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Optimum contents of a portable emergency airway equipment bag: results of an institutional survey

To the Editor:

Previous studies suggest that emergency crash carts may not always be readily available or adequately stocked.^{1,2} In view of this, anesthesia residents and fellows in our institution carry a portable airway equipment bag to all emergencies. We carried out a department wide survey in an attempt to optimize and standardize the equipment and drugs included in this bag.

Forty-two staff, fellows and residents in anesthesia working at the Hospital for Sick Children, Toronto, were surveyed in October 2004. A preliminary questionnaire was pretested by sending it to selected departmental members. Sixty-four possible items for inclusion in a portable airway equipment bag were listed on the final questionnaire, and sent to all departmental members. Each respondent was asked to provide a "yes" or "no" response to each item. Any item approved by more than 75% of the respondents was to be included in the bag. All items gaining 50 to 75% approval were discussed with the Trauma Committee of the department to determine if their inclusion was warranted.

The response rate was 50%. The Table lists the 37 items gaining more than 75% approval.

Three items, the laryngeal mask (LMA) size 1, gum elastic bougie and Ayre's T-piece received 50 to 75% approval, and were included in the list of equipment following discussion with the Trauma Committee. The LMA size 1 has been shown to be useful in neonatal emergencies³ and the gum elastic bougie is commonly included with the difficult airway equipment.⁴

The Ayre's T-piece anesthesia bag was a more popular choice than the self inflating bag as a device to provide positive pressure ventilation to the lungs.

TABLE Items gaining > 75% approval for inclusion in portable airway bag

<i>Items to be included</i>	<i>% Approval</i>
<i>Face mask</i>	
1	86%
2	95%
3	95%
4	90%
5	86%
<i>Guedel airway</i>	
3	81%
4	86%
5	95%
6	95%
7	100%
8	95%
9	81%
Straight blade size 1	95%
Curved blade size 3	90%
<i>Uncuffed endotracheal tubes</i>	
2.5	90%
3.0	90%
3.5	86%
4.0	86%
4.5	81%
5.0	76%
5.5	76%
<i>Cuffed endotracheal tubes</i>	
5.5	76%
6.0	90%
6.5	76%
7.0	86%
<i>Laryngeal mask</i>	
2	90%
3	95%
4	81%
Stylet	90%
Macgills forceps	76%
<i>Drugs</i>	
Propofol	76%
Suxamethonium	95%
Atropine	95%
Rocuronium	76%
Ketamine	76%

Perhaps the respondents had greater familiarity with the T-piece and were conscious of the ready availability of self inflating bags on all wards in at our institution.

We believe the reconstituted portable airway equipment bag we describe contains appropriate equipment to deal with immediate cardiopulmonary management problems in emergency situations.

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Medium-/long-chain triglyceride emulsion reduced severity of pain during propofol injection

To the Editor:

Injection pain is a common problem associated with the clinical use of propofol. Recently, free propofol in the aqueous phase was thought to be an important factor implicated in injection pain. Medium-/long-chain triglyceride (MCT/LCT) propofol is a new formulation,¹ in which free propofol in the aqueous phase has been reduced to 72.4% of the level in LCT propofol Diprivan™.² The purpose of the present randomized, double-blind study was to evaluate the potential of MCT/LCT propofol itself to decrease the incidence and severity of injection pain.

After approval of the Institutional Review Board and obtaining written informed consent, adult patients undergoing elective surgery participated in this study. No patient received premedication. Patients were randomly assigned to a LCT group or a MCT/LCT group. During induction, patients in the LCT group received Diprivan™ 1% (Astra Zeneca, Osaka, Japan), while those in the MCT/LCT group received 1% propofol Maruishi™ (Maruishi Pharmaceutical Co., Osaka, Japan). Both patients and anesthesiologists were blinded with respect to the formulation used. After establishing *iv* access, 2 mg·kg⁻¹ of propofol was manually injected at 1 mL·sec⁻¹. During the propofol injection, patients were ques-

TABLE Demographic data and anesthetic condition

	LCT (n = 95)	MCT/LCT (n = 99)	
Age (yr)	56.4 ± 16.4	57.8 ± 14.9	
Gender (f/m)	43/52	42/57	
Weight (kg)	59.8 ± 10.9	58.3 ± 10.5	
ASA I/II	52/43	52/47	
<i>Site of injection</i>			
Forearm vein	85 (89.5%)	91 (91.9%)	
Dorsal vein of hand	10 (10.5%)	8 (8.1%)	
<i>Cannula size</i>			
18/20/22 (gauge)	27/56/12	21/67/11	
Dose of propofol (mg)	118.6 ± 24.8	118.2 ± 25.7	
Time to loss of consciousness (sec)	46.0 ± 16.4	47.7 ± 18.1	
<i>Incidence and severity of pain at injection site</i>			
INTENSITY OF INJECTION PAIN			
None	37 (38.9%)	50 (50.5%)	P = 0.1056
Mild	29 (30.5%)	35 (35.4%)	P = 0.4747
Moderate	25 (26.3%)	11 (11.1%)	P = 0.0065
Severe	4 (4.2%)	3 (3.0%)	P = 0.6595

LCT = long-chain triglyceride; MCT = medium-chain triglyceride.

tioned about the presence of pain at the injection site, and its severity was graded by the patients themselves using a four-point scale: 0 = no pain; 1 = mild, acceptable pain; 2 = moderate, uncomfortable pain; and 3 = severe, intolerable pain. Data were analyzed using the Chi-square test and t test.

Ninety-five patients were randomly allocated to the LCT group and 99 patients to the MCT/LCT group. The two study groups were comparable with respect to demographic characteristics, site of injection, cannula size, and induction time (Table). The MCT/LCT formulation significantly decreased the incidence of moderate injection pain when compared to the LCT group (11.1% *vs* 26.3%, *P* = 0.0065), and there was a tendency that the MCT/LCT formulation increased the incidence of mild or no pain. However, no statistically significant difference was apparent in the incidence of patients who felt no pain (50.5% in MCT/LCT *vs* 38.9% in LCT, *P* = 0.1056), (Table). These results suggest that reduction of free propofol concentration in the aqueous phase in the MCT/LCT formulation was not sufficient for complete prevention of injection pain.

In conclusion, while MCT/LCT formulation represents a better choice to reduce the severity of injection pain with propofol, supplemental medication to prevent injection pain should be considered for patients with low pain thresholds.