# SPLINTSdk User Guide

(Scrub Practitioners' List of Intraoperative Non-Technical Skills)

A tool for structuring observation and feedback on non-technical skills of surgical staff.

Region Hovedstaden

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**Introduction**

It is not always easy to put into words exactly what it is they've got, but we know them well: those surgical staff members (scrub practitioners and circulating staff) who have everything under control, even when the procedure does not go according to plan and things must move quickly; the surgical staff members who seem to be able to read the surgeon's mind; the surgical staff members who can remain calm, stay organized, solve problems and prioritize tasks well, all the while providing competent, attentive assistance to the surgical team.

These surgical staff members not only have a high level of technical and clinical expertise, they also have good non-technical skills. Most experienced surgical staff have good non-technical skills. Nevertheless, irrespective of how experienced a person is, there is always room for improving these skills in daily practice.

This is a user guide for SPLINTSdk (Scrub Practitioners' List of Intraoperative Non-Technical Skills). SPLINTSdk is an observational and assessment tool designed to provide a formal framework and a common language in which to discuss and train non-technical skills. The first part of the user guide lays out the motivation for this tool to train non-technical skills and describes how it can be used. The last part consists of the tool and the evaluation form.

**What are non-technical skills?**

Non-technical skills consist of social and personal skills such as communication and teamwork and of cognitive skills such as situational awareness. Non-technical skills support technical and clinical skills and contribute to ensure safe and effective work of high quality.

International research has shown that many errors and adverse events during surgery are due to failure of non-technical skills rather than a lack of technical skills. Non-technical skills are crucial for patient safety and quality of care, and they are skills that can be learned.

It is estimated that approximately 1 in 10 hospitalized patients is exposed to an adverse event, with about 40% of the events occurring in connection with a surgical intervention. Approximately 70% of all these adverse events are due to lack of non-technical skills.

A large controlled study has documented that the introduction of preoperative briefings and team training in communication and cooperation in 74 hospitals significantly reduced surgical morbidity and mortality compared with a control group of 34 hospitals where there was no intervention.

Non-technical skills are not something new in surgical nursing. Good surgical staff members have always shown good non-technical skills, but these skills have not previously been the specific focus of training. Instead, they have been taught and developed in an informal and implicit manner.

**What is SPLINTSdk?**

SPLINTSdk is a tool for structuring observation and feedback on non-technical skills of surgical staff (scrub practitioners and circulating staff). SPLINTSdk consists of three categories: Situational Awareness, Communication & Teamwork, and Task Management. The three categories each have 3–4 underlying elements (see the following table). Each element is illustrated with examples of observable behavior that is either good or undesirable. These examples should be seen as illustrations of behavior that can guide the feedback and rating. It is not an exhaustive checklist, other examples can easily be found. Some examples of behavior are very specific, while others are more general. The tool includes a rating scale.

| Category | Element |
|---|---|
| Situational Awareness | • Gathering information<br>• Acknowledging and understanding the situation<br>• Anticipating |
| Communication & Teamwork | • Exchanging information<br>• Coordinating activities with the team<br>• Stepping into character<br>• Supporting others |
| Task Management | • Planning and preparing<br>• Providing and maintaining standards<br>• Coping with pressure |

**What can SPLINTSdk be used for?**

SPLINTSdk is a formative learning tool. This means that its primary use is to strengthen and stimulate the observed professional development, rather than determining whether basic skills have been obtained or a specific test passed.

- SPLINTSdk can form the basis of a dialogue-based evaluation of the scrubbed up/circulating staff's development when based on observations in the clinic or simulated environment.
- SPLINTSdk can be used to assess the scrubbed up/circulating staff's non-technical performance in the operating room.
- SPLINTSdk can prompt the staff to reflect on their own practice and can be used in other forms of training and appraisal interviews.
- SPLINTSdk can be used as a framework to discuss cases from the clinic in a professional forum on the ward.
- SPLINTSdk can be used to design and implement training and measure its effects.

**How can SPLINTSdk be used?**

SPLINTSdk can be used to structure observation of and feedback on the scrubbed up/circulating staff's non-technical performance during an operation. The idea is that an assessor observes a member of the surgical team during training or an experienced team member during a procedure in which the assessor may even participate. Directly after the procedure, time should be set aside for feedback and assessment of the person being observed.

The assessor's tasks:

- To arrange with the individual to be observed when the assessment of the non-technical skills should take place.
- To ensure the atmosphere is conducive to an open discussion and set the framework for the conversation. It is not an examination; the objective is to support the observed staff's learning process.
- To observe the scrubbed up/circulating staff's performance from receiving the patient until the patient leaves the operation room. The assessor can be a non-participating observer or a member of the operation team.

- Specific steps:

    1. Observe behaviour, especially the verbal and non-verbal communication.
    2. List in the 'feedback notes' section of the assessment form what was and what was not observed.
    3. Rate the behaviour on the scale, taking care to rate only what was actually seen and heard and rating it in relation to how an experienced member of the surgical team would behave. The absence of a required behaviour should receive a negative rating, it should be rated as 1. Surgical staff in training will probably score low initially; however, SPLINTSdk allows their development to be followed over time.
    4. Give the observed feedback (see suggestions below of how to do this).

- The order of the scores is irrelevant. Starting with the elements is probably the easiest as they are the most tangible.

The observed staff's tasks:

- To actively participate in the follow-up conversation in order to fully benefit from the feedback.
- To use the structure of SPLINTSdk to reflect on own development.
- To set learning goals to work towards.

| Score | Description of category |
|---|---|
| **5 – very good** | Performance is of an extremely high standard, can be used as an example for others |
| **4 – good** | Performance is of a consistently high standard, enhances patient safety |
| **3 – acceptable** | Performance is satisfactory but can be improved |
| **2 – undesirable** | Performance is worrying, improvements are necessary |
| **1 – very undesirable** | Performance exposes the patient to danger or potential danger, or absence of behavior required for the situation |
| **N/R – Not Required** | The skills were not required in the situation |

**How can SPLINTSdk be used in structuring feedback?**

- Feedback can be given immediately after surgery. Create a secure atmosphere, preferably use a location without interruptions, and adopt a tone suitable to the conversation.
- Consider how much time is available and focus on the essentials. Discussing something in depth is preferable to touching superficially on many points.
- Be inquisitive and try to understand the situation from the observed staff's viewpoint by asking how he/she saw it, and how he/she reasoned.
- Start either by taking up the observed staff's situational awareness during the surgical procedure or by discussing how he/she sought information, understood the information and planned accordingly. Discussing Communication & Teamwork and Task Management follows on easily after this. Remember always to try to understand the situation from the observed staff's perspective.
- Another way of starting is to ask the observed staff to talk about what he/she did well and what he/she wishes to do differently next time. Observations can then be added.
- Agree on the learning goals the observed will work towards and, if applicable, arrange a date for a follow-up interview or new assessment.

**General recommendations**

- Use SPLINTSdk to assess both inexperienced and experienced surgical staff. Give constructive feedback and emphasize that new surgical staff cannot expect to achieve a high score for non-technical skills. These skills will develop over time.
- Use SPLINTSdk to assess the observed on several occasions with different interventions, each with a different level of difficulty. This increases the reliability of the assessment. For example, the assessment can be done twice a year.
- Note down the context of the assessment, for example, the observed staff's experience, familiarity with the team and familiarity with the intervention, as well as other circumstances, such as the time of day and disturbances, and include any other factors that may influence performance.
- Performance may vary over time, especially during long procedures. This can be challenging when an assessment is taking place; nevertheless, discussion of what happened and why it happened can lead to important reflections.
- The tool is designed to reflect observable behaviour. It is also central that it relates to the most important non-technical skills. For example, it includes the mental preparation before a surgical procedure, the need to be able to deal with stress, fatigue and disturbance. These skills can be difficult to observe, but they are essential to learn. Accordingly, it is important to take them up when giving feedback, providing they were relevant to the situation.

**Training in the use of SPLINTSdk**

Although the tool may initially appear simple, it reflects the complex skills relevant to the circumstances. It may take time to feel confident in using SPLINTSdk; it is necessary to become familiar with the structure and language and to learn how to observe and give feedback. Training in its use is therefore recommended and should include background information on human factors and non-technical skills, ensuring the observed staff receives constructive feedback. It is recommended in the initial phase to select a small group of trainers/clinical supervisors in each department to conduct assessments and give feedback.

**How was SPLINTSdk developed?**

SPLINTSdk was originally a tool developed in Scotland. It has been adapted to Danish conditions through focus group interviews with scrub practitioners, social- and healthcare assistants, surgical technicians, surgeons, nurse anesthetists and anesthesiologists from the Capital Region. Based on the interviews, the tool was modified and a prototype of SPLINTSdk was presented at a workshop and discussed with 17 nurses responsible for training in the Capital Region. The tool was then reviewed. This process ensured that the tool was appropriate and adequate for scrub practitioners and circulating staff in Danish operation rooms.

The tool has subsequently been evaluated by 14 surgical nurses responsible for training who used SPLINTSdk to assess the surgical staff's non-technical skills in simulated videotaped scenarios. The resulting evaluations indicate that to a large extent users found SPLINTSdk useful for making assessments and giving feedback.

**Supplementary Literature**


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See the Danish Institut for Medical Simulation’s webside: www.regionh.dk/dims/menu for courses in team training etc.

**Situation Awareness** – Maintaining a dynamic awareness of relevant aspects in the operating theatre, such as the patient, the team, elapsed time, the surgical procedure, instrumentation and equipment. Observing and listening and anticipating what might happen next.

### Gathering information – Being attentive and actively seeking information from the surgical team by listening and asking relevant questions. Being aware of the surroundings and the course of the surgical procedure.

**Examples of good behaviour**

- Ensures the patient is informed about the procedure and is in agreement
- Actively participates in identifying the patient
- Is aware of the location of equipment and movement of staff on the floor
- Watches surgical procedure
- Conducts frequent scan of the environment
- Gathers information from the team and the patient

**Examples of undesirable behaviour**

- Focuses on a single task and loses the overview of the situation
- Is inattentive and is distracted by irrelevant disruptions
- Fails to listen to instructions
- Does not listen to work-related conversation between other team members
- Does not ask clarifying questions when in doubt

### Acknowledging and understanding the situation – Continually assessing the gathered information and comparing it with existing knowledge in order to understand the situation.

**Examples of good behaviour**

- Effective prioritization of tasks
- Acknowledges changes in procedure or the patient condition and reacts accordingly
- Switches between tasks efficiently
- Provides correct instrument even when not named or incorrectly described by surgeon
- Reacts to conversational cues exchanged between other team members
- Reacts appropriately to changes in the surgeon's body language or tone of voice
- Adjusts music and non-professional conversation to the situation in the theatre

**Examples of undesirable behaviour**

- Does not increase activity level when appropriate
- Does not prioritize tasks effectively
- Responds late or not at all to changes in pace of procedure
- Fails to seek clarification when orders from team members are unclear
- Does not detect clear non-verbal signs of the surgeon's concentration and need for quiet

### Anticipating – Thinking ahead and anticipating needs when the situation changes.

**Examples of good behaviour**

- Hands surgeon instruments in correct order
- Anticipates changes to the surgical plan, such as change from laparoscopic to open procedure
- Is pro-active in acquiring additional equipment when needed
- Times requests appropriately

**Examples of undesirable behaviour**

- Does not pay attention to the course of procedure
- Asks for relevant instruments or equipment only when predictable problems have occurred
- Does not follow the surgeon's timing
- Lacks concentration, is inattentive and surprised by the surgeon's orders

# Communication and teamwork – Sharing information and knowledge and ensuring a common understanding in the team to facilitate smooth progression through the surgical procedure.

## Exchanging information – Giving and receiving enough detailed information to ensure a shared understanding within the team.

**Examples of good behaviour**

- Shares observations and information with the team
- Directs information to relevant team member
- Passes on information to the team if the surgeon does not or is not able to do so
- States clearly which instrument is handed to the surgeon when relevant.
- Uses non-verbal signals where appropriate
- Communicates result of surgical count for swabs/instruments in timely manner

**Examples of undesirable behaviour**

- Gives orders without directing them to a specific team member
- Does not share important information such as ”sharp needle” or ”short suture”
- Fails to articulate problems in timely manner
- Uses non-verbal communication where verbal clarification is more appropriate
- Does not inform of waiting time or delay for equipment and instruments

## Coordinating activities with the team – Ensuring tasks are performed in a constructive, collaborative manner, that facilitates the smooth flow of the surgical procedure.

**Examples of good behaviour**

- Communicates foreseeable changes in the situation to the team
- Effectively prioritizes orders given simultaneously from various team members
- Suggests relevant alternative options/equipment
- Reacts appropriately to interruptions from others
- Confirms orders from other members of the surgical team
- Coordinates with collaborators outside the theatre when necessary

**Examples of undesirable behaviour**

- Fails to share knowledge about the plan for the surgical procedure
- Talks to team members who are trying to concentrate
- Ignores requests of others
- Lacks an overview of where other team members are located

## Stepping into character – Using an appropriate level of authority to clarify important questions and adapting own manner of communication to the situation in order to achieve effective teamwork.

**Examples of good behaviour**

- Ensures the plan, the set-up, the positioning etc. is agreed with the surgeon
- Asks for clarification if there are deviations from the original plan
- Gives clear orders/notifications to the team
- Demonstrates leadership when necessary
- Steps into character, for example, when calm and space is required to reorganize the operation area, time-out etc.
- Adjusts style of communication and tone to reflect situation
- Displays the necessary authority, for example, when safety procedures or other guidelines are to be followed

**Examples of undesirable behaviour**

- Passively accepts surgeon or other colleagues’ decisions when challenging is a more appropriate response
- Fails to communicate in a clear and precise manner
- Adopts a subservient manner when a stronger response is required
- Communicates demands/needs late or not at all
- Does make others aware of own level of competence
- Accepts degrading or inconsiderate communication within the team

## Supporting others – Providing professional and personal support to other team members. Contributing to creating a good atmosphere and a good working environment in the theatre.

**Examples of good behaviour**

- Supports other team members by providing help and assistance
- Is aware of other team members’ level of fatigue and offers them support.
- Guides the surgical team towards the correct behaviour in the operation zone
- Offers good advice and guidance to the team
- Proposes, or supports the team, calling for assistance, for example, when assistance or a second opinion is needed
- Proposes a second time-out when lack of progress or during long and complicated procedures
- Arranges for extra operation staff to be present when assistance is required

**Examples of undesirable behaviour**

- Allows unnecessary disruptions that distract the surgeon, for example, irrelevant phone calls
- Is unaware of other team members’ needs
- Displays disrespectful behaviour towards the team
- Is unaware of the level of competence of other team members

**Task Management** – Organizing resources and activities to achieve individual and team-oriented goals and maintaining standards with minimum stress to the team.

## Planning and preparing – Organizing and preparing equipment and instruments. Preparing the patient for the procedure. Ensuring the timing of tasks and activities minimizes disturbances and allows the surgical procedure to run smoothly.

**Examples of good behaviour**

- Collects relevant information on the patient and the procedure that influences, for example, the positioning, catheterization, hair removal etc.
- Is on time and does not keep the team waiting unnecessarily
- Asks about the next phase and next step when in doubt.
- Utilizes time during pauses in the procedure to prepare forthcoming tasks
- Displays effective organization of the work area, instruments and equipment
- Displays knowledge of the standard order of the surgical procedure

**Examples of undesirable behaviour**

- Prioritises tasks incorrectly and delays the course of the surgical procedure
- Opens sterile wrappings/equipment without due thought
- Has difficulties in finding the correct equipment
- Does not articulate lack of knowledge about equipment or its use

## Providing and maintaining standards – Ensuring patient and staff safety and following current instructions and guidelines.

**Examples of good behaviour**

- Protects the sterile area and the instruments
- Attempts to optimize working conditions and working positions for the surgical team.
- Adheres to current guidelines in the theatre and encourages other staff to do the same
- Takes responsibility/joint responsibility for the enforcement of safety procedures and their documentation
- Displays care for the patient and protects the patient against exposure to pressure, cold, heat etc.

**Examples of undesirable behaviour**

- Does not follow or violates accepted instructions and guidelines
- Is distracted by or initiates undesirable non-professional conversation
- Fails to check relevant equipment or relies on others to do so
- Does not display logical or effective organisation of own workspace

## Coping with pressure – Maintaining composure in stressful situations while exhibiting understanding of the pressure to which the rest of the team is exposed.

**Examples of good behaviour**

- Maintains a neutral voice that changes only when underlining the seriousness of the situation
- Remains neutral despite undesired reactions from other team members
- Keeps an overview of instruments and equipment despite the pressure or stress
- Delegates tasks when necessary to reduce the level of stress

**Examples of undesirable behaviour**

- Raises voice unnecessarily
- Loses temper/reacts inappropriately
- Appears disorganised and incapable of timely offering the correct instruments
- Allows stress and pressure to adversely affect performance by becoming incapacitated and ceasing to function effectively
- Awaits orders and does not act independently
- Burdens the circulating staff with random tasks

# SPLINTSdk Assesment Form

Name: ……Profession:……

Scrubbed up/circulating staff:……Procedure:……

Special circumstances:……

Hospital and dept.:…… Observer: ……Date/time:……

| Category | Category score | Element | Element score | Feedback notes |
|---|---|---|---|---|
| Situation Awareness | | Gathering information | | |
| | | Acknowleding and understanding the situation | | |
| | | Anticipating | | |
| Communication & Teamwork | | Exchanging information | | |
| | | Coordinating activities with the team | | |
| | | Stepping into character | | |
| | | Supporting others | | |
| Task management | | Planning and preparing | | |
| | | Setting and maintaining standards | | |
| | | Coping with pressure | | |

1. Very undesirable 2. Undesirable 3. Acceptable 4. Good 5. Very good N/R Not Required, the behaviour was not required in the situation

Most important areas to focus on in the future:

1._____

2._____

Date of next assessment: _____