



Anaesthesiologists' Non-Technical Skills in Denmark (ANTSdk)

ANTSdk is an instrument for observation and assessment of anaesthesiologists' non-technical skills (NTS).

The instrument was developed on the basis of the Scottish Anaesthetists' Non-Technical Skills (ANTS) system as part of a PHD project at Copenhagen Academy for Medical Education and Simulation (CAMES). ANTSdk was customised to the Danish setting through interviews with Danish trainee and consultant anaesthesiologists, surgeons, nurse anaesthetists and surgical nurses.

ANTSdk provides a common language to talk about NTS, which are the skills anaesthesiologists use when medical knowledge and technical skills are applied in everyday clinical practice. The instrument can be used for giving structured feedback on skills that many find it hard to put into words. It can be used as inspiration for anaesthesiologist wanting to analyse own work and reflect on how their use of NTS can be improved in clinical work, for the benefit of oneself, colleagues and patients. ANTSdk can also be used as a basis for training NTS.

The instrument was designed for assessment of anaesthesiologists in the operating room. The NTS identified during the research process were consistent with those found in other studies from healthcare and other domains. The instrument can therefore be used as inspiration for assessment of NTS in other contexts.

ANTSdk was developed as a formative assessment instrument; it is therefore essential that the numerical ratings are followed by verbal feedback. ANTSdk comprises four categories, Situational Awareness; Decision Making; Team Working; and Leadership. The categories include 16 elements. Each element encompasses two to seven examples of good and poor behaviours. There is a rating form for skills assessment based on observations and explanation on how to use the rating scales in the clinic at the end of the short information folder.

Situation Awareness: Maintaining a dynamic attention to the situation by including information from the patient, the team, equipment etc. and thinking ahead. Being aware of own abilities and continually assessing own handling of the situation.

Gathering information – vigilantly and systematically seeking out information about the situation

Examples of good behaviour

- Adapts the collection of information to the seriousness of the situation
- Continually collects clinical information about the patient
- Gathers information from the team on the situation in the OR to identify problems
- Focuses on the specific situation
- Keeps updated about the progress of surgery and asks for status when relevant

Examples of poor behaviour

- Has "head down" and loses overview of the situation
- Does not use systematics when gathering information about the situation
- Is inattentive and gets distracted by irrelevant disturbances
- Fixates on irrelevant details

Recognising and understanding contexts – evaluating the information collected continuously and comparing with the expected course of the situation

Examples of good behaviour

- Recognises patterns and relates it to the situation
- Describes relevant changes in the patient's status to the team and ensures that appropriate action is taken when needed
- Assesses severity of the observed

Examples of poor behaviour

- Does not respond to changes in patient's clinical condition
- Does not point out relevant changes in patient's condition to the team
- Does not demonstrate understanding of the consequences of the collected information
- Overlooks/-hear warnings from the environment

Anticipating and thinking ahead – asking "what if ...?" questions. Anticipating possible consequences of interventions or omissions. Planning strategies for several possible courses and anticipating potential complications

Examples of good behaviour

- Is on top of the situation
- Informs team members when a situation could develop critically
- Plans limits for intervention and communicates these to the team
- Sees opportunities in resources and thinks ahead

Examples of poor behaviour

- Has not prepared a plan B for an expected difficult situation
- Refuses to respond to questions about alternative plans
- Is not willing to deviate from a planned course

Demonstrating self-awareness – being aware of own abilities and actions in relation to the situation

Examples of good behaviour

- Knows own limits
- Asks for help when needed
- Reflects on what help is needed
- Recognises that personal feelings can make work difficult and acts accordingly
- Recognises the need for own development and qualification
- Asks when in doubt

Examples of poor behaviour

- Is not aware of when own limits are reached
- Overestimates own competences
- Rejects constructive criticism
- Exhibits inappropriate behaviour in relation to the situation
- Neglects own lack of knowledge
- Does not say if s(he) is overloaded

Decision Making: Assessing the situation and making a decision. Communicating plan and implementing decisions. Reassessing and adapting the strategy to the dynamic situation.

Identifying options – providing an overview of the situation, identifying several possible solutions for the given situation and considering the pros and cons of the various options

Examples of good behaviour

- Summarises the situation for the team when needed; for example using ABCDE systematics
- Discusses options with relevant team members
- Establishes several solutions in a structured way adapted to the specific situation
- Assesses advantages and disadvantages of various solutions

Examples of poor behaviour

- Does not examine side effects of medications that are not used routinely
- Does not confer problems when relevant
- Does not consider differential diagnosis

Choosing, communicating and implementing decisions – taking decisions based on the above considerations. Motivating and communicating choices for the team, contributing to implementation of decisions

Examples of good behaviour

- Adapts strategy to the degree of seriousness
- Uses the options available in the given situation
- Includes guidelines and algorithms in decision making
- Justifies and communicates decisions to relevant team members
- Makes sure that the team reacts when relevant

Examples of poor behaviour

- Selects one solution immediately without considering other options
- Does not involve team members in the decisions when relevant

Reassessing decisions – assessing decisions continuously and changing plan when needed

Examples of good behaviour

- Awaits effect of an intervention before reviewing
- Reassesses the patient's condition after an intervention, e.g. using ABCDE systematics
- Re-evaluates the situation continuously and changes the plan if needed
- Asks team members for input when reassessing

Examples of poor behaviour

- Does not await effect of intervention
- Does not reassess plan despite changes in the situation
- Reassesses in too much detail and/or too often

Team Working: Facilitating collaboration through safe communication, coordinating tasks on the basis of assessment of team skills, ensuring that team members get the necessary understanding of the situation and being aware of factors that can affect the team members' ability to solve a problem.

Exchanging information – giving and receiving relevant information in order to coordinate teamwork and manage the task

Examples of good behaviour

- Introduces her/himself to new team members and states competencies
- Offers in with own competences
- Informs continuously about anaesthesia progress and the patient's condition
- Shares uncertainty and concerns about the situation with the team - thinks out loud when relevant
- Tailors communication and behaviour to the situation and uses e.g. closed loop

Examples of poor behaviour

- Does not introduce her/himself for other team members
- Gives too many orders at once
- Does not inform the team about changes in the patient's status
- Does not communicate concerns or significant observations clearly and accurately to the team
- Speaks in a low tone or unclearly

Assessing competencies – assessing the individual team members' skills and abilities to tackle the situation. Being aware that factors such as experience, stress and fatigue can affect the effectiveness and capabilities

Examples of good behaviour

- Clarifies the individual team members' skills
- Reacts to signals from team members when they are losing focus and no longer can manage the task

Examples of poor behaviour

- Does not clarify the team's competences
- Does not call for help if team competencies are insufficient

Coordinating activities – collaborating with other team members about task management. Applying knowledge of team members' responsibilities to ensure the task is managed jointly

Examples of good behaviour

- Discusses the situation with relevant team members
- Clarifies the individual team members' responsibilities
- Includes knowledge about team members' competences when tasks are distributed
- Cooperates with the team to achieve goals

Examples of poor behaviour

- Does not coordinate with relevant team members
- Stays passive without taking part in the coordination of activities
- Assigns team members tasks beyond their area of competence

Supporting others – being available, contributing to a positive atmosphere and a good working environment, providing professional and personal support

Examples of good behaviour

- Exhibits sensitivity and respect towards team members
- Appears calm
- Contributes to creating an environment where it is okay to ask when in doubt
- Contributes with constructive feedback/suggestions on team members' challenges
- Declines on behalf of other team members, if it is deemed that the member is unable to perform a task

Examples of poor behaviour

- Does not listen to input from team members
- Seems unstructured and confused
- Refuses other team members need to reflect about a situation
- Does not offer assistance to other team members
- Does not notice needs of the other team members and possible needs for change in duties
- Takes over in non-emergency

Leadership: Organising and prioritising resources and activities to solve tasks based on the department's guidelines. Assuming the leading or non-leading role depending on the situation. Focusing on safety and quality of the work.

Planning and preparing – systematically identifying primary and alternative plan(s) prior to task management

Examples of good behaviour

- Uses systematics in planning the task
- Incorporates knowledge of the specific operation in the planning of anaesthesia
- Checks that appropriate medicine and equipment are in the room before induction of anaesthesia
- Communicates plan to relevant team members

Examples of poor behaviour

- Does not use order and systematics in planning
- Does not make alternative plans
- Does not check that equipment and medications are OK
- Does not inform the team about plan or subsequent changes to the plan

Prioritising – prioritising tasks according to the situation. Identifying potential challenges and allocating the necessary attention to them, without being distracted

Examples of good behaviour

- Prioritises tasks according to time, resources and patient safety
- Prioritises patients according to the degree of seriousness, e.g. by using ABCDE systematics
- Involves relevant team members in the prioritisation of tasks
- Adapts priority when changing conditions requires it

Examples of poor behaviour

- Leaves the operating room when s(he) should be present
- Permits other factors than the degree of severity determine the order of operations
- Does not involve the team members when necessary

Identifying and utilising resources – ensuring that the necessary resources are available for the task management e.g. team members, equipment and time. Utilising resources well

Examples of good behaviour

- Investigates what resources are available
- Delegates tasks to relevant team members
- Adapts task management to the team's overall competences

Examples of poor behaviour

- Does not use relevant available resources
- Takes on too many tasks without delegating
- Starts more activities than there are resources for
- Overloads the team with tasks without ensuring that they are solved

Using authority and assertiveness – adapting leadership style to the situation and the team. Assuming a non-leading role when relevant

Examples of good behaviour

- Communicates clearly with the team
- Demonstrates the necessary authority
- Assumes leadership responsibility when relevant
- Says if a mistake is about to occur
- Contributes actively to conflict-solving
- Suggest that the surgeon should postpone the operation to a better time, e.g. because of lack of competence within the team

Examples of poor behaviour

- Does not address prescriptions to specific team member
- Does not exhibit authority when necessary
- Does not insist on working in quietness when needed
- Does not say if something is not understood
- Does not let team members make their arguments

Providing and maintaining standards – ensuring focus on safety and quality in work, keeping knowledge up to date and following recognised anaesthetic practice

Examples of good behaviour

- Adheres to instructions and guidelines
- Relates critically to guidelines when relevant
- Justifies when guidelines are not followed
- Appears to be academically updated
- Guides others to find instructions and guidelines

Examples of poor behaviour

- Does not follow instructions and guidelines e.g. for hygiene
- Fixates on using a single guideline, although it does not fit the situation
- Takes chances and exhibits risky behaviour

Tips and tricks for assessment using ANTSdk:

Scale:

5 - Much above average	The performance was very good and contributed to high patient safety, could be used as a good example for others
4 - Above average	The performance was generally good, only need for minor improvements
3 - Acceptable	The performance was satisfactory, but can be improved
2 - Below average	The performance caused concern, there is need for improvement
1 - Much below average	The performance exposed, or could potentially expose, the patient to risks, there is substantial need for improvement
N/A - Not applicable	The behaviour was not observed and was not required in the situation

- Assess the observed doctor compared to what is expected for a **newly qualified specialist**.
- Assessment using ANTSdk must be **adapted to the specific situation**; what is good behaviour in certain situations could therefore be poor in others.
- **Assess each element at a time**. Use the corresponding examples of good and poor behaviour in ANTSdk to guide what behaviour can be assessed in the specific element.
- Provide **constructive feedback** with many examples, e.g. using the examples of good and poor behaviour from each element.
- Use the **rating scale definitions** to find the correct numerical assessment. Think about what the doctor would have to do to get a better rating and mention this in the **verbal feedback**. Use the rating scale's 1 and 5 ratings when appropriate, so the entire scale is utilised.
- The **numerical assessment** must reflect the behaviour that will have the biggest consequence for the patient in the observed situation. This means that an element where several examples of good behaviour are observed can get a numerical rating that does not reflect this if poor behaviours with greater consequence for the situation are observed as well. When e.g. assessing the element 'Gathering information' under the category 'Situation Awareness' it is assessed, among other things, how the doctor gathers information about the patient, focuses on the specific situation and keeps abreast about the surgical progress. If the doctor manages this well, but takes (too) long time to collect information in an emergency situation, the rating must reflect this. However, it is important that the verbal feedback focus also on good behaviour observed in the case. That is, the verbal feedback can comprise feedback on both good and poor behaviour.
- Make the observed doctor aware that it is unlikely that the first numerical assessments results in a high the non-technical skills score, as there will be progression over time.
- It is important to use the rating **non-applicable (IR)** if something was not observed and was not required in the situation. If the observed doctor e.g. has worked with the same team a whole day, it will probably not be necessary to assess the team's overall competence. It may also be situations where, e.g. the nurse anaesthetist tells what her level of competence is. It is then appropriate to rate 'IR' for the element 'Assessing competences' in the category 'Teamwork', since there is no need to ask for the information again.
If the behaviour should have been observed the rating should be 1 or 2, depending on how serious the lack of behaviour is for the situation. That is, if a nurse anaesthetist states her level of competence late in the process, and the doctor should have asked for it earlier, the rating should be 1 or 2, depending on the seriousness of the situation.
- Make a note of the **context** the assessment took place under, i.e. the experience of the assessed, the patient's condition and comorbidities, as well as other circumstances as time of day, disruptions or other factors influencing performance.
- **Performance may vary over time**, particularly during long operations. It is a challenge to give one numerical rating in these situations, but the situation might be used for important reflections, if it is discussed what is happening and why.

ANTSdk rating form

Anaesthesiologist: _____

Supervisor/observed by: _____

Department: _____ Date: _____

Categories	Category rating (1-5*)	Elements	Element rating (1-5*)	Feedback notes
Situation Awareness		Gathering information		
		Recognising and understanding contexts		
		Anticipating and thinking ahead		
		Demonstrating self-awareness		
Decision Making		Identifying options		
		Choosing, communicating and implementing decisions		
		Reassessing decisions		
Team Working		Exchanging information		
		Assessing competencies		
		Coordinating activities		
		Supporting others		
Leadership		Planning and preparing		
		Prioritising		
		Identifying and utilising resources		
		Using authority and assertiveness		
		Providing and maintaining standards		

*5 – Much above average, 4 – Above average, 3 – Acceptable, 2 – Below average, 1 – Much below average, N/A – not applicable, the behaviour was not required in the situation.

The anaesthesiologist is rated based on what is expected of a qualified anaesthesiologist.

Overall global rating of performance (mark with a ring):

Poor 1 - 2 - 3 - 4 - 5 - 6 - 7 Excellent

General comments: