

## 2.7 TIVA/TCI training for anaesthesia and intensive care trainees

Dr Susan C Williams  
East Midlands School of Anaesthesia

### Why do this quality improvement project?

All anaesthetists must be able to deliver total intravenous anaesthesia by target controlled infusion (TIVA/TCI). This technique has major advantages for many patient groups and is the only safe technique for administering general anaesthesia to patients with malignant hyperthermia. Inhalational anaesthesia is also not possible in all circumstances (e. lack of scavenging, transfer of anaesthetised patients).<sup>1</sup>

The Fifth National Audit Project (NAP5) found that cases of awareness during TIVA were mostly preventable and the most common contributory factor was lack of TIVA education and training. It has been suggested by previous surveys that TIVA teaching and training in the UK and Ireland is not adequate and that many anaesthetists lack the confidence to use TIVA.<sup>1,2</sup>

### Background

Training in TIVA/TCI should begin during basic training for all anaesthetic and intensive care trainees and should continue into intermediate and higher training. Trainees should be competent in the use of TIVA/TCI prior to unsupervised practice in this technique, including transfer of patients anaesthetised with an intravenous propofol infusion.<sup>1</sup>

### Best practice

The Society for Intravenous Anaesthesia recommends 25 cases (10 consultant-led, 10 with close supervision and 5 solo cases) before basic trainee competence has been achieved.<sup>3</sup>

### Suggested data to collect

#### Standards

Trainees should be achieving Society for Intravenous Anaesthesia recommended TIVA/TCI case numbers during the course of their core training.

Trainees should maintain their skills in delivering TIVA/TCI during intermediate and higher training.

Trainees should attend at least one formal TIVA/TCI teaching session per training level.

#### Measures

- Percentage of core trainees who have logged the requisite number of TIVA/TCI cases by the end of this training level.
- Percentage of intermediate trainees who have logged a suggested minimum of 10 cases, ideally including 5 solo cases per training year.
- Number of formal TIVA/TCI sessions attended per training level; either as part of the school of anaesthesia's internal teaching programme or other suitable external course or teaching.

## Quality improvement methodology

### Trainers

- Are there a sufficient number of consultants, specialty doctors or senior trainees competent to teach and supervise core trainees in basic TIVA/TCI anaesthesia?
- Is there a departmental lead for TIVA/TCI? Do trainees have access to suitable trainers during elective theatre sessions? Has this been taken into account during completion of departmental rotas and training carousels?
- Are trainees able to report any deficiencies in TIVA/TCI case numbers and what action is taken to address these. Modified Cappuccini tests specifically relating to TIVA/TCI could be performed.<sup>4</sup>

### Teaching

- Is there a teaching programme within the school of anaesthesia which delivers formal TIVA/TCI teaching at all appropriate training levels?
- If trainees are unable to attend their school's internal teaching, are they aware they should attend a suitable external course/study day and is there a robust process for requesting study leave and adequate study budget?

### Equipment

- Is there sufficient equipment for the safe delivery of TIVA/TCI anaesthesia (TCI pumps and processed electroencephalogram monitoring) available within the anaesthetic department to allow for the provision of training.

### Mapping

**ACSA standards:** 1.3.1.5, 2.5.3.1, 2.5.3.2, 2.5.6.1, 4.1.2.1

**Curriculum competences:** CI\_BK\_30, PC\_BK\_52, PR\_BK\_22;23;24;28, CS\_IK\_04, EN\_IK\_02, NA\_IK\_04;05, PC\_IK\_20, POM\_IS\_22, PR\_IS\_01;03, CD\_HK\_11, CK\_HS\_05, POM\_HS\_11

**CPD matrix code:** 1E06

**GPAS 2020:** 3.4.1, 3.4.3, 3.4.5

## References

1. Nimmo AF et al. Guidelines for the safe practice of total intravenous anaesthesia (TIVA). *Anaesthesia* 2019;74:211–224.
2. Pandit J, Cook T. Accidental Awareness during General Anaesthesia in the United Kingdom and Ireland: Report and findings. NAP5, 5th National Audit Project of The Royal College of Anaesthetists and the Association of Anaesthetists of Great Britain and Ireland. London: RCoA; 2014 (<https://www.nationalauditprojects.org.uk/NAP5report?newsid=1187#pt>).
3. Society for Intravenous Anaesthesia. Proposal for a National Competency Framework for Teaching TIVA/TCI (<https://siva.ac.uk/joom2/index.php/resources>).
4. Bogod DG. The Cappuccini test. *Bull R Coll Anaesth* 2018;108:36.