From April to October 2016, we conducted simulation training with 60 fifth year medical students with no experience in tracheal intubation, as a part of their routine training at Osaka Medical College. We teach medical students about basic airway management using manikin simulations, bag-and-mask ventilation with various techniques, supraglottic device insertion (e.g. with laryngeal masks or laryngeal tubes), and tracheal intubation with the Macintosh laryngoscope (McL) and Pentax-AWS Airwayscope™ (AWS; Hoya Corporation, Tokyo, Japan).

We divided the medical students into Group 1 (McL 10 min, AWS 10 min), Group 2 (AWS 10 min, McL 10 min), and Group 3 (AWS 20 min). After simulation training, we assessed tracheal intubation time and success rates using AWS in both normal and difficult airways (cervical fixation) using a tracheal tube (Portex, St Paul, MN, USA) with an internal diameter of 7.5 mm.

Intubation time was defined as the time from picking up the AWS until they performed bag-and-mask ventilation. Results were compared using the $\chi^2$ test or one-way repeated-measures analysis of variance, and are presented as means (SD).

Two students in Group 3 failed to intubate in both normal and difficult airways, whereas all succeeded in Groups 1 and 2. Although this difference in success rate was not significant, the intubation time was significantly higher in Group 3 compared with Groups 1 and 2 for both normal and difficult airways ($P<0.001$ for each; Fig. 1). One explanation for this is that students can see the pharyngeal and laryngeal anatomy laryngoscopically with the McL, which might have helped with AWS-mediated laryngoscopy and tracheal intubation.3

Our findings highlight the importance of direct laryngoscopy training for medical students in order to obtain indirect laryngoscopy skills.

**Declaration of interest**

None declared.

**References**


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‘LIVES’: a mnemonic for teaching advanced airway management

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Learning is the process whereby knowledge is created through the transformation of experience.

D. A. Kolb, 1984

Editor—Mnemonics1 are ‘effective learning strategies’, widely used in teaching and learning of medicine. They can ‘enhance memory’ and ‘may increase memory of important steps and provide a structured process to follow’.2 Examples of mnemonics in medicine are countless, although relatively few are published. Examples pertaining to emergency medicine include ‘ABCDE’, used in teaching the Advanced Trauma Life Support (ATLS) course,3 and the ‘7 Ps’ used in the Manual of Emergency Airway Management.4 Even fewer publications investigate the efficacy of specific mnemonics. One paper noted of mnemonics that there were ‘few data on their effectiveness’ and more studies were needed to evaluate aide memoires.5 We developed the ‘LIVES’ mnemonic to enable the user safely to perform all the steps around a successful tracheal intubation (Table 1).

Each of the five letters in ‘LIVES’ reminds the user of at least two items and might help them to complete all the steps required in the safe insertion of the tracheal tube. The worth of this mnemonic lies in the fact that it both clearly states the steps of tracheal intubation in order and informs the user of the tools required for each step.

**Table 1 The LIVES mnemonic for tracheal intubation**

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>Laryngoscope</td>
</tr>
<tr>
<td>I</td>
<td>Intubation tube</td>
</tr>
<tr>
<td>V</td>
<td>Ventilatory device</td>
</tr>
<tr>
<td>E</td>
<td>End-tidal CO₂ monitor</td>
</tr>
<tr>
<td>S</td>
<td>SaO₂ monitor</td>
</tr>
</tbody>
</table>
After very positive feedback from ATLS candidates on the effectiveness of ‘LIVES’ as a mnemonic during their ATLS sessions, we conducted a pilot study to evaluate its efficacy. Ethical committee approval was obtained, and a double-blind randomized control trial was conducted with students from Year 2 and Year 3 Warwick University medical school. The aim was to assess the effectiveness of the LIVES mnemonic in retention and recall of the steps surrounding tracheal intubation.

The ATLS advocates the use of the four-step teaching technique referred to as Kolb’s cycle.6 These steps broadly consist of experience, observations and reflections, development of ideas, and testing ideas in practice. The four-step technique requires watching an expert perform a procedure without commentary (experience), then watching while commentary is provided from the expert (observations and reflections). The participant then talks through the procedure while it is performed (development of ideas). Finally, the participant performs with commentary (testing ideas in practice).

Professional quality videos of the two teaching methods, using the same trainer, were prepared and peer reviewed to ensure a good standard of the video and teaching techniques. The two teaching videos were similar in content and used Kolb’s learning cycle. The difference in the videos was the use of the LIVES mnemonic in one to serve as an aide memoire, whereas the other was without any mnemonic. The same trainer was requested to perform in the two videos to eliminate bias that might result from teaching abilities of two different individuals. The videos were roughly of the same duration, lasting ~17 min.

This study was conducted with 40 medical students in two equal groups. The two groups performed equally well, but the mnemonic group felt that ‘LIVES’ was a valuable long-term aide memoire for remembering all the essential steps related to intubation. The mnemonic has also proved to be a favourite among trainers and trainees in locally held ATLS courses. A larger study has been planned to evaluate statistical significance; mean-based and standard deviation of responses. The mnemonic has also been found to be a valuable aid in the retention of emergency medicine.


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Transparent acrylic protector use for patient positioning and monitoring in robot-assisted laparoscopic prostatectomy


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Editor—A modified lithotomy position with steep Trendelenburg is adopted for robot-assisted laparoscopic radical prostatectomy. Exceptional attention must be paid to avoid complications associated with the position, such as cephalad shifting, pressure sore, and neuromuscular injury.1 In addition, facial swelling and upper airway oedema attributable to venous stasis of the head and neck are not uncommon.2 Given that observation of the patient’s airway and i.v. access are limited with the conventional positioning device,2 3 a device for direct monitoring of the patient’s head and neck is advisable.

Various methods and instruments have been used for patient positioning and safety, but most of them have been focused on patient immobilization.2 X-Shaped chest straps, shoulder straps, and shoulder braces have been used to bind the patient to the table.4 5 However, with straps there are risks for brachial injury and a further decrease in pulmonary compliance in addition to the effect of Trendelenburg and pneumoperitoneum.5 To avoid these complications, a padded beanbag, egg-crate foam padding, or gel pad on the operation table has been used to prevent patient sliding. For protection of the head, a Mayo stand was put over the patient’s head to prevent facial injury associated with the robotic arms and other instruments.2 However, it is inconvenient to check and access the patient under the conventional anaesthesia screen under the Mayo stand.

A hollow and transparent half-cylinder-shaped acrylic protector (Fig. 1) is used in our institution for patient positioning.