

## Retention of Knowledge after an Integrated One Hour Pediatric Airway Management Course

P. Dalby, M.D.  
S. McCann, M.D.  
M. Fiedor, M.D.  
R. Romeo, M.D.  
R. Patel, M.D.

University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania

**Introduction:** Pediatric residents that participate in a structured curriculum for pediatric resuscitation acquire greater knowledge, skills, confidence and leadership than those who do not participate in a formal curriculum. (1) It is reasonable to deduce that medical students would also benefit from a formal curriculum for pediatric airway management. Medical students at the University of Pittsburgh School Of Medicine do receive BLS training upon entering medical school but are formally introduced to pediatric airway management in their second year during a Clinical Procedures Course. In this course, one four hour session is dedicated to respiratory evaluation and airway management skills. Out of these four hours, one hour specifically focus on pediatric airway management. We were curious as to the retention of information immediately following this one-hour session. We were also interested in the difference in posttest performance based on prior exposure to pediatric airway management, since studies on paramedics have shown that clinical knowledge returns to baseline levels approximately six to twelve months after completing a pediatric resuscitation course. (2)

**Methods:** All second year medical students during the 2003-2004 school year participated in this course. Approximately 10 to 15 students participate in the one-hour pediatric airway management session simultaneously. This hour includes a 5-minute anatomy pretest, a 15-minute power point presentation, a 30-minute guided practice on a tracheal intubating manikin and a 10-minute written posttest. The posttest is optional although strongly recommended and consists of 5-questions. The first question evaluates prior exposure to pediatric resuscitation and asks "were you aware of the age-based sequence for resuscitation of infants and children versus older children and adults prior to this session for a single resuscitation?" The other four questions are taken verbatim from the power point presentation and can be seen in Table 1. The correct answers are also in Table 1 along with plausible, although considered incorrect, answers given by students. Blank answers were considered incorrect.

**Results:** Data was obtained from 65.4% (89/136) of students taking the course. According to the first posttest question, 73.0% (65/89) of second year medical students were aware of the age-based sequence for resuscitation of infants and children versus older children and adults prior to this session, 24.7% (22/89) were unaware and 2.2% (2/89) did not answer this question. Students answering "yes" to this first question had a mean of 2.15 correct answers out of a possible of 4 with a SD of 0.94. Students answering "no" had a mean of 2 with a SD of 0.87. Using an unpaired t-test, a p-value of 0.5012 was found when comparing these means. The percentage of students answering correctly and incorrectly to the four questions taken verbatim from the power point lecture are in Table 1.

**Discussion:** Student participation in taking the posttest was moderate at 65.4% and hopefully can be improved upon in the future by instructors stressing the importance of information that is gathered from this test. The majority of students had previous exposure to pediatric resuscitation. It is unclear what if any advantage this gave them since the mean in the group with prior exposure was slightly higher, but there was not a statistically significant difference ( $p = 0.5012$ ) between the two groups. By tallying the number of correct and incorrect answers, we were able to see the retention rate after a structured curriculum. The percentage of students answering correctly varied from 22.5% to 97.8% depending on the question. Because of this large span, we realize that some questions need to be reworded in the posttest and also some points need to be better emphasized in the power point lecture. Plans for the upcoming year involve using a pediatric simulator. The benefits that simulators provide over conventional teaching methods in terms of retention of knowledge and skills is

controversial, but students routinely enjoy simulator sessions more than conventional teaching methods. (3,4)

**Table 1.**

<b>Questions</b>	What is the maneuver that health care workers are taught to do to relieve foreign airway obstruction that lay people are not taught to do?	What is the single most determinate of effective bag-valve-mask ventilation?	What is the single most important issue in treatment of pediatric foreign airway obstruction?	How many breaths should be attempted after initially opening a pediatric airway?
<b>Correct Answer</b>	Tongue/jaw lift Or Bag-valve-mask ventilation	Visible rise in chest	Prevention	Two
<b>% Students with Correct Answers</b>	42.7% (38/89)	51.7% (46/89)	22.5% (20/89)	97.8% (87/89)
<b>% Students with Incorrect Answers</b>	57.3% (51/89)	48.3% (43/89)	77.5% (69/89)	2.2% (2/89)
<b>Plausible but Considered Incorrect Answers</b>		1. Fit of mask 29.2% (26/89)	1. Relieve obstruction 19.1% (17/89)  1. No blind sweeps 16.9% (15/89)	

**References:**

1. Nadel FM: Teaching Resuscitation to Pediatric Residents. Arch Pediatric Adolescent Med 2000; 154: 1049-54.
2. Su E: A Randomized Controlled Trial to Assess Decay in Acquired Knowledge among Paramedics Completing a Pediatric Resuscitation Course. Academic Emergency Medicine 2000; 7(7): 779-86.