



Royal College of
Obstetricians &
Gynaecologists

Assessing Non-Technical Skills

A Guide to the NOTSS Tool Adapted for Gynaecological Surgery

Acknowledgements

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NOTSS was adapted by Karen Brackley and Suzanne Jackson for use by the RCOG with permission of the original authors.

What are non-technical skills?

Non-technical skills are the cognitive and interpersonal skills that complement practical and technical competences. Analyses of adverse events in surgical specialties have revealed that many underlying causes originate from these behavioural or non-technical aspects of performance (e.g. communication failures) rather than a lack of technical expertise. Therefore, technical skills appear to be necessary but not sufficient alone to ensure patient safety in the operating theatre. Paying attention to non-technical skills such as team working, leadership, situation awareness, decision making and communication has the potential to increase the likelihood of maintaining high levels of performance over time.

To date, aspects of performance such as decision making, leadership and team working have been largely developed in an informal and tacit manner rather than being explicitly addressed in training. The NOTSS system provides a framework and common terminology for rating and feedback to be given on non-technical skills.

What is a behavioural marker system?

Behavioural marker systems are already used to structure training and evaluation of non-technical skills in anaesthesia, surgery and emergency medicine. These marker systems are rating scales based on skill categories and are used to identify observable individual behaviours that contribute to superior or substandard performance. They tend to comprise two parts: a skill category with examples of good and poor behavioural markers allied to each skill; and a rating system. The NOTSS system can be used to structure observations, ratings and feedback in theatre or on the labour ward.

What is the NOTSS system?

The Non-Technical Skills for Surgeons (NOTSS) is a behavioural rating system originally developed by a multi-disciplinary group comprising surgeons, psychologists and anaesthetists in Scotland. NOTSS describes the main observable non-technical skills associated with good surgical practice. When used in conjunction with medical knowledge and clinical skills, NOTSS can be

used to observe and rate behaviour in theatre in a structured manner and allow a clear and transparent assessment of training needs. The system has been adapted for use on labour ward, while the rating system has been removed to provide a focus on the provision of constructive and timely feedback. The system comprises only behaviours that are directly observable or can be inferred through communication. It has wide-ranging coverage of non-technical skills in as few categories and elements as possible

The NOTSS system comprises a three-level hierarchy consisting of four skill categories, each with three elements (see table 1) Each category and element are defined in this handbook, and examples of good and poor behaviours are provided for each element. These exemplar behaviours were generated by consultants and are intended to be indicative rather than a comprehensive list.

Table 1: NOTSS skills taxonomy

Category	Elements
Situation Awareness	<ul style="list-style-type: none"> ● Gathering information ● Understanding information ● Projecting and anticipating future state
Decision Making	<ul style="list-style-type: none"> ● Considering options ● Selecting and communicating option ● Implementing and reviewing decisions
Communication and Teamwork	<ul style="list-style-type: none"> ● Exchanging information ● Establishing a shared understanding ● Co-ordinating team activities
Leadership	<ul style="list-style-type: none"> ● Setting and maintaining standards ● Supporting others ● Coping with pressure

Using the NOTSS system

The NOTSS system is intended to be used as a debrief tool giving feedback in a structured manner after a theatre list in which a trainee worked directly with a consultant or trainer. Initial piloting suggests that the debrief may take as little as five minutes to complete.

General Recommendations

It may take some time for users to become familiar with the language and structure of the NOTSS system. Training and practice should help facilitate this process.

- As with any other training, teaching and assessment, NOTSS should not interfere with clinical care; if circumstances dictate, the use of NOTSS should be abandoned
- Formative assessment and feedback on non-technical skills should occur routinely in both clinical and simulator environments and so should not be perceived as threatening
- Although it is expected that a consultant will complete the NOTSS feedback form, liaising with other team members such as the theatre sister and anaesthetist is recommended.
- Ideally the NOTSS form should be completed at the end of theatre list. Otherwise, completion should occur as soon as possible. Face-to-face feedback is essential.

Trainer training

Training is required to learn how to rate behaviours using the NOTSS system effectively. This should include:

- Background knowledge on human performance, error management and non-technical skills, so constructive, directive feedback can be given to trainees
- The contents of the NOTSS system and how they relate to everyday activities

Trainee training

- Trainees should receive their own copy of the NOTSS system booklet for reference.
- The NOTSS system should be used appropriate for the level of experience of the trainee.

Situation Awareness

Developing and maintaining a dynamic awareness of the situation in theatre based on assembling data from the environment (patient, team, time, displays, equipment); understanding what they mean and thinking ahead about what may happen next.

Gathering information – Seeking information in the operating theatre from the operative findings, theatre environment, equipment, and people.

Good behaviours:

- Carries out pre-operative checks of patient notes, including investigations and consent
- Ensures that all relevant investigations (e.g. imaging) have been reviewed and are available
- Liaises with anaesthetist regarding anaesthetic plan for patient
- Optimises operating conditions before starting e.g. moves table, lights, AV equipment
- Identifies anatomy/ pathology clearly
- Monitors ongoing blood loss
- Asks anaesthetist for update

Poor behaviours:

- Arrives in theatre late or has to be repeatedly called
- Does not ask for results until the last minute or not at all
- Does not consider the views of operating room staff
- Fails to listen to anaesthetist
- Fails to review information collected by team
- Asks for information to be read from patient notes during procedure because has not been read before operation started

Understanding information – Updating one's mental picture by interpreting the information gathered, and comparing it with existing knowledge to identify the match or mismatch between the situation and the expected state.

Good behaviours:

- Acts according to information gathered from previous investigation and operative findings
- Looks at CT scan and points out relevant area
- Reflects and discusses significance of information

Poor behaviours:

- Overlooks or ignores important results
- Misses clear sign (e.g. on CT scan)
- Asks questions which demonstrate lack of understanding
- Discards results that don't 'fit the picture'

Projecting and anticipating future state – Predicting what may happen in the near future as a result of possible actions, interventions or non-intervention.

Good behaviours:

- Plans operating list taking into account potential delays due to surgical or anaesthetic challenges
- Verbalises what equipment may be required later in operation
- Shows evidence of having a contingency plan ('plan B') (e.g. by asking scrub nurse for potentially required equipment to be available in theatre)
- Cites contemporary literature on anticipated clinical event

Poor behaviours:

- Overconfident manoeuvres with no regard for what may go wrong
- Does not discuss potential problems
- Gets into predictable blood loss, then tells anaesthetist
- Waits for a predicted problem to arise before responding
- Operates beyond level of experience
- Practises beyond level of experience

Decision making

Skills for diagnosing the situation and reaching a judgement in order to choose an appropriate course of action

Considering options – Generating alternative possibilities or courses of action to solve a problem. Assessing the hazards and weighing up the threats and benefits of potential options.

Good behaviours:

- Recognises and articulates problems
- Initiates balanced discussion of options, pros and cons with relevant team members
- Asks for opinion of other colleagues
- Discusses published guidelines

Poor behaviours:

- No discussion of options
- Does not solicit views of other team members
- Ignores published guidelines

Selecting and communicating option – Choosing a solution to a problem and letting all relevant personnel know the chosen option.

Good behaviours:

- Reaches a decision and clearly communicates it
- Makes provision for and communicates 'plan B'
- Explains why contingency plan has been adopted

Poor behaviours:

- Fails to inform team of surgical plan
- Is aggressive/ unresponsive if plan questioned
- Shuts down discussion on other treatment options
- Only does what she/he thinks is best or abandons operation
- Selects inappropriate manoeuvre that leads to complication

Implementing and reviewing decisions – Undertaking the chosen course of action and continually reviewing its suitability in light of changes in the patient's condition. Showing flexibility and changing plans if required to cope with changing circumstances to ensure that goals are met.

Good behaviours:

- Implements decision
- Updates team on progress
- Reconsiders plan in light of changes in patient condition or when problem occurs
- Realises 'plan A' is not working and changes to 'plan B'
- Calls for assistance if required

Poor behaviours:

- Fails to implement decisions
- Makes same error repeatedly
- Does not review the impact of actions
- Continues with 'plan A' in face of predictably poor outcome or when there is evidence of a better alternative
- Becomes hasty or rushed due to perceived time constraints

Communication and Teamwork

Skills for working in a team context to ensure that the team has an acceptable shared picture of the situation and can complete tasks effectively

Exchanging information – Giving and receiving knowledge and information in a timely manner to aid establishment of a shared understanding among team members.

Good behaviours:

- Talks about the progress of the operation
- Listens to concerns of team members
- Communicates that operation is not going to plan

Poor behaviours:

- Fails to communicate concerns with others
- Attempts to resolve problems alone
- Does not listen to team members
- Needs help from assistant but does not make it clear what assistant is expected to do

Establishing a shared understanding – Ensuring that the team not only has necessary and relevant information to carry out the operation, but that they understand it and that an acceptable shared ‘big picture’ of the case is held by team members.

Good behaviours:

- Provides briefing and clarifies objectives and goals before commencing operation
- Ensures team understand the operative plan before starting
- Encourages input from all members of the team
- Ensures relevant members of team are comfortable with decisions
- Checks that assistant knows what they are expected to do
- Debriefs relevant team members after operation, discussing what went well and problems that occurred

Poor behaviours:

- Does not articulate operative plan to team
- Does not make time for collective discussion and review of progress
- Fails to discuss the case beforehand with unfamiliar team members
- Makes no attempt to discuss problems and successes at end of operation
- Fails to keep anaesthetist informed about procedure (e.g. to expect bleeding)
- Appears uncomfortable discussing the operative plan if challenged

Co-ordinating team activities – Working together with other team members to carry out cognitive and physical activities in a simultaneous, collaborative manner.

Good behaviours:

- Checks that other team members are ready to start operation
- Stops operating when asked to by anaesthetist or scrub nurse
- Ensures that team works efficiently by organising activities in a timely manner

Poor behaviours:

- Does not ask anaesthetist if it is OK to start operation
- Proceeds with operation without ensuring that equipment is ready

Leadership

Leading the team and providing direction, demonstrating high standards of clinical practice and care, and being considerate about the needs of individual team members

Setting and maintaining standards – Supporting safety and quality by adhering to acceptable principles of surgery, following codes of good clinical practice, and following theatre protocols.

Good behaviours:

- Introduces self to new or unfamiliar members of theatre team
- Clearly follows theatre protocol
- Requires all team members to observe standards (e.g. sterile field)

Poor behaviours:

- Fails to observe standards (e.g. continues even though equipment may be contaminated or inadequate)
- Breaks theatre protocol
- Shows disrespect to the patient

Supporting others – Providing cognitive and emotional help to team members. Judging different team members' abilities and tailoring one's style of leadership accordingly.

Good behaviours:

- Modifies behaviour according to trainee needs
- Provides constructive criticism to team members
- Ensures delegation of tasks is appropriate
- Establishes rapport with team members
- Gives credit for tasks performed well

Poor behaviours:

- Does not provide recognition for tasks performed well
- Fails to recognise needs of others
- Engages in 'tunnel vision' approach to technical aspects of operation
- Shows hostility to team members (e.g. makes sarcastic comments to nurses)

Coping with pressure – Retaining a calm demeanour when under pressure and emphasising to the team that one is under control of a high-pressure situation. Adopting a suitably forceful manner if appropriate without undermining the role of other team members.

Good behaviours:

- Remains calm under pressure
- Emphasises urgency of situation (i.e. by occasionally raising voice)
- Takes responsibility for the patient in emergency/ crisis situation
- Makes appropriate decision under pressure
- Delegates tasks in order to achieve goals
- Continues to lead team through emergency

Poor behaviours:

- Suppresses concern over clinical problem
- 'Freezes' and displays inability to make decisions under pressure
- Fails to pass leadership of case when technical challenge requires full attention
- Blames everyone else for errors and does not take personal responsibility
- Loses temper