

The use of technology has certainly been explored and drug identification verification is a targeted area for automation interventions. However, as pointed out, putting a machine in the interaction between patients and doctors does not automatically improve safety. In fact, potential vulnerabilities can be exposed by increasing the complexity of the system as argued by the Normal Accident Theory⁴. The authors concurred with this.

Some of the system issues contributing to drug errors in an operating room cannot be addressed by an automated drug labelling system. These include:

- ambient lighting and background noise level,
- distractions and interruptions during the drawing up of drugs,
- confusion arising from trainees and consultants working together without clear definition of roles leading to omission or doubling up of drug administration and
- limitations of technology in dealing with sterile drug administration (e.g. neuraxial routes) where errors lead to more significant consequences.

This list could go on. Many aspects of the working environment are recognised to impact on drug administration errors. In addition, there are practitioner factors that are operational at various times. Some examples include fatigue, workload and cognition overload. It is difficult to evaluate the effects of these factors for there has been little success in translating the observations made into measurable indicators of medication safety⁵.

In adopting the Donabedian framework⁶, the evaluation of using the Codonics Safe Label System to improve labelling compliance of anaesthesia drugs constitutes a process-focused assessment of the quality of care. The difficulties faced with structure measures have already been mentioned. Finally, drug errors are most certainly under-reported, contributed to by drug errors affecting single patients rather than causing mass casualty, the majority of errors not resulting in catastrophic consequences and, in instances where no harm resulted, patients not necessarily even being informed.

Without accurate and meaningful data in structure, process and outcome measures, we are challenged in our quest to reduce medication errors during anaesthesia.

M. Wong

Parkville, Victoria

References

1. Ang SB, Hing WC, Tung SY, Park T. Experience with the use of the Codonics Safe Label System(™) to improve labelling compliance of anaesthesia drugs. *Anaesth Intensive Care* 2014; 42:500-506.
2. Webster CS, Merry AF, Larsson L, McGrath KA, Weller J. The frequency and nature of drug administration error during anaesthesia. *Anaesth Intensive Care*. 2001; 29:494-500.
3. Weller JM, Merry AF. Best practice and patient safety in anaesthesia. *BJA* 2013; 110:671-673.
4. Perrow C. *Normal Accidents: Living with High-Risk Technologies*. New York: Basic Books, 1984.
5. Flynn EA. Human factors and ergonomics in medication safety. In: Carayon P, editor. *Handbook of Human Factors and Ergonomics in Health Care and Patient Safety*. 2nd ed. Boca Raton: CRC Press, 2012. p.788.
6. Donabedian A. The quality of care: how can it be assessed? . *JAMA* 1988; 260:1743-1748.

Experience using a new staged extubation kit in patients with a known difficult airway

In patients with a known difficult intubation or an abnormal airway, tracheal extubation may be associated with loss of the airway and difficult reintubation. In the fourth National Audit Project from the United Kingdom, one-third of the major airway complications relating to anaesthesia occurred during emergence or in the recovery room, with a mortality rate of 5%¹. For patients at risk of extubation attempt failure, particularly those known to have a difficult airway, an airway exchange catheter-assisted technique has been recom-

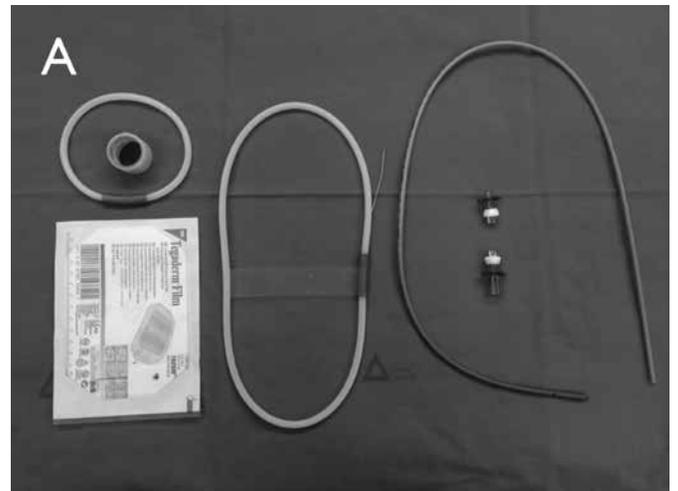


Figure 1: A) the staged extubation set. B) A screenshot following the staged reintubation catheter (indicated by the arrow) through the vocal cords. Note: the tip of the endotracheal tube railroading on the catheter.

mended to safely transition the removal of an endotracheal tube (ETT)². While airway exchange catheters such as the Cook exchange catheter (Cook Critical Care, Bloomington, IN, USA) have been used for “safe extubation protocols”³, experience with their effectiveness and safety is limited⁴. Recently, Cook Critical Care have released a staged extubation set (SES) designed for extubation in patients with a difficult airway (Figure 1). The SES consists of the staged reintubation catheter, a 14-Fr airway exchange catheter with a blunt soft tip and a 0.035 inch (0.889 mm) flexible wire with a polymeric coating. The wire is advanced through the ETT, before extubation, to a predetermined depth. The ETT is removed while the wire remains secured in place until the risk of extubation failure has passed. In the event that reintubation becomes necessary, the staged reintubation catheter is advanced over the wire and an ETT is then advanced over the reintubation catheter. The benefit is patient comfort and longer tolerance of the wire in the airway versus the exchange catheter itself.

We would like to describe our experience with the new Cook SES. We retrieved data collected prospectively from January to December 2013 at our general community hospital (G.B. Morgagni-L. Pierantoni Hospital, Forlì, Italy) as part of a multisite prospective observational study (Ref no. 997/2010 I 5/209-439).

All adult patients undergoing general anaesthesia where an SES was used for ETT exchange or as an extubation aid were included. There were 40 such patients in the database. We were primarily interested in SES usage failure, defined as the inability to complete tracheal tube exchange or tracheal reintubation as intended and secondarily in airway injury, including minor injury (dental injury, lip trauma, airway oedema) and pneumothorax. In four cases, a postoperative emergent reintubation was necessary and attempted over the SES. All were successful and no airway injury was recorded. A videolaryngoscope (Glidescope, GVL, Verathon Inc., Bothell, WA, USA) was used to assist reintubation, which, in our opinion, helps to optimise laryngeal viewing and the passage of the reintubation ETT⁵. The mean duration of SES in situ was about 60 minutes. All patients were judged comfortable during this period by nurses in our recovery room.

Clearly, further experience with the SES is required before it is confirmed as being safe and effective; however, in our retrospective review, the use of the SES appeared to be an effective and safe technique, allowing successful reintubation in the few cases of extubation failure. The SES may be a suitable alternative to other systems available and could potentially replace standard airway exchange catheters in patients with a high risk of extubation failure.

R. M. Corso

D. Cattano

S. Maitan

Forlì, Italy and Houston, United States

References

1. Cook TM, Woodall N, Frerk C. Major complications of airway management in the UK: results of the Fourth National Audit Project of the Royal College of Anaesthetists and the Difficult Airway Society. Part 1: anaesthesia. *Br J Anaesth* 2011; 106:617-631.
2. Popat M, Mitchell V, Dravid R, Patel A, Swampillai C, Higgs A. Difficult Airway Society Guidelines for the management of tracheal extubation. *Anaesthesia* 2012; 67:318-340.
3. Cavallone LF, Vannucci A. Review article: Extubation of the difficult airway and extubation failure. *Anesth Analg* 2013; 116:368-383.
4. McLean S, Lanam CR, Benedict W, Kirkpatrick N, Kheterpal S, Ramachandran SK. Airway exchange failure and complications with the use of the Cook Airway Exchange Catheter®: a single center cohort study of 1177 patients. *Anesth Analg* 2013; 117:1325-1327.
5. Mort TC. Tracheal tube exchange: feasibility of continuous glottic viewing with advanced laryngoscopy assistance. *Anesth Analg* 2009; 108:1228-1231.