

## References

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## A national survey of single-use and reusable laryngeal mask use in England

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### EDITOR:

Single-use products, similar in design to the reusable classic laryngeal mask airway (cLMA: LMA-Classic™, Intavent Orthofix, Maidenhead, UK), have been available since 2003. In the UK, the Association of Anaesthetists, Royal College of Anaesthetists, Chief Medical Officer and Department of Health have recommended single-use equipment where appropriate as part of an infection-control policy. The impact of this advice on the uptake of single-use laryngeal masks (LMs) has not been well described.

We conducted a telephone survey of LM use by the 148 NHS Acute Hospital Trusts in England in September 2006. If a Trust comprised more than one hospital, the call was directed to the hospital predominantly performing general surgery. Up to three calls were made to reach theatre store managers and senior operating department practitioners (SODPs), or assistants were requested. If neither were reached in 15 min, the attempt was abandoned. If further details were required a further phone call was made.

Respondents were asked if their department used single-use and/or reusable LMs, which single-use LMs are stocked, do you have single-use and/or reusable LMs on your difficult airway trolley, what was the main factor affecting your choice of single-use LM, were anaesthetists involved in the choice and why do you still keep reusable LMs?

Responses were obtained from 129 (87%) operating theatre departments. Twenty-three (18%) departments only stocked single-use LMs. Twenty-six (20%) routinely used single-use LMs but also stocked reusable LMs. Forty (31%) had both types in routine use. Forty (31%) stocked single-use LMs but routinely used reusable LMs. The single-use brands in routine use were Intavent (31), Marshall (21), Intersurgical (14), Ambu (13), Portex (2) and ProAct Medical (1). One department routinely stocked more than one brand. Six departments were performing in-house evaluations of single-use LMs. On the difficult airway trolley, 14 departments had single-use LMs, 49 had reusable LMs and 23 had both. Forty hospitals had no LMs on their trolley, as they were reported to be available in the anaesthetic room.

The main reasons given for the purchase of a single-use brand were cost (34), anaesthetist's preference (30) (epiglottic bars were specifically mentioned by three respondents as desirable), result of an in-hospital evaluation (11), 'same manufacturer as the Classic™ (3), 'it was the first brand available' (1), 'concern over phthalates' (1), 'good salesperson' (1) and not known (4). Of the 89 departments stocking single-use LMs, 67 had involved anaesthetists in decision-making. Twenty-seven of these used anaesthetists' preference as the main factor determining the choice. In 40 departments another factor predominated. In 22, this was cost.

Thirty-three departments had performed evaluations of single-use LMs. Thirteen had made their choice after experiencing just one brand. Two were continuing to evaluate other single-use brands while purchasing another. Eight chose the cheapest

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product after their evaluations. Eight continued routinely using reusable LMs after their evaluations. One department used single-use LMs for 'high-risk patients only'. The main reasons for still stocking reusable LMs were cost-efficiency (41), anaesthetists' preference (20), surgery requiring an armoured LM (19), for the difficult airway trolley (11), for paediatric use (5), to cope with stock interruptions (4), 'cuff pressures too high in single-use LMs' (1) and not known (1). Four departments' in-house evaluations of single-use LMs were intended to result in replacement of reusable LMs.

This survey was aimed at general operating theatre departments. We hoped to avoid departments with a dedicated surgical predominance, for example, ENT or paediatric surgery, which might affect their preference of airway device. The responses suggested that the introduction of single-use LMs in hospitals in England had been substantial. All the hospitals surveyed possessed them, and 69% routinely used them. Some departments had adopted single-use devices completely and others intended to do so. Some routinely used single-use LMs but still occasionally employed reusable armoured and paediatric LMs, even though single-use versions of these devices are manufactured.

Eighty-two percent of departments still stocked reusable LMs, most frequently because of cost-efficiency and user preference. Many departments had found that the comparative cost of using single-use and reusable LMs favoured reusable devices. This suggests some single-use brands were not competitively priced with reusable devices. However, the commonest basis for choosing between single-use brands was cost. Anaesthetists' preferences only affected the choice of LM in some departments, and surprisingly, in a few, anaesthetists were not involved in decision-making.

The reasons for anaesthetists' preferences for a specific LM were not sought directly, but the results of an in-house evaluation affected the selection in 11 departments. Thirty-three evaluations in separate hospitals were reported, with others on-going. The finance, size, duration, structure and analyses of these evaluations were not questioned. However, one published evaluation [1] suggested such investigations could be 'poorly conducted', 'underpowered' and 'unethical'. If the decision between brands were ultimately to be based on cost, performing these evaluations might be futile.

Six different single-use LM brands were reported in use. The reasons for their different incidences in our sample were not determined and cannot be taken as an indicator of cost, quality or departmental satisfaction with a brand. As some departments had completely switched to a single-use LM while others had rejected them entirely, it could be

inferred that the formers' brands were 'better' than the latter's. This survey neither supports nor refutes this possibility and there is little published research comparing all the available single-use LMs. However, departments might disagree significantly over their desirable and tolerable characteristics of an LM, making the value of this type of comparative evaluation moot.

The apparently inconsistent behaviour of departments that routinely used both single-use and reusable devices deserves explanation. Clinical indications might have determined the use of each type of LM in these departments as indicated by the department that employed single-use LMs only for high-risk cases. Accommodating conflicting costs, infection concerns and anaesthetists' preferences might also produce simultaneous use within a department.

Seventy percent of hospitals with LMs on their difficult airway trolley kept a reusable device. If this is presumed to be a cLMA, given few reusable brands are available, it could be inferred anaesthetists prefer this reusable device for difficult and emergency airway problems. The Difficult Airway Society of the UK guidelines for management of the unanticipated difficult intubation [2] specifically suggest using a cLMA, but state 'any other supraglottic airway device could be used.' However, in some hands, some single-use LMs are more difficult to use than cLMAs in terms of ease of insertion, trauma induced and as an aid to fibre-optic intubation [3–6]. Furthermore, not all size 3 or 4 single-use brands permit the passage of a 6.0 mm ID endotracheal tube [7].

There are limitations of this survey. Without independent verification, the trustworthiness of the information could be questioned. However, a pilot study suggested finding anaesthetists making purchasing decisions would be difficult. Speaking to any available anaesthetist might not yield useful information. For example, some did not know which LMs were used in their department. Other authors have published data derived from ODPs and theatre managers to demonstrate the risks to patient safety of single-use devices [8].

Individual survey attempts were time-limited for the practical conduct of the survey and cost. However, the LM stock and use data from store managers comprised ordering and sterilization records that were unambiguous. SODPs were familiar with the practice of many anaesthetists and regularly checked difficult airway trolleys. Reported motives behind purchasing single-use LM brands might be suspect because respondents might not be involved first-hand. Nevertheless, there is little reason to doubt that cost and anaesthetic preference are principal factors affecting the choice of single-use LMs.

In summary, we found the universal introduction of single-use LMs in hospitals in England over the past 4 years but they have far from replaced reusable LMs. The majority of hospitals still routinely use reusable devices and, in some, single-use LMs as well as reusable LMs are employed. These confusing observations might represent a gradual transition to the routine use of single-use LMs in all hospitals. However, many departments justified reusable devices on cost and anaesthetists' preference despite conflicting recommendations by relevant government and professional bodies. We noted wide variation in purchasing single-use LM brands and in behaviour selecting these brands. We are uncertain of the quality of assessments of single-use LMs revealed by the survey. We would exercise great caution in interpreting these data and extrapolating measures of satisfaction from them. Some departments reported evaluations of only one brand before proceeding with purchasing. The apparently successful results of such a 'trial' may indicate the adequacy of a device, not excellence. We would be interested in similar data from other countries.

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## Videolaryngoscopy – an answer to difficult laryngoscopy?

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### EDITOR:

We would like to report the findings of a series of 57 difficult laryngoscopies in which videolaryngoscopy was shown to significantly improve the glottic view, enabling successful intubation.

Videolaryngoscopy has previously been compared with direct laryngoscopy and shown to have potential advantages in the glottic view obtained [1,2]. Videolaryngoscopes have an intense light source and a fibre-optic camera built into a range of blades. The blade is inserted in the same way as in conventional laryngoscopy but the view is observed on a screen rather than directly. Fibre-optics relay the image from beyond the curvature towards the tip of the blade. This, combined with the image being magnified on the screen, is largely the reason for the improved view of the glottis. External manipulation of the larynx by an assistant viewing the image on the

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screen can enable further improvement. Viewing the endotracheal tube passing through the cords allows immediate and direct confirmation of successful intubation. At our institution, we routinely use videolaryngoscopy (X-lite, Rusch, Germany) in cases of anticipated or unexpected difficult laryngoscopy and anecdotally it appeared to improve the glottic view. We set out to see whether this was actually the case, by comparing the direct glottic view with video laryngoscopy when we were faced with difficult laryngoscopies (Grade III/IV Cormack and Lehane (CL) views [3]).

Over a 6-month period, 57 patients with CL Grade III or IV at direct laryngoscopy were subsequently intubated using videolaryngoscopy. In each case, a consultant anaesthetist confirmed that the view at direct laryngoscopy was Grade III or IV and then the view was assessed at videolaryngoscopy (prior to intubation), which was performed either by themselves or by another anaesthetist. The patients were from a cross-section of surgical specialties – 61% ENT, 19% general surgery, 11% maxillofacial and 9% orthopaedic. The procedures being undertaken were elective in

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