TITLE: PERIOPERATIVE PULMONARY ASPIRATION: INCIDENCE AND RISK FACTORS

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Problems in determining the incidence of pulmonary aspiration (PA) include lack of uniformity of patient care, different definitions of PA, and unreliable data collection. We have, therefore, reviewed the 3-year experience of 105,364 consecutive patients undergoing general anesthesia at one institution to determine the incidence of and risk factors related to PA.

With institutional approval, we identified all patients from July, 1985 through June, 1988 who underwent elective or emergent general anesthetics for procedures performed by all surgical specialties and who had PA. PA was rigidly defined as the presence of bilious secretions or particulate matter in the tracheobronchial tree. Demographic, perioperative, and outcome data were recorded and personnel involved in those cases were interviewed. All patients were monitored at or above the ASA Standards of Monitoring. Care was provided in all instances by an anesthesia care team of an anesthesiologist and either a resident, staff nurse anesthetist, and/or a student nurse anesthetist. Similar anesthetic technique, personnel, reporting criteria, and medications were used on all patients over the study period.

PA occurred in 42 patients (1:2509); one died intraoperatively from exsanguination during emergent repair of a ruptured abdominal aneurysm. Of the remaining 41 patients, 26 (63%) did not develop either a symptomatic cough or wheeze, hypoxia on room air, or radiographic abnormalities within 2 hours of PA. Those 26 patients had no respiratory sequelae. The remaining 15 patients needed intensive care observation for hypoxia and/or pneumonitis. Ten patients needed mechanical ventilatory support; of these, one developed Klebsiella pneumonitis and three others needed ventilatory support < 24 hours. Six patients developed non-bacterial respiratory distress syndrome (RDS). Two patients with RDS died from pulmonary insufficiency. Significant risk factors for PA included emergency procedures, age < 2 years, and high ASA classification.

Our PA incidence of 4:10,000 is lower than others have previously reported, although the major factors are similar.[1] Based on our results, patients with clinically-apparent PA but who do not develop either hypoxia, radiographic abnormalities, or symptomatic cough or wheeze within 2 hours after PA will probably not have respiratory sequelae. If any of these findings are present, however, approximately 2/3 of these patients will need ventilatory support immediately postoperatively and their risk of developing pneumonitis or RDS is approximately 50%.

Reference
1. Acta Anaesthesiol Scand 30:84-92, 1986

## A1018

Title: **Does Short-Term Use of an Automated Device (HealthQuiz) for Preoperative Test Selection Affect Physicians' Test-Ordering Habits?**

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Previous studies indicate that the number of preoperative tests can be reduced without adversely affecting patient care. Furthermore, unnecessary testing can be hazardous because of the pursuit of borderline and false positive results. The benefits of decreasing unproductive and possibly harmful testing are considerable. Among these are avoidance of iatrogenic disease, delays necessitated by further testing, anxiety provoked by extra tests and delays, and increased costs.

An automated device is available that allows patients to answer questions about their health histories and that uses those answers to suggest laboratory tests preoperatively. We tested the hypothesis that use of this automated method of test selection, the HealthQuiz, would affect surgeons' choice of tests with future patients.

With institutional approval, we reviewed the charts of three groups of patients matched for sex, age, ASA status, operation, and surgeon who performed their operations. Operations included cataract removal, total hysterectomy, laminectomy, hernia repair, transurethral resection of the prostate, total hip and total knee repair, breast biopsy, and mastectomy. Preoperative tests were ordered by surgeons in the usual way for Group 1 (n=218), all of whose operations were performed between January and May 1989. Operations for patients in Groups 2 and 3 were performed between May and December 1989. For Group 2 (n=119) preoperative tests were ordered with the aid of HealthQuiz. For Group 3 (n=236) tests were ordered without the aid of HealthQuiz by surgeons who had previously used the device for preoperative test selection with Group 2. Data was not included only if unavailable (chart not found or not available for review).

Preoperative tests for each patient were tabulated and their costs calculated by the usual hospital charge, with any four chemistries counted as one test and charged the price of the entire 17-chemistry test, $64. All other tests were tabulated at the lowest price charged at this institution. Statistical analysis was by means of analysis of variance. The cost and number of tests appear in the Table. Values are mean ± 1 SD.

| | Group 1 Pre HQ | Group 2 with HQ | Group 3 Post HQ but without HQ |
|---|---|---|---|
| | n=218 | n=119 | n=236 |
| Average no. of tests ordered | 7 ± 3*§ | 5 ± 5†§ | 6 ± 3*† |
| Average test costs/patient | $326 ± 123*§ | $262 ± 100†§ | $297 ± 113*† |

* statistically different by operation from Group 2
† statistically different by operation from Group 1
§ statistically different by operation from Group 3

Our results indicate that the number and cost of tests per patient were decreased when surgeons familiar with the HealthQuiz, but not using it (Group 3), ordered tests preoperatively—yet not decreased to the same degree as when HealthQuiz guided test selection (Group 2). Prior methods of reducing inappropriate test selection by education, refresher courses, society guidelines, and paper-and-pencil questionnaires with overlays have largely proven unsuccessful. Intense educational efforts of selected housestaff also have not had lasting effects. Use of an automated device by patients to aid in test selection may indirectly educate physicians about appropriate test selection.