or patient-controlled epidural analgesia is used, vital signs (hemodynamic parameters and consciousness) are monitored and recorded hourly (Grade 1, D).
- If analgesia is maintained by intermittent top-ups, maternal vital signs (at least blood pressure and heart rate) are monitored non-invasively and recorded at least every 5 minutes for 30 minutes after the top-up. Fetal heart rate is recorded continuously for at least 30 minutes following the bolus top-up (Grade 1, D).
- A skilled person (obstetrician or midwife) monitors fetal heart rate either in the labor room (if central monitoring is absent) or in the labor and delivery area (if central monitoring is present) (Grade D).

#### GUIDELINE 7 : MONITORING

##### *Maternal monitoring*

- Maternal monitoring during anesthesia for Caesarean section is similar to that advised for any surgical procedure by the Belgian Standards for Patient Safety in Anesthesia (1, 2) (Grade 1, D).
- During a Caesarean section, a left lateral tilt is the rule (Grade 1, B).

#### GUIDELINE 8 : AMBULATION

- When epidural analgesia and combined spinal-epidural analgesia are used, maternal ambulation is safe, provided that a local written policy is followed (Grade 1, A). It remains unproven that it has a positive effect on labor progress and outcome (Grade 2, B). However, patient satisfaction increases. In addition, there might be a positive

effect on urinary retention and the risk of deep venous thrombosis (Grade 2, D).

- The ASA I and II parturient, which do not require continuous FHR monitoring, is allowed to ambulate. Any other parturient is allowed to be mobile, provided that fetal heart rate can be continuously monitored by a telemetry (Grade 1, D).
- If ambulation is allowed, the mother should not leave the labor and delivery ward.
- While ambulating, the mother must be accompanied by a responsible adult (partner, family, midwife, etc...) (Grade 1, D).
- Ambulation is allowed if the following conditions are met (Grade 1, D) :

- Fetal heart rate monitoring is reassuring during the first 30 minutes after the initiation of analgesia.
- The ability of the parturient to be mobile is assessed by the midwife, or the anesthesiologist. The assessment must be based on a protocol, previously established by the anesthesiology department.
- Midwives and obstetricians do not object to ambulation in this specific patient.
- Mobility must be regularly re-evaluated by the midwives, using a pre-determined protocol.
- An epidural test-dose can potentially impair ambulation, and must therefore be used with caution (Grade 1, B).

#### GUIDELINE 9 : FLUID INTAKE

- It must be kept in mind that all pregnant women from the second trimester on are at risk of inhaling the gastric content (Grade 1, B and D).

##### *Labor*

- Clear liquids can be consumed during labor in moderate amounts (Grade 1, B). It is recommended to use isotonic sports drinks if clear liquids are consumed (Grade 1, B).
- When the parturient is in the active first stage of labor, solid foods and non-clear liquids are not allowed (Grade 1, D).

##### *Caesarean section*

- Before an elective Caesarean section, clear liquids can be consumed until two hours prior to the initiation of anesthesia (Grade 1, B) (see the paper by WONG *et al.*) (4)

- Solid food or non-clear liquids should be banned for at least six hours before an elective Caesarean section (Grade 1, D).
- Aspiration prophylaxis is mandatory for elective and emergency Caesarean section (Grade 1, B). It is recommended to give at least oral non-particular antacids.
- Clear liquids are all liquids, which do not contain solid material. Clear liquids are water, tea, black coffee, pulp-free fruit juice, carbonated drinks, isotonic sport drinks. The following drinks are NOT considered to be clear liquids : milk, pulp-containing fruit juice, and alcoholic beverages.

#### GUIDELINE 10 : CAESAREAN SECTION

##### *Choice of the anesthetic technique*

- Unless existing contraindications, regional anesthesia is the recommended option for elective Caesarean section (Grade B).
- The decision to use general anesthesia or a regional technique should be individualized, and based on anesthetic, obstetrical (e.g. elective versus urgent), and fetal risk factors, as well as on the preferences of the patient. An emergency Caesarean section does not automatically require a general anesthetic technique. General anesthesia is not induced until the surgeon is scrubbed, and ready to proceed with surgery (Grade 1, D).

##### *Informed consent*

- All women booked for elective Caesarean section should receive information about anesthesia for Caesarean section, preferably in a written form. Informed consent must be given before each elective Caesarean section, preferably in a written form (Grade 1, D).

##### *Availability*

- The time interval between the decision to perform an urgent (Grade 1) Caesarean section and the delivery of the baby should be as short as possible, provided that the anesthesiologist is informed as early as possible after the decision has been made (Grade 1, D). The welfare of the mother is always superior to the welfare of the fetus.

##### *Preload*

- An intravascular fluid preload using crystalloid or colloid solutions before spinal anesthesia re-

sults in a decreased incidence of hypotension, but does not reliably prevent it. Initiation of spinal anesthesia should not be delayed in order to administer a fixed volume of IV fluid (Grade 1, D).

##### *Vasopressors*

- Phenylephrine is the preferred vasopressor in the absence of maternal bradycardia (Grade 1, A).

##### *Antibiotics*

- Prophylactic antibiotics are the issue of a hospital policy, and should be agreed on by obstetricians and anesthesiologists. They can be administered during elective or emergent Caesarean sections (Grade 1, A). If administered, they should be given before skin incision.

##### *Prevention of uterine atony*

- Drugs to prevent uterine atony must be the subject of a hospital policy. However, it should be clear that all of these drugs have significant cardiovascular and cerebral side effects, especially when administered rapidly. Slow intravenous infusions or an administration through alternative routes is therefore preferable (Grade 1, B). The administration of uterotonic drugs should always be done according to a clearly defined homemade protocol.

##### *Operating room*

- The location for an elective or urgent Caesarean section is variable from one hospital to the other.
- In each case, the room should be fully equipped to the standards described for operating theatres in the Belgian Standards for Patient Safety in Anesthesia (1, 2). Operating department or midwifery staff trained to assist the anesthesiologist should be available throughout the procedure. A fully equipped and staffed recovery area is necessary (Grade 1, D).
- A 30° left lateral tilt is maintained during the procedure until delivery (Grade 1, D).

##### *Paternal presence – Multimedia*

- The presence of an accompanying person and the use of multimedia recordings depend on the individual hospital policy.

- During elective Caesarean delivery under regional anesthesia, a paternal presence should be allowed, provided that the obstetrician agrees.

#### *Postoperative period*

- All women who have received regional or general anesthesia for Caesarean section should benefit from the care of an anesthesiologist during the first hours and days after delivery. Follow-up should consist in regular visits on the ward.

#### GUIDELINE 11 : MATERNAL AND NEONATAL RESUSCITATION

##### *Maternal resuscitation*

- Whenever present, the anesthesiologist directs maternal resuscitation in a shared effort with the obstetrical team (Grade D).
- Left lateral tilt is mandatory (Grade C).
- If maternal circulation is not restored within 4 minutes after the occurrence of cardiac arrest, a Caesarean delivery should be initiated by the obstetrical team (Grade C).

##### *Neonatal resuscitation*

- Qualified personnel, other than the surgical team or the anesthesiologist attending the mother, should immediately be available to endorse the responsibility for the newborn resuscitation (Grade D).
- Neonatal resuscitation is the responsibility of the pediatrician, whenever his/her presence during delivery is legally mandatory.
- If the anesthesiologist judges that the mother requires immediate care, he/she cannot be held responsible for the neonate. He/she may, based on an individual judgment, assist briefly in neonatal resuscitation, only after having weighed the benefit for the newborn against the risk to the mother, and only when the care for the mother has been transferred to a skilled person who will perform this task to the exclusion of any other (Grade D).

#### GUIDELINE 12 : HIGH-RISK PREGNANCIES

- High-risk pregnancies include all pregnancies, which fall in one of the following categories (Grade D) :

- Hypertension, and particularly preeclampsia.
- Preterm labor.
- Preterm rupture of membranes.
- Maternal associated disease resulting in a III or IV ASA physical status.
- Antepartum obstetric hemorrhage.
- Fetal growth retardation.
- Twin or multiple pregnancy.
- Breech delivery.
- Vaginal delivery after a previous Caesarean section.
- Any conditions which increases the likelihood of a (semi-) urgent Caesarean section.
- Any condition, which complicates the safe institution of a regional block (anticoagulation, previous back surgery, etc...).
- Any condition, which can be associated with problematic tracheal intubation.
- Any disease associated with an increased sensitivity to any drug.
- Chorioamnionitis.
- Obesity or morbid obesity (BMI greater than 30 and 40, respectively).
- Diabetes.
- The anesthesiologist should be informed immediately after the admission of a high risk parturient.
- The anesthesiologist, obstetrician, midwife, and pediatrician establish a concerted plan of action. Communication is of supreme importance. A multidisciplinary approach is essential (Grade D). It is advised to write down an individualized anesthetic plan for delivery.
- It is advisable to establish regional analgesia early in the course of labor in the absence of contraindications (Grade D).
- When the obstetrician has a patient who has maternal-associated disease resulting in a class III or IV ASA physical status, he/she has to inform the anesthesiologist early during pregnancy, and a consultation with the anesthesiologist has to be planned at the beginning of the 3rd trimester to establish a plan of action for delivery (Grade D).
- Centers caring for high-risk pregnancies (Maternal Intensive Care units (MIC)) should feature facilities to establish prolonged neonatal care and maternal intensive care. It is a recommended option that at least one anesthesiologist acquires experience in the domain of obstetric anesthesia. Invasive monitoring equipment must be available in the delivery suite whenever a potentially unstable parturient is present (Grade D).

- High-risk pregnancies can only be managed by an anesthesiologist or by an anesthesiologist in training under the direct supervision of an anesthesiologist (Grade D).

#### Recommended readings

1. Belgian standards for patient safety in anesthesia. An update. *ACTA ANAESTHESIOLOGICA BELGICA*, **53**, 5-9, 2002.
2. Adriaensen H., Baele P., Barvais L., Camu F., DeVille A., Herregods L., Larbuisson R., Vandermeersch E., *Belgian standards for patient safety in anesthesia. The Belgian Anesthesia Patient Safety Steering-Committee*, *ACTA ANAESTHESIOLOGICA BELGICA*, **52**, 173-9, 2001.
3. Lucas D. N., Yentis S. M., Kinsella S. M., Holdcroft A., May A. E., Wee M., Robinson P. N., *Urgency of caesarean section : a new classification*, *J. R. SOC. MED.*, **93**, 346-50, 2000.
4. Wong C. A., McCarthy R. J., Fitzgerald P. C., Raikoff K., Avram M. J., *Gastric emptying of water in obese pregnant women at term*, *ANESTH. ANALG.*, **105**, 751-5, 2007.