



EMS NEWS

ESSENTIALS OF INTUBATION & ADVANCED AIRWAY MANAGEMENT

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Ask a paramedic to name an infrequently used ALS skill and the response one might provide would include procedures such as needle cricothyrotomy, or pleural decompression. But what about endotracheal intubation (ETI)? You might not consider this to be a "low-frequency" procedure. In fact, large-scale studies reveal that most ALS providers hardly intubate at all. Researchers in Pennsylvania surveyed the 2003 prehospital care records for the entire state and showed that nearly 40% of ALS providers **never** intubated that year. Overall 2/3 of the state's ALS providers had 2 or fewer ETI attempts that year. Another study that looked at the frequency of ETI by Maine ALS providers showed similar rates.

This bit of statistical information may be interesting, but consider this: Is ETI a critical procedure? Does ETI positively impact patient outcome? Nearly all recent studies indicate that it does not. In another words, patients do no better when intubated compared to when they are not in serious conditions such as cardiac arrest. Several studies have shown that intubation for patients with traumatic brain injuries (TBI) may in fact *worsen* outcomes when compared against TBI patients whose airways are managed with basic life support methods.

One more consideration: ETI success rates are not very high in EMS systems that carefully measure this performance indicator. Reports of 50 to 75% success rates are not uncommon; more importantly undetected esophageal intubations occur at a

low but steady rate.

What does this mean to the field paramedic? Simply this: advanced airway management is neither easy nor benign. Perhaps the smartest approach is to match the procedure to the condition. The continuum of airway management begins with simple basic procedures such as positioning, suctioning, ventilatory assistance and ensuring adequate oxygenation. The use of these approaches may be effective and adequate for many situations.

If ETI is judged to be necessary, then it is essential that the paramedic does whatever he or she can to make it successful. There are several fundamental steps to perform:

- ✓ Ensure that all of the necessary equipment is available and functioning, including multiple tube sizes, suction and a secondary airway device such as a Combitube.
- ✓ Properly position the head and neck to best visualize the glottic opening. Padding 1-2 inches under the shoulders and head may better align the upper airway axis.
- ✓ Adopt a "sterile" mentality. It may be impossible to maintain a infection-free environment in the field; however a paramedic can minimize the opportunity for infection by not "pre-loading" an ET tube with a stylette or leaving the tube outside of its protective sleeve.
- ✓ Maintain adequate ventilation and

MALLIMPATTI SCALE



Class I

Class II

Class III

Class IV

"3 - 3 - 2" Rule:

- 3 fingers fit in mouth
- 3 fingers fit from mentum to hyoid cartilage
- 2 fingers fit from mandible to top of thyroid cartilage

- ✓ Try to predict if the patient will be a "difficult tube" using measurement tools such as the "3-3-2" rule or the Mallimpatti scale. Patients with short necks, receding chins, or overweight are challenging intubations.

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Airway (Continued from page 1)

oxygenation before, during and after intubation. Measurement tools such as electronic capnography and pulse oximetry can provide objective data to better understand the exchange of gases. In fact, at least one study clearly showed that the consistent use of capnography essentially eliminated the chances of an undetected esophageal intubation.

- ✓ Be flexible during the intubation. While there is no clear data that shows that techniques such as cricothyroid pressure (Sellick maneuver) or BURP (Backward, Upwards and to the Right pressure of the trachea) are always helpful, many practitioners report better success with their use.
- ✓ Immobilizing the head and neck after a successful intubation may reduce the chance of a dislodged ET tube. Constant monitoring of breath sounds and end tidal carbon dioxide is a must, especially during extrication and transport.
- ✓ Ventilate CAREFULLY. Again, studies have shown that practitioners of all levels tend to over-ventilate the patient. Gastric distension with possible emesis is a significant threat to an airway; even worse, a hypocarbic state that results in alkalosis is more harmful to a patient than a hypercarbic, acidotic state.

Remember that the goal of airway management is *proper* ventilation and oxygenation of the patient. The tools and techniques used to accomplish this goal should be reviewed and practiced often. System quality improvement processes should measure for *appropriate* airway management, not just procedure.

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Dr. Pointer adds: Mr. Hsieh's article points out one of my major clinical

Teen's Driving Riskier with Male Teen Passenger

Excerpted from a press release issued by the National Institute of Child Health and Human Development, August 24, 2005



Teenage drivers - both male and female - were more likely to tailgate and exceed the speed limit if there was a teenage male passenger in the front seat, according to a study by the National Institute of Child Health and Human Development of the National Institutes of Health. Conversely, male teenagers were less likely to tailgate

concerns – maintenance of excellence in the performance of advanced airway techniques. In addition to the objectives that are mentioned, the gum elastic bougie is also available in Alameda County for difficult intubations.



Gum Elastic Bougie (GEB)

The Combitube may be used expectantly if the patient fails the "3-3-2 rule" or is a Mallampati Class III or IV. Always use Capnography (or the colorimetric technique) and the esophageal detector device with every advanced airway placement. The former should remain in place during the patient's entire pre-hospital course.

The overall success rate for Alameda County for the first three quarters of 2005 was 86%. This includes Combitube successes even if initial ETI was unsuccessful. By remembering a few mnemonics that can help predict a pending bad airway experience and utilizing appropriate adjuncts and detection devices, we can achieve our goal of a 95% success rate.

or exceed the speed limit when a teenage female was in the front passenger seat. In addition, female teen drivers were slightly more likely to tailgate if there was a female teen passenger in the vehicle with them.

The study was published in *Accident Analysis and Prevention*. "This study provides information that will be useful for officials in devising teen licensing standards," said NICHHD Director Duane Alexander, M.D. "The findings indicate that teen risky driving increases in the presence of teen passengers, particularly male teen passengers. But more important, the finding should remind teens and the adults who care about them that they need to drive safely, regardless of who is in the passenger seat."

On average, teens drove 1.3 miles an hour faster and allowed .17 seconds less headway than for the general traffic (about 10 feet less at 40 miles an hour). Both male and female teenage drivers were most likely to drive faster than the general traffic and to allow shorter headways if there was a male teenage passenger in the car. In fact, when a male passenger was in the vehicle, a quarter of teenage drivers exceeded the speed limit by at least 15 miles an hour.

Of the 14.9% of teen males engaging in risky driving, 21.7% had a male teen passenger in the vehicle. In contrast, only 5.5% of teen male drivers showed risky driving behavior in the presence of a female passenger.

Of the 13.1% of teen female drivers showing risky driving behavior, 12.9% had a male teen passenger, and 15.5% had a female passenger. Dr. Simons-Morton said that most cases of risky driving in this 15.5% of risky teen female drivers were due to short headways.



From the Medical Director

New AHA Guidelines - Evidence is the Difference

By Jim Pointer, MD. FACEP

Recently the American Heart Association (AHA) published the latest basic life support (BLS) and advanced cardiac life (ALS) support guidelines. This article will summarize the most important components. More than ever, the changes were based on solid evidence in the medical literature. The following is a brief summary of the changes and is not an attempt at exhaustive coverage. A complete text of the guidelines can be obtained at the AHA website americanheart.org.

BLS & ALS Cardiac Arrest Changes:

After two initial breaths the compression/ventilation ratio has changed from 15:2 to 30:2. The emphasis is on high quality, uninterrupted CPR. The rate should be about 100 compressions a minute for adults. For children, because of the increased incidence of respiratory arrest, the compression-ventilation ratio for two rescuers and health care professionals is 15:2. One rescuer or layperson employ the 30:2 ratio. For CPR with an advanced airway (endotracheal tube or combitube), 8-10 asynchronous breaths/minutes (on every 6-8 seconds) should be given. In all cases, a breath is one second in duration. These changes come about from evidence that hyperventilation decreases venous return, coronary perfusion pressure, and survival rates in cardiac arrest.

Defibrillation: Stacked shocks (defibrillatory shocks without intervening CPR) are no longer the recommendation. For all patients in ventricular fibrillation (VF), the rescuer should administer one shock of 360 joules for monophasic

defibrillators and 150-200 joules for biphasic defibrillators) with two minutes, of about five cycles, of CPR intervening. The first and all subsequent shocks are at these levels. The AHA also recommends that the role of the compressor be rotated every two minutes if conditions allow.

Other ALS Changes: Lidocaine is increasingly deemphasized as a preferred drug for cardiac arrest patients. Amiodarone is the preferred drug for refractory VF and ventricular tachycardia with pulses. Endotracheal administration of cardiac arrest drugs is increasingly deemphasized. The recommendations state that intraosseous infusion is the route of choice for cardiac arrest drugs, even in adults, if intravenous access is not available. Transcutaneous pacing is to be used without delay for Type Two second degree and third degree block.

A more complete treatment of the AHA changes will be distributed to all providers within the next thirty days. I have decided to distribute this material because the changes are very important in the treatment of our cardiac arrest patients and their survival. I realize that the new training from the AHA will not be available for some months. As usual, I appreciate your input and comments. Please contact me at james.pointer@acgov.org or (510) 618-2022.

Think about it . . . according to the U.S. Census Bureau during 2006 each day 7,918 people in the United States will turn 60 years old - that equals 330 every hour. How might this effect EMS systems, service providers and customers?

First Aid Guidelines for Schools

The Emergency First Aid Guidelines for Schools was developed for K-12 schools in response to the declining numbers of school nurses. Currently, only 50% of California school districts have a school nurse on staff and it is not uncommon to have a school nurse for two hours a week per campus.

EMS is paving the way to address the needs of vulnerable children with the new "Emergency Guidelines for Schools." The purpose of the guidelines is to assist school staff (health aides, secretaries, and teachers, etc.) to respond to medical emergencies until first responders arrive on scene.

The approach is to raise awareness with: user-friendly color coded tools, "train-the-trainer" customized presentations, and collaboration among child advocate partners to unite Alameda County schools. To help school staff follow the recommended emergency procedures quickly, the guideline document was developed in algorithm form. The guidelines address: developing an emergency plan; planning for persons with special needs; emergency first aid procedures; when to call 9-1-1; basic information on infection control; behavior emergencies; recommended first aid supplies, and emergency phone numbers.

Cynthia Frankel, EMS-C Coordinator is providing outreach to school districts, nurses, and religious organizations in training and dissemination of the document. Joining the effort are Fremont Fire Division Chief Vic Valdes, and paramedic supervisor Bruce Hagen, American Medical Response, who

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Emergency First Aid
Guidelines for
California Schools



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What's New on the Web

- The Bay Area Paramedic Journal Club returns!
- EMT cert & recert frequently asked questions document.



News & Announcements . . .

Save the date! EMS week is May 14-20, 2006. Several new events are planned this year including a formal awards banquet in the evening on May 20, 2006 at the Rotunda at Frank Ogawa Plaza in Oakland. Check the EMS website for updated information

The 2007 Policy Review Process will begin March 15th. If you have ideas or suggestions about the policies forward them to Kris Helander-Daugherty at (510) 618-2032 or kris.helander@acgov.org. We need to hear from YOU!

Happy Trails to You - John Noe, has accepted a position with the Public Health Department as an Information Systems Analyst; the position is a promotion for John. He will be working on Security and HIPPA compliance.

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Alameda County Intubation Data - 2005

ET Success	77%
Combitube success	9%
Unable	14%



The **6th annual Senior Injury Prevention Conference** will be held May 18, 2006 at the Atrium Hotel in Irvine California. This year's event will be hosted by the Senior Injury Prevention Partnership, the Center for Injury Prevention Policy and Practice, and the UC Irvine.

For more information contact Colleen Campbell at (510) 577-3535 or CCAMPBEL2@acgov.org.



School Guidelines (Continued from page 3)

runs a has offered to translate, replicate and share this tool with schools in Belize, Costa Rica, Mexico, Honduras, and Pakistan.

Alameda County would like to recognize the stakeholders who assisted in reviewing the guidelines:

- Mary Rutherford, MD ED Medical Director and Stacy Hanover, ED Manager at Children's Hospital.
- Jim Pointer, MD, and Kris Helander-Daugherty, Alameda County EMS .
- The California Emergency Medical Services Authority for assistance with federal grant funding provided by Health Resources & Administration, Maternal and Child Health Bureau and the National Highway Traffic Safety Administration.

These guidelines are the first step in the development of community pediatric emergency preparedness that will be integrated into county-wide disaster response plans.

For more information contact Cynthia Frankel at (510) 618-2031 or cynthia.Frankel@acgov.org.