



# **DEGEA-Curriculum (Curriculum of the German Society of Endoscopy Nurses and Associates): Sedation and Emergency Management in Endoscopy for Endoscopy Nurses and Associates**

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## **1. Preamble**

Every patient has the right to a pain and stress free endoscopy. Patients often want an endoscopy without pain. The increasing sedation frequency for endoscopic examinations also in Germany demonstrates that this demand is being increasingly met. While in the mid 90's only about 9% of the gastrointestinal endoscopies in Germany were done under sedation [1], current results of a "nationwide evaluation on sedation in gastrointestinal endoscopy" show that up to 88% of the examinations are now done under sedation [2].

To reduce the risk of possible complications that can arise during analog sedation and to treat these competently and professionally structural-personnel as well as personal requirements must be met. These must be observed and implemented as part of the daily routine for every examination.

Cardiopulmonary complications are one of the most frequent complications in endoscopy. They are found in more than 50% of the analog sedation cases [3]. By nature they arise unexpectedly. In addition to clearly assigning responsibilities beforehand, emergency medical training increases the quality of incident management.

In the past, the personnel and structural requirements for sedation during endoscopic interventions have often been intensively and controversially discussed. Despite existing recommendations of the different gastroenterologic and anesthesiologic societies these are not always optimally implemented.

For over 10 years, aside from the standard medication with benzodiazepines often in combination with an opioid, short-acting hypnotic propofol (half-life 7-8 min.) is increasingly being used. The advantage of propofol compared to the use of benzodiazepines is its shorter onset of effect [4] - especially for interventional endoscopies (such as ERCP) -, significantly better patient cooperation [5-7], as well as quicker patient recovery [5;6;8-14], this includes psychomotor functions [13].

With the recently approved first S3-guideline „Sedation in gastrointestinal endoscopy“ [15] precise recommendations exist on :

- what the structure and process quality for safe sedation should be,
- which qualifications are necessary for doctors and assistance personnel,
- which sedation tasks must only be performed by qualified doctors, and
- which tasks specifically during propofol sedation can be delegated to nurses and assistance personnel.

## **2. Curriculum goals and limitations**

The aim of the curriculum is to acquire and extend knowledge, competence, and skills in preparation, implementation, and follow-up of sedation during endoscopic interventions.

The content of the curriculum focuses on the current recommendations of the S3-guideline „Sedation in gastrointestinal endoscopy“.

However, a course certificate alone is not enough. Experience and structured teamwork are especially required to avoid unwanted side effects and to adequately treat them if they occur.

Workshops and courses that are structured according to this curriculum are not a free for all for “Nurse administered Propofol Sedation“ (NAPS). The knowledge of various sedation and monitoring methods and care of sedated patients should be extended. In addition, practical exercises on competence and skills of patient monitoring and management of problem situations will be trained.

If it is intended to delegate sedation to nurses,

- the structural-personnel and personal requirements must be checked in the participant's department,
- the delegation of sedation (especially propofol sedation) must be discussed with the clinic board of directors and the chief physician of the department,
- a delegation can apply only to a certain individual,
- a phase of intensive practical instruction should follow this course in the participant's department.

The recommendations of the S3-guideline and the legal aspects on delegation of sedation procedures should be observed.

### **3. Curriculum objectives**

After completing a training module based on this curriculum, the participant should have achieved the following objectives:

- The participant should be proficient in the basics of pharmacology, pharmacokinetics, and different sedation concepts including the side effect profile of the most commonly used substances.
- He/she should know the possibilities and limitations of the different sedation concepts (especially propofol administration) that have to be considered for the individual risk profile of the individual patient.
- The participant is familiar with the recommended number of persons and the qualifications that are necessary and can relate this to the situation in the hi/her own department.
- The participant should know, which structural conditions (space, device, and personnel requirements) are required to perform safe analog sedation before, during, and after endoscopic interventions (especially propofol administration) and can evaluate the deficits and resources of his/her own workplace.
- The participant is familiar with different patient risk scores, knows their meaning, and knows how to handle them with respect to pre-, intra-, and post-endoscopic management:
  - He/she can professionally prepare the patient for the intervention according to the risk assessment including safe positioning, standard monitoring, and care of the intravenous access.
  - He/she can safely position patients independently and avoid damage due to positioning.
  - He/she can professionally prepare the drugs according to the hygienic guidelines and administer them during the intervention.
  - He/she should know the monitoring criteria during interventions and can safely implement them.
  - He/she can judge and evaluate the patient, and if necessary, implement corresponding measures (e.g. nasal oxygen supply) before, during, and after the intervention with the help of monitoring and vital signs.
  - He/she can professionally document the implemented measures.
- The participant is familiar with the indications, contraindications, and delegation limitations of propofol sedation as they are set in the S3-guideline “Sedation in endoscopy“.
- The participant is familiar with possible complications of each sedation concept, can relate them to the current patient situation and risk, and can initiate and assist in corresponding measures. This includes:
  - respiratory insufficiency
  - cardiovascular insufficiency
  - shock
  - treatment of acute respiratory problems
  - BLS (basic life support)
  - ALS (advanced life support)
- The participant is familiar with the discharge criteria following interventions under analog sedation and can give the patient professional instructions and advice on behavior.
- The participant is familiar with the legal aspects and contents of the doctor-patient interview.

- The participant is familiar with his/her legal and professional responsibilities and restrictions with regard to:
  - duty in respect of care and supervision
  - delegation, transfer of responsibilities, and transfer fault
  - organizational liability and negligence
  - monitoring and discharge management

#### **4. Target group:**

The curriculum addresses the following endoscopy personnel:

- nurses with and without certified training for endoscopy services who are involved in analog sedation during endoscopic interventions
- doctor's assistants and medically qualified employees with and without certified gastroenterologic endoscopy qualification who are involved in analog sedation during endoscopic interventions
- nurses who are currently taking training for endoscopy services
- doctor's assistants and medically qualified employees who are currently taking training for endoscopy services

The eligibility of persons with other occupations should be checked individually.

### **5. Content of the theoretical part (14 hours)**

#### **5.1. Pharmacology (2 hours)**

Pharmacologic principles of intravenous anesthetics that are used in endoscopy

Use of sedatives, analgesics, and vegetatively effective drugs

- dosing
- application techniques
- onset of effect, duration of effect
- contraindications
- side effects
- combinations and risks of the individual sedation concepts
- particulars of propofol

Introduction to pharmacokinetics (absorption, distribution, and elimination of the active ingredient in the body)

#### **5.2. Structural – personnel requirements (1 hour)**

- Spatial requirements with regard to emergency management
- Intervention room equipment (essential and recommended accessories)
- Monitoring room equipment (essential and recommended accessories)
- Work place equipment
- Emergency instruments and drugs
- Number of persons and their qualifications for analog sedation
- Special requirements as to number and qualification of personnel for high risk patients and NAPS

#### **5.3. Pre-endoscopic management (2 hours)**

- Patient risk assessment, scores
- Differentiation of risk situations that require the presence of an anesthesiologist, preparation, and differential therapeutic implementation of sedation/anesthesia
- Taking over patients
- Duty of the doctor to inform the patient
- Patient preparation (informing and instructing the patient, positioning, standard monitoring)
- Preparation of drugs
- Hygiene guidelines for drug preparation

#### **5.4. Intra-endoscopic management (3 hours)**

- Organization and process planning (work instructions, process description)
- Dose guidelines
- Application methods
- Hygiene-guidelines for drug application and storage
- Monitoring / observation criteria

#### **5.5. Complication management (2 hours)**

- Respiratory insufficiency, indications for intubation
- Cardiovascular insufficiency, shock
- Implementation of the new reanimation guidelines
  - BLS (basic life support)
  - ACLS (advanced cardiac life support)
- Differentiation of risk situations that require the presence of an anesthesiologist, preparation and differential therapeutic implementation of sedation/anesthesia

#### **5.6. Post-endoscopic follow-up (2 hours)**

- Take over
- Important information of the take over discussion
- Evaluation, assessment, and confirmation of monitoring criteria
  - breathing
  - cardiovascular functions
  - consciousness
  - nausea, vomiting
  - pain
  - sweating, feeling cold
  - urinating
- Discharge management
  - Organizational problems of discharge management
  - Discharge criteria
  - Instructions and advice on behavior

#### **5.7. Documentation and quality assurance (number of hours is part of the hours in section 3-6)**

#### **5.8. Legal aspects (2 hours)**

- duty in respect of care and supervision
- Delegation, transfer of responsibility, and transfer fault
- Organizational liability and negligence
- Monitoring and discharge management
- Legal peculiarities of propofol sedation and NAPS (e.g. delegation limits)

## **6. Content of the practical part (8 hours)**

#### **6.1. Reanimation training using a dummy**

- BLS – training according to the new European rules on cardiopulmonary reanimation
- Instruction on the use of automatic defibrillators

#### **6.2. Simulator training**

- Training of different sedation concepts (especially propofol), their dosing, and efficacy in different types of patients
- Management of saturation drop, blood pressure drop, bradycardia, tachycardia, rhythm disorder, apnea

#### **6.3. Debriefing after individual exercises**

- Debriefing in small groups is an effective tool to evaluate the practical training and to reinforce the participant's experiences.

## 7. Outline

### 7.1. Theory

Definition:

- 1 lesson / units are 45 minutes

At least 14 lessons are recommended but best would be 16 lessons.

In preparation, beforehand a study letter must be sent out. The final exam is based on this letter.

Contents of the study letter may be:

- S3-guideline „Sedation in gastrointestinal endoscopy“ (15)
- lecture notes on individual lessons
- different publications on sedation during endoscopy including NAPS-studies (16-20)
- curriculum
- recommendations and standards of discharge management (20,21)
- advice for the examination
- extended questions and written work assignments

### 7.2. Practical training

At least 8 hours of practical training are recommended in small groups. Simulator training offers the chance to check, question, and develop ones own knowledge.

Practical training is best done using human patient simulators (HPS), because real situations are best imitated by entering different scenarios. The training should at least be performed on mega-code-dummies.

### 7.3. Internship

An internship of at least 3 days should be done to extend the theoretical and practical contents of these modules. Participants must have their internship confirmed in writing. Simulator training is not a substitute for practical experience. Practical experience is extended during the internship. This supports the practical implementation in the participant's department.

The internship can be done in an endoscopic reference center which is very experienced in propofol sedation. As an alternative it can be done in an anesthesia or wake up room. The intern should be supported by a contact person/tutor who is specifically trained in this area.

The contents of the internship should be:

- the use of different sedation strategies in practice
- to collect practical experience in the use of propofol
- the evaluation of patients, implementation of scores
- the clinical monitoring and adequate patient monitoring according to the risks and the respective drug
- the establishment of incident management, complication prevention

### 7.4. Delegation

If it is intended to delegate sedation to nurses,

- the structural-personnel and personal requirements must be checked in the participant's department,
- the delegation of sedation (especially propofol sedation) must be discussed with the clinic board of directors and the chief physician of the department,
- a delegation applies only to a certain individual,
- a phase of intensive practical instruction should follow this course in the participant's department. The instruction must be structured and done by a qualified tutor. Studies on NAPS have shown structured training concepts in 6-9 weeks [17,19].

The recommendations of the S3-guideline and the legal aspects on delegation of sedation procedures must be observed.

## 8. Implementation recommendations

When the curriculum is implemented in specific courses and workshops the following is recommended:

- Workshops / courses should include at least 14 lessons for the theoretical part and 8 hours of practical training (start: Friday around noon, end: Sunday afternoon)
- Best would be at least 16 lessons and 8 hours of practical training (3 full days). This includes a test that lasts 1.5 hours.
- This curriculum can be offered as part of professional further education for endoscopy services, because its contents are already part of the curriculum for the further education for functional services.
- This curriculum can also be integrated in the professional qualification gastroenterological endoscopy for doctor's assistants ("Arzthelferin").
- The curriculum can also be offered as an independent workshop. It is best if team training is done during practical exercises.
- The increasing use of propofol and its structural-personnel requirements, possibilities, and delegation limitations should be especially addressed.

## 9. Objectives control

The objectives control can be done with multiple choice questions from a question pool. The written exam concludes the theoretical module.

The practical exam is performed directly in the course as an interactive module with discussion of results.

## 10. Recognition by DGVS, DEGEA

The curriculum was prepared based on the GATE concept ("Gastroenterologie – Ausbildung – Training – Endoskopie" (gastroenterology-education-training-endoscopy)).

The German Society for Endoscopy Assistance Personnel ("Deutsche Gesellschaft für Endoskopieassistentenpersonal") recommends offering courses according to this curriculum. Course concepts and their contents can be submitted to the DEGEA to be recognized.

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