Royal College of Anaesthetists

Difficult Airway Society

Tayside Mastery Learning Programme

Skills Training for Novice Anaesthetists – Why Simulation Based Mastery Learning

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Introduction

It seems cruelly ironic that the May edition of the RCoA Bulletin entitled 'Overcoming Challenges in Training' was entirely written before the COVID-19 pandemic.[1] In the 'post COVID era' trainees will have reduced clinical exposure and reduced clinical training opportunities. It will be a major challenge to ensure that trainees reach the level of competency required for IAC and safe delivery of anaesthesia for on-call purposes. As trainers, we have a responsibility to fill the clinical void in training that faces our future colleagues and so we must be innovative in our approach to these challenges. One obvious solution to the problem is simulation training. This has long played a role in training but now it must play a greater role. Increased simulation, with the support of a mastery learning structure, is established in many training centres and may enhance training now, and going forward.

Mastery Learning Approach

Simulation based mastery learning (SBML) for teaching practical procedures has a strong evidence base[2,3] and has been shown to reduce complications[4] and reduce health-care costs for organisations.[5] Additional collateral effects of promoting a culture of good practice among those who have not been through the SBML training have been noted.[6] In addition to improving patient safety, simulation training can improve training opportunities in clinical practice, as an opportunity to observe can be converted to an opportunity to perform under supervision. The model for SBML is two staged, involving learner engagement with:

1. **pre-procedure related material**
2. **clinical procedure skills session**.

Pre-procedure material is an educational package containing relevant information about the specific procedure, including: video demonstration, procedural steps, indications and contraindications, and a checklist that guides assessment and feedback. Trainees should be provided with written teaching material prior to attendance at the skills session.

At the clinical procedure skills-session the trainee is expected to perform the procedure uninterrupted and is observed by the trainer who assesses them according to a checklist. Targeted feedback is then given using the checklist. The trainee then repeats the procedure until it is completed correctly and they have achieved the minimum passing grade. Sessions generally take about 1 hour, recognising the session should be results orientated rather than time based. Sessions are best delivered on a high tutor to trainee ratio (ideally 1 : 1 or 1 : 2). Although costly in terms of faculty time, this way of teaching is highly effective and also enables social distancing. Moving away from this model would dilute the educational value. To make the process time efficient, it is helpful if there is a dedicated training area where the equipment can be left out. This has the benefit that trainees can practice prior to and after supervised training sessions and be given the opportunity to practice on manikins, ideally in pairs or small groups in a form of peer-supported training.

It is important to recognise that when the trainee has performed the procedure to a satisfactory level on the manikin, this does not mean that they are 'competent' to perform the procedure in clinical practice, or that they have 'mastered' it. The clinical skills session is one stage on a continuum of learning that should be followed by supervised practice in the clinical setting, ideally using the same checklist, and is supported by Workplace-Based Assessment such as DOPS.

Mastery Learning for Anaesthetic Procedures

SBML can be used to teach any clinical skills; however, the greatest value is likely to be with the most complex and invasive procedures. In anaesthesia these are:

- airway management
- dural puncture for spinal anaesthesia
- central venous catheterisation
- lumbar epidural.

The first three would be recommended for initial stages of core training (ideally prior to IAC) and epidural would be recommended for initial training in obstetric anaesthesia (and ideally before IAOC).

Airway training is complex and needs to be further divided. In Tayside, we have divided airway management into five:

1. pre-oxygenation and basic airway management
2. supra-glottic airway
3. laryngoscopy and intubation
4. extubation
5. unanticipated difficulty in airway management and emergency front-of-neck airway.

Clearly, teaching in RSI also needs prioritised for IAC. This is a more complex process and we have decided to keep things simple and not develop SBML material for RSI yet, but we may do so later. Hopefully, providing effective training in the process of intubation will mean that the 'cognitive load' during RSI will be reduced.

Options for delivery

SBML sessions could be part of large central anaesthetic 'bootcamps', but the model is more usefully delivered locally or regionally, facilitated by local Airway Leads and supporting faculty. Modes of delivery are best decided by the local educational faculty. For example, SBML can be delivered during dedicated half days where skills are taught in one session and are followed by clinical practice using the same checklists over the coming days.

Suitable task trainers are required. Sessions can be delivered in a dedicated anaesthetic training area, a clinical skills unit or in a clinical area if space and dedicated storage is available. Tutor Guides are provided for each individual skill being taught.

e-LA platform

The e-LA platform would be the ideal site for a virtual learning environment (VLE). This would consist of pre-session material including the relevant information to be able to perform the procedure safely and correctly, a checklist, and a video demonstration of the procedure being performed according to the checklist. Questions could also be added to check understanding, and feedback provided on the answers. Links could be provided for further reading along with additional eLA modules relevant to the skill.

References

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