TITLE: COMPUTER MANAGEMENT OF QUALITY ASSESSMENT MONITORING DATA

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INTRODUCTION: The Joint Commission for Accreditation of Healthcare Organizations (JCAHO) recommends and the prudent practice of medicine dictate that medical providers monitor the appropriateness and effectiveness of their care and that this quality assurance monitoring be prospective in design. The results should be available on a provider specific basis. We have accomplished these recommendations via a Macintosh based database described here.

METHODS: The input to the database is based on a National Computer Systems (NCS) 70921 data sheet which is overprinted with 21 categories which include demographics (patient, staff, and resident identification numbers and date), type of anesthesia , and unusual, unexpected, and unwanted events for circulatory, respiratory, regional, and "other" categories, all by location. The resident marks the sheet in the OR which is continued in the PACU by the nurses. The single-sided sheets are scanned on a NCS Sentry 3000 scanner using a Macintosh SE running Maxscan which creates a file which is read into a database for report generation using programs written in Foxbase. Reports, to date, consist of counts for each event on a monthly basis, and a provider-specific rate of occurrence of events. Data sheets are scanned weekly and reports generated monthly.

RESULTS: This system has been operational for six months. We have scanned over 6000 sheets without major problems such as loss of data. As expected, the major difficulty has been the inability of the residents to complete the demographics correctly, most frequently omitting the staff ID number. The event-count report allows us to identify areas which need further investigation, such as cardiac arrest/death in the OR or PACU, and to plot trends on a monthly basis. Additionally, the provider-specific report provides input to the provider's QA file for use in credential renewal. JCAHO, which visited us after just three weeks of operation of the system, was very pleased with this feature. This report also allows comparison of rates of events among the faculty and residents. The number of sheets scanned compared to the number of billings gives an 85% compliance rate for sheet completion.

DISCUSSION: Our goal in developing such a system was to reduce the time required to perform some of the necessary QA data gathering activities. Scanning sheets from one week takes about 1 hour, including culling the ones which will not scan because of incomplete demographics. It takes an additional one hour per week to correct the incomplete sheets. Programming time on the Macintosh to set up Maxscan and Foxbase for the two reports has been about 40 hours. Each series of reports takes 1 hour to generate. Some of the remaining problems are to validate the event data that the resident records and to improve the rate of compliance. In conclusion, the system was easy to set up and is providing us with important QA data.

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TITLE: END EXPIRED CO_2 FOLLOWING INGESTION OF "COLA"--TRACHEAL AND ESOPHAGEAL

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End expired CO_2 is considered to be the most reliable method for identification of correct placement of endotracheal tube. CO_2 generated by the presence of "cola" (carbonated beverages) in the stomach may contribute and elevate end expired CO_2 during esophageal ventilation. The aim of this study was to determine end expired CO_2 levels with esophageal ventilation following ingestion of "cola."

Methods: With approval of the institutional animal investigation committee, six Yorkshire swine were anesthetized with ketamine 15-20 mg/kg i.m. Following loss of consciousness, anesthesia was maintained with pentobarbital 20 mg/kg/hr/i.v. The animals were mechanically ventilated at 15 ml/kg at a rate of 10 per min with an endotracheal tube (7.0 mm) placed through a tracheostomy. A similar size endotracheal tube was placed in esophagus through the mouth. After measuring the end expired CO_2 with tracheal ventilation, the ventilator was switched to esophageal tube and end expired CO_2 levels were

recorded with six esophageal ventilations. The ventilator was reconnected to the tracheal tube and 150 ml of "cola" were administered into stomach. Six esophageal ventilations were repeated and their end expired CO_2 levels measured.

Results: The tracheal and esophageal end expired CO_2 levels are shown in the table. The highest end expired CO_2 during first esophageal ventilation following ingestion of "cola" was 5.3%. The end expired CO_2 waveforms obtained from esophageal ventilations were similar to those recorded from tracheal ventilations.

Ventilation	End Expired CO_2 (%)		
	Tracheal	Esophageal	Esophageal following Cola
1st	4.8 ± 0.9	0.4 ± 0.3	2.0 ± 2.1
6th	4.9 ± 0.9	0.2 ± 0.1	1.4 ± 1.3

Mean ± S.D.

Conclusion: High levels of end expired CO_2 can be recorded with esophageal intubation following ingestion of "cola." Esophageal intubation in patients with "cola" in their stomach may not be readily identified if total reliance is placed on capnography.