



# Norwegian Standard for the Safe Practice of Anaesthesia

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## 1. Introduction

The Norwegian standard for the safe practice of anaesthesia was first published in 1991. It was then revised in 1994, and subsequently in 1998, 2005 and 2010. The revision process is carried out jointly by the Norwegian Association of Anaesthesiology and the Norwegian Association of Nurse Anaesthetists. This document must be read and interpreted as a whole.

The purpose of the Norwegian Standard for the Safe Practice of Anaesthesia is to protect patients by ensuring good practice in anaesthesia in Norway. The standard establishes normative guidelines for everyone who provides anaesthesia care, irrespective of their geographical location or the organisation they work for.<sup>1,2</sup>

All anaesthesia care must be patient-centred. This means that he/she must be kept informed and be involved in decision-making, as well as have the opportunity to give feedback that can be used to improve the patient experience and safety.

Wherever possible, the standard should be followed even in emergency situations, including when providing prehospital care. The Norwegian Standard for the Safe Practice of Anaesthesia must never lead to life-saving treatment being delayed. Any deviations from the standard must be justified and documented on a case-by-case basis.

This document must be revised regularly to ensure that it is in accordance with current legislation, medical/technological advances and best practice.

## 2. Organisation and areas of responsibility

### 2.1 Definitions

- The term anaesthesia care shall be taken to cover anaesthetic preoperative assessments, general anaesthesia, regional anaesthesia, intravenous sedation using a titrated dose, anaesthesia standby and postoperative care.
- Anaesthetic staff refers to consultant anaesthetists, anaesthetists and nurse anaesthetists.
- A consultant anaesthetist is a doctor who is a fully qualified specialist anaesthetist.
- In this document, the term anaesthetist refers to a doctor employed at an anaesthetic department (a consultant anaesthetist or registrar anaesthetist, but not a house officer).
- A nurse anaesthetist has a Master's degree or a post graduate education as nurse anaesthetist based on the Norwegian national curriculum or equivalent.
- The ASA group refers to the patient's physical condition based on the American Society of Anesthesiologist's classification system.<sup>3</sup>

## 2.2 Clinical responsibility

Any entity that provides anaesthesia care must have a consultant anaesthetist with overall clinical responsibility for anaesthesiology. In conjunction with anaesthesia care, it must always be clear which anaesthetist has clinical responsibility. The doctor with clinical responsibility must check that the anaesthetist on duty has the necessary qualifications to ensure patient safety when on duty.

## 2.3 Teamwork

Normally an anaesthesia team consists of an anaesthetist and a nurse anaesthetist. Additional resources may be added where necessary. The anaesthetist may be responsible for several patients under anaesthesia at the same time, provided that this is consistent with good practice.

The anaesthesia team is responsible for establishing clear agreements about the patient's perioperative care.

If anything unexpected occurs during anaesthesia, the nurse anaesthetist must notify the anaesthetist responsible as soon as possible.

## 2.4 Competencies

Healthcare personnel who will be administering sedatives/anaesthetics must be capable of dealing with their effects, side-effects and any complications.

Expertise in anaesthesia requires regular practice, continuing professional development and annual training on acute interventions (e.g. cardiac arrest, trauma, neonatal resuscitation and difficult airways), including communication and teamwork.

Nurse anaesthetists are qualified to independently administer general anaesthesia for minor operations on otherwise healthy patients (ASA I and II), provided that an anaesthetist has passed the patient as fit for anaesthesia and can be called upon if needed. Nurse anaesthetists are qualified to work in a team with an anaesthetist on anaesthesia for major operations and patients with more complex illnesses (ASA III and IV), as well as to monitor patients during regional anaesthesia, sedation and general anaesthesia.

## 2.5 Organisational structure

The work of the anaesthetic team shall be organised in such a way that it is always ready to deal with emergencies.

Hospitals providing obstetric services (maternity or gynaecology ward) must be capable of performing a Caesarean section within 15 minutes if there are known risk factors before or during delivery.<sup>4</sup> Anaesthetic care must therefore also be organised in a way that allows this.

In order to provide emergency care, a hospital must have the following:

- On-duty anaesthetic staff: at least a nurse anaesthetist or an anaesthetist.
- If the anaesthetist is on home call or in-house call, he or she must be available within 10 minutes.
- If the anaesthetist is a registrar, a consultant anaesthetist must be on call. The person on call must be able to attend quickly (within 30 minutes) if needed.
- Exemptions from the above requirements may be granted if a local risk and vulnerability analysis indicates that the organisational structure in place does not compromise patient safety.

### 3. Inspection and use of medical equipment

Procedures must be in place for the inspection, use and maintenance of medical equipment. All technical equipment must be registered and have an instruction manual in Norwegian. There must also be a system for training and approving users that complies with the requirements of the Directorate for Civil Protection and Emergency Planning.<sup>5</sup> Anaesthesia units and ventilators, including the patient system, must always be checked before use. The user must sign off that the equipment has been checked and approved for use.

### 4. Preoperative assessments, supervision and communication with patients

A medical assessment must be carried out and conclude that anaesthesia is necessary and consistent with good practice. Relevant information must be available. If necessary, past anaesthetic records or other documentation should be obtained.

A nurse anaesthetist or anaesthetist should be responsible for supervision, providing preoperative information and documentation. Before anaesthesia, an anaesthetist must declare the patient fit for anaesthesia and approve the type of anaesthesia.

The following must be taken into consideration and if necessary be checked:

- Medical information including height and weight
- Past anaesthesia
- Allergies or intolerances
- Current medication
- Bleeding disorders/coagulation status
- Physical and mental state of health
- Airways and intubation
- Results of any relevant supplementary examinations (blood tests, ECG, radiological investigations, spirometry, etc.)
- Results of any preoperative cardiac or pulmonary assessment
- Preoperative pain
- Preoperative fasting
- ASA group
- Plan for postoperative care including pain management

The assessment must take into account the type of anaesthesia and the nature of the intervention.

The patient must be informed of, and have a say in, the choice of premedication, type of anaesthesia and postoperative care including pain management. The final decision on the type of anaesthesia must be based on a medical assessment and be taken by the anaesthetist. The patient must be informed of any special risk factors.

The information given should take into account the situation and the patient's condition.

### 5. Monitoring and equipment requirements in conjunction with anaesthesia

The patient must be monitored continuously during and after anaesthesia. As a minimum requirement, monitoring must include a clinical assessment of respiratory and circulatory function, as well as a pulse oximeter.

During anaesthesia, there must always be equipment available to deal with complications, with the minimum requirement being a self-inflating bag, intubation equipment, appropriate emergency drugs, an oxygen source, a suction unit and a defibrillator.

Anyone providing anaesthesia care must be familiar with and know how to apply an algorithm for dealing with an unanticipated difficult airway, as well as having airway equipment available. Ultrasound guidance is considered an integral part of anaesthesia care and appropriate equipment should also be available.

Monitoring during anaesthesia:

- Monitoring must reflect the patient's condition and the nature of the intervention.
- During general anaesthesia, monitoring devices must include an ECG machine, capnograph, pulse oximeter and blood pressure monitor. ECG may be omitted for minor operations involving otherwise healthy patients or if there are other reasons for doing so.
- When using inhaled anaesthetics, multigas monitoring must be used.
- With central neuraxial blocks, the patient's blood pressure must be measured before induction of the blocks and regularly during the operation.
- During peripheral regional anaesthesia, if the patient is stable, monitoring can be delegated to suitably trained healthcare staff who are not specialists in anaesthesia. An anaesthetist or nurse anaesthetist must be available to provide immediate assistance.
- During sedation, a pulse oximeter must be used.
- When using muscle relaxants, neuromuscular monitoring should be used.
- Always consider monitoring the temperature of the patient. If there is a risk of a temperature abnormality, appropriate action must be taken.
- Monitoring equipment must have appropriate alarms. When using a ventilator, an alarm must sound if it is disconnected.

## 6. Provision of anaesthetic care

### 6.1 General

We recommend using the WHO surgical safety checklist for all operations.<sup>6</sup>

All departments that provide anaesthetic care must have guidelines on preoperative fasting periods before elective general and regional anaesthesia.

Vascular access is always needed for general and regional anaesthesia, as well as when giving large doses of local anaesthetic. In special cases, the anaesthetist may decide to waive this requirement (e.g. for inhaled anaesthetic or ketamine injected intramuscularly).

Medications and syringes must be clearly marked with the name of the drug and its concentration. Generic names and concentrations in SI units should ideally be used. Medications should be double checked in accordance with the entity's guidelines. Two people must check the infusion pump settings and that the right medication is being used before induction of anaesthesia.

A nurse anaesthetist or anaesthetist must stay with the patient at all times from when the anaesthesia is administered until handover to the postoperative ward (an exception may be made for peripheral regional anaesthesia if the patient is stable; cf. Section 5). Additional anaesthetic staff must be easy to get hold of and be able to provide assistance quickly if needed.

When starting a general anaesthesia, at least two people with anaesthesia training must be present.

If the preoperative assessment identifies a high risk of complications, the medical team treating the patient must have the necessary qualifications and skills. The anaesthetic staff allocated should reflect the anaesthetic procedure, type of surgery, condition of the patient and other available resources. When administering anaesthesia to high-risk patients, to children under the age of 3, for major operations and in remote locations, the anaesthetist will often only be able to take responsibility for one patient at a time. Registrar anaesthetists must always be able to call upon a consultant anaesthetist.

### 6.2 Paediatric anaesthesia

Norwegian healthcare legislation defines anyone under the age of 18 as a child. When administering anaesthesia to children, it is very important for the anaesthetic staff to have the right skills and experience. Anaesthetic staff who work with children must have specialist knowledge of age-related physiological changes and pharmacology. Age-appropriate equipment must be available. There must be a segregated post-anaesthesia care unit appropriate for the child's age.

All anaesthesia departments should have anaesthetists with clinical responsibility for paediatric anaesthesia, as well as relevant written guidelines.

These anaesthetists should collaborate with the region's university clinics and have opportunities for regular continuing professional development. When administering anaesthesia to seriously ill children, a consultant anaesthetist with regular experience of paediatric anaesthesia should be present. Regular experience means once or twice a month per consultant anaesthetist.

Registrar anaesthetists may only administer anaesthesia to children under the age of 3 if a consultant anaesthetist is available to provide immediate assistance if needed. When a child under the age of 3 is put under anaesthesia, the anaesthetist should normally only be responsible for one patient at a time.

Special care and experience are required when putting children under the age of 1 under anaesthesia, particularly for newborns (<4 weeks) and seriously ill infants. Ideally it should be possible to have two consultant anaesthetists present when administering anaesthesia to these patients. Elective anaesthesia for children under the age of 1 should be done at a department where this kind of procedure is performed regularly and relatively often (around 5-10 procedures per consultant anaesthetist per year).

### 6.3 Anaesthesia outside operating theatre departments

The Norwegian Standard for the Safe Practice of Anaesthesia also applies to anaesthesia care provided outside operating theatre departments. Here special attention should be paid to the anaesthetic staff's competencies and experience, available equipment and access to assistance.

### 6.4 Sedation

Intravenous sedation using a titrated dose of an agent that induces anaesthesia must be performed by anaesthetic staff. The degree of monitoring will depend on the patient's condition and the intended depth of sedation, but a pulse oximeter must always be used. An anaesthetist must be on hand.

Healthcare personnel who administer sedative drugs must be able to recognise and treat potential side-effects and complications. This includes performing bag valve mask ventilation and cardio-pulmonary resuscitation.

Equipment for dealing with complications must always be available during sedation.

### 6.5 Obstetric anaesthesia

Special care must be taken with anaesthesia for pregnant women in their second or third trimester. Departments that perform obstetric surgery must meet the staffing requirements set out in Section 2.5. There must be written procedures for dealing with complications of pregnancy, performing acute and elective Caesarean sections, managing pain during childbirth and dealing with delivery complications.

### 6.6 Prehospital care

When providing emergency care outside a hospital, it may be necessary to administer anaesthesia even if not all of the requirements in the Norwegian Standard for the Safe Practice of Anaesthesia are met. Anaesthesia departments must have procedures in place for this kind of care. The anaesthetist responsible must decide that the expected health benefit for the patient justifies the known higher risk. The team must be trained in the use of medical equipment, the administration of anaesthesia and how to handle any complications. Anaesthetic staff who provide prehospital care must work regularly in an anaesthetic department.

## 7. Documentation

Anaesthetic records must be taken during anaesthesia. Vital signs must be documented regularly, at least every 5-10 minutes, depending on the patient's condition and the complexity of the intervention. All important information about the whole course of the anaesthesia must be included.

Anaesthetic records must be assessed together with the patient's other medical records and documentation. There must be a system for transferring information from the anaesthetic records to the patient's main medical records.

Anaesthetic records must include:

- Date and time
- Patient ID
- Preoperative diagnosis and ASA group
- Anaesthetic equipment used and associated patient system
- Documentation of equipment/system check
- Patient positioning
- Other equipment
- Doses of medication, intravenous fluids and blood components
- Documentation of problems and how they were dealt with
- Name and/or code of the type of anaesthesia administered
- Name and/or code of the intervention/examination performed
- Name(s) of the person with clinical responsibility and other people involved in the anaesthesia
- Postoperative care

### 7.1 Reporting of anaesthesia-related problems

All unexpected events that take place during anaesthesia must be documented in the anaesthetic records. Serious events must also be documented in the patient's main medical records. Events that are defined as nonconformities must also be reported in accordance with the department's procedures.

As soon as is practicable, the patient must be informed in writing of any problems during anaesthesia, for example using an anaesthesia incident card. A template for anaesthesia incident cards can be downloaded from [nafweb.no](http://nafweb.no).

Once the national Electronic Medical Record (EMR) core is up and running, anaesthesia-related problems will need to be documented there in accordance with the relevant guidelines.

## **8. Monitoring after anaesthesia**

Places that provide anaesthesia care must have suitable facilities for monitoring patients after anaesthesia/operations. This monitoring should take place in segregated, suitable premises, with properly trained staff and necessary equipment for monitoring, diagnosing and treating issues related to the patient's awareness level, respiratory function and circulation. Anaesthetic staff must be available to provide immediate assistance if needed.

Patients must be accompanied to the post-anaesthesia care unit by a member of the anaesthetic team familiar with the course of the anaesthesia provided.

Risks are particularly high during the immediate post-anaesthesia period. During patient transport, the use of supplemental oxygen, a pulse oximeter and any other appropriate monitoring tools should always be considered. The member of the anaesthetic team should not leave the patient until the person taking over responsibility is ready and has been given a report.

As a general rule, patients should be monitored until they are awake, their respiratory and circulatory functions are stable and their pain is properly controlled. Monitoring must be documented.

The post-anaesthesia care unit must have written guidelines on when a patient can be discharged.

These should include criteria for:

- Alertness
- Respiratory function
- Circulatory function
- Pain
- Nausea
- Diuresis/bladder function
- Acceptable drain fluid loss/bleeding
- Return of sensory/motor function after regional anaesthesia

The doctor and nurse responsible must be named in the medical records. When the patient is discharged, the record must state who took the decision.

## **9. Special requirements for outpatient anaesthesia**

When selecting patients for outpatient anaesthesia, the following factors must be taken into account:

- The nature and scope of the operation.
- The type of anaesthesia and the risk of after-effects.
- Postoperative pain management.
- The patient's consent to outpatient anaesthesia.
- The patient's overall suitability based on physical, mental and social considerations.

- Patients in ASA group 3 may be eligible if their condition is stable and their level of function is acceptable. Patients in ASA group 3 must be assessed by an anaesthetist before being approved for outpatient anaesthesia.
- Outpatient surgery should not be used for infants under a gestational age of 60 weeks.

### 9.1 Discharge criteria

The patient's circulatory and respiratory functions must be stable.

The patient must be almost back to his or her normal state of health, including in areas such as:

- Alertness
- Cognitive function
- Motor function, including balance
- Patient should have urinated; if not, he/she must be told to contact the hospital in the event of any problems after being discharged
- The patient must have had something to eat and drink
- The patient should not be nauseous and must not vomit or be suffering from pain that requires the injection of painkillers
- The patient must not show any signs of complications

There must be a written plan in place for pain management where necessary.

Before the operation, the patient must be informed in writing and orally of the following:

- The patient will need to be accompanied home by an adult.
- The patient will also need to be accompanied by an adult for the initial period after the operation (the exact length of time depends on the patient's condition and the nature of the operation). As a general rule, the patient must have an adult with them until the day after outpatient surgery.
- Limitations on activities requiring concentration and alertness.

Patients must be given a 24-hour number that they can call if they have any questions or need help after discharge.

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