

Putting ANTS into practice

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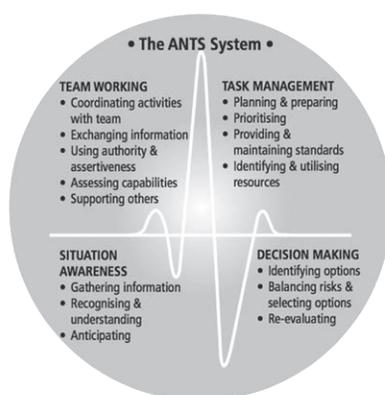
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This article focuses on overcoming some of the challenges of using the Anaesthetists' Non-Technical System (ANTS) in the operating theatre. The term non-technical skills (NTS) is a generic one that includes decision-making, situation awareness, task management and teamworking.¹ Previous studies have shown that poor or absent NTS make major contributions to the human component of adverse outcomes or near-misses in anaesthetic practice in the operating theatre.² Good anaesthetists have always used good NTS, but as these skills have been implicit rather than explicit, instruction, reflection and assessment of NTS has been difficult. The development of the ANTS system and some ways of applying it to clinical practice have already been described,^{2,3} but the focus of this article is on how to put the system into practice for those who are relatively new to the system or who lack familiarity and confidence with it.

The ANTS system provides both a framework of non-technical skills and a related set of examples of good and poor behaviours. The framework consists of four categories, each divided into a number of elements. The described behaviours are linked to the elements. The described behaviours are only examples from a much wider body of behaviours. Indeed, one could think of the ANTS framework as a mechanism for structuring the behaviours that form our repertoire of practice. One of the intentions behind the development of the system was to provide a tool to allow reflection on our behaviours and so help us modify those behaviours to become safer and

more efficient practitioners. Space does not allow a full reproduction of the system, but one can be downloaded from the following website www.abdn.ac.uk/iprc/ants.

Figure 1



The first stage is to become familiar with the system. This is probably best done by beginning with either a small part of the system or a small part of one's own practice.

Strategy 1: Divide the ANTS system into smaller pieces

The system can appear quite daunting in terms of its size. This is not surprising, because it was developed to cover the intraoperative care of patients. Rather than attempt to master the system as a whole, one can focus on a smaller component, such as one of the four categories. The system can also appear to be quite abstract, and so to help familiarise ourselves with it we need to identify a concrete episode of our practice. A colleague once described human physiology as being invisible – when everything is working smoothly we are not aware of how it works; it is largely through

human pathophysiology that we come to understand human physiology. We can apply this principle to identifying a concrete episode, such as an episode where non-technical skills contributed to an adverse outcome or a near miss. These were described as 'Triggers of reflection' in the November 2014 *Bulletin* article 'Reflection'.⁴ The idea is to think about such a trigger and match it to the most appropriate category and then explore the related behaviours.

Let us take as an example an episode where an elective theatre list has been disrupted because the anaesthetist was presented with a change to the intended surgical procedure, which brought about a slight delay to the list as they had to prepare additional drugs and equipment. If the anaesthetist's understanding of what was going on was different from the understanding of the other members of the theatre team, then we are dealing with Situation Awareness. We can now work our way through the three elements of Situation Awareness to find out which behaviours were most likely to be responsible for this event. The three elements are: gathering information, recognising and understanding, and anticipating.

The first element would be relevant if the anaesthetist had failed to gather the relevant information – not checking the theatre list, not paying attention at the surgical brief, e.g. being distracted by phone calls, etc. The second element, recognising and understanding, would be relevant if the anaesthetist did not appreciate the surgeon's intentions, i.e. did not know what the surgery involved. This would also relate to the first element because if the

anaesthetist was not familiar with the surgical requirements then an attempt should have been made to acquire such information. The third category, anticipating, would be relevant if the anaesthetist had failed to understand, for example, that the results of further surgical investigation were awaited before a final decision was made, and so a failure to anticipate what may be required could be implicated. These behaviours are less likely in an experienced career grade anaesthetist working with a regular surgeon, but may happen when working in changed circumstances.

Strategy 2: Focus on one aspect of anaesthetic practice

In this case one concentrates upon a familiar task such as a practical skill – for example, an ultrasound guided nerve block. It is necessary to take a familiar task, because one can work one's way through the ANTS system looking for examples of behaviours that one carries out regularly. The downloadable booklet of the ANTS framework begins with the category of Task Management. The first of the four elements is 'planning and preparing'. So one could note down some behaviours one normally does, e.g. obtaining the relevant equipment, positioning the patient and ultrasound screen, and so on. One can use reflective triggers by thinking about events or episodes that promoted a change in subsequent behaviour. Concentrating on a familiar task reduces the cognitive workload and so makes it easier to think about which behaviours best map to the elements in the ANTS system.

Strategy 3: Expand upon these beginnings

Let us explore this strategy by returning to the Situation Awareness example described above. The intention behind

the reflective process is to analyse aspects of one's performance, identify what needs to be changed and think about ways in which those changes can be achieved. In the case of the ANTS system, the initial 'trigger of reflection' can be used as an entrance into the larger system. Let us take the example of not being prepared for the surgical procedure that the patient is scheduled to undergo. If this occurred because the anaesthetist had not gathered the relevant information, then the obvious solution is to ensure that information is gathered. How might the anaesthetist do that? One of the elements in the category of Team Working is 'exchanging information'. Our anaesthetist may decide formally to enquire of both surgical and scrub members of the team during the surgical brief, and so incorporate that behaviour into the routine repertoire of behaviours. Alternatively, our anaesthetist may decide to discuss these requirements with the surgical and scrub teams prior to the brief because our anaesthetist has recognised that the intended surgical procedure is not one with which s/he is familiar. Recognising that one doesn't understand what is going to be required has implications for the elements of 'understanding' and 'anticipating' from Situation Awareness, as well as 'planning and preparing' from Task Management. How can one prepare for something if one doesn't know what is required?

The above is a very simple example, and anaesthetists have developed their own strategies to deal with events; but the advantage of going through the ANTS system is that one can think about changing behaviours in a systematic and organised way. Indeed, the system may serve on occasion as a check-list to ensure that areas have not been omitted.

Strategy 4: Use other sources of behaviours to populate the system

The previous strategies have focussed on one's own practice. However, in our specialty we may have the opportunity to work with our fellow anaesthetists and so have the opportunity to observe their practice and their NTS. Even as career-grade anaesthetists, we can ask colleagues to observe them in action, usually when performing a task such as a nerve block, central venous cannulation, an anticipated difficult intubation etc. Those who have taken up career-grade posts more recently can reflect upon which consultants worked efficiently and effectively, and which ones less so. It is important to remember that the lists of behaviours supplied with each element are small in number and are intended to give a flavour of the element. The processes in this strategy can help populate these lists with a greater number of examples.

Strategy 5: Rating behaviours

The lists of example behaviours supplied with the elements are in a binary form – good behaviours or bad behaviours. This is clearly a simplification, as in reality behaviours exist on a spectrum ranging between good and poor (which the rating scale supplied with the ANTS system refers to: 1–Poor, 2–Marginal, 3–Acceptable, 4–Good). As one continues to populate the categories and elements with one's own behaviours, or with examples observed in others, this will become increasingly evident. For example, there are many different behaviours associated with gathering information, or with planning and preparing. As one grows more familiar with the ANTS system, and more comfortable using it informally to reflect on performance, one can begin to think about how to make acceptable behaviour good, and good behaviour even better. This will help prepare for the next section.

Strategy 6: Instruction and Feedback of trainee anaesthetists

Feedback was the topic of an article in the July 2014 *Bulletin*.⁵ In that article reference was made to the importance of feedback on specific elements of a learner's technical or non-technical performance.

a Informal, intraoperative feedback

Instruction of NTS often takes the form of discussing an aspect of practice during the management of a patient. For example, before a rapid sequence induction the consultant/senior trainee may ask the more junior trainee: 'What are you going to do? If that doesn't work then what will you do? What equipment might you need for your back up plan? Who else knows what you have decided as your back-up plan?'. These questions deal with a lot of elements including 'anticipating', 'exchanging information' and 'planning and preparing'. One doesn't need to teach the ANTS system at this stage of training but the system can help structure the form of instruction, especially when so many NTS are relevant to the task in hand. At this stage, the more senior anaesthetist can be thought of as promoting behaviours that are consistent with good NTS.

b Informal postoperative feedback

The more senior anaesthetist may wish to discuss the management of the patient at the end of the case. Remember, feedback is more effective if specific and structured. The ANTS system has a structure, and although one may not wish to go through all of the elements, the ANTS system can also be linked to other structured tools such as those used in the Workplace Based Assessments. For example, the Directly Observed Procedural Skill list (Tables 1 and 2 below) contains the following items:

Table 1

Annex A domains	Description
2	Good advance preparation for the procedure.
2,3	Communicated plan for procedure to relevant staff.

These clearly map onto the elements 'planning and preparing' and 'exchanging information'. Others are not tightly mapped but can be used to explore NTS.

Table 2

Annex A domains	Description
2	Understood the indications for the procedure and clinical alternatives.

The above item can be explored by discussing the elements associated with the category 'Decision Making' – 'identifying options' and 'balancing risks and selecting options'.

The emphasis is on informal feedback so that trainee anaesthetists have the opportunity to acquire and develop the important behaviours related to the relevant workplace based assessment tools. At the same time those who will be carrying out formal assessments in the workplace can develop their experience and their confidence in using the tools and the relevant non-technical skills.

Formal assessment using the ANTS system is beyond the scope of this article.

Conclusions

The ANTS system provides a framework for identifying behaviours related to NTS, and can aid structured reflection and feedback. Familiarity and confidence using the system can be built up by employing the strategies outlined in this article, and further training can be obtained through the new Anaesthetists as Educators: ANTS training course at the RCoA and the Scottish Centre for Simulation and Clinical Human Factors.

For further information see:

- www.rcoa.ac.uk/node/18470
- <http://bit.ly/1zNrhH7>
- <http://bit.ly/1zNrlGQ>

References

- 1 Flin R, O'Connor P, Crichton M. Safety at the sharp end. A guide to nontechnical skills. *Ashgate Publishing*, Farnham, 2008.
- 2 Flin R et al. Anaesthetists' non-technical skills. *BJA* 2010;**105**(1):38–44.
- 3 Fletcher G et al. Anaesthetists' Non-Technical Skills (ANTS): evaluation of a behavioural marker system. *BJA* 2003;**90**(5):580–588.
- 4 Barrie J, Barrie J. Reflection. *RCoA Bulletin* 2014;**88**:17–20.
- 5 McCahon R. Feedback. *RCoA Bulletin* 2014;**86**:17–20