Teaching and testing lay and paramedical personnel in cardiopulmonary resuscitation.


Ten groups of lay and paramedical groups were given lessons in cardiopulmonary resuscitation and were tested later. The groups comprised ladies and mixed church groups, high school, college, medical school, dental school and nursing students, fire- and policemen, and mixed hospital personnel.

Members of each group were given opportunities to practice; others were given lectures and demonstrations only. Groups taught with practice generally had better test scores (results on manikins) than those who had no practice. Paramedical groups had better scores than lay groups. All non-practice groups had less than 50 percent passing scores on tests.

Anesthesia with methoxyflurane in children. A technic for rapid induction and emergence.


Methoxyflurane, in its useful concentrations, is nonflammable, non-explosive, and resembles ether in many physical characteristics. It may be used with epinephrine and with electrocautery.

A rapid induction technic was used in 120 pediatric surgical patients. Induction was with thiopental sodium or cycloptentane, methoxyflurane-nitrous oxide-oxygen, or halothane. Premedication was with phenobarbital, meperidine, and scopolamine.

Induction with the methoxyflurane-nitrous oxide-oxygen mixture was stable and consistent. Hyperventilation and continuous monitoring is required. Electrocardiographic changes are minimal and acid-base alterations were insignificant. Six of 120 patients given methoxyflurane was induction and/or general anesthetic vomited. Muscle relaxation was adequate; all patients were intubated after succinylcholine administration.

Recovery time was not a problem when the anesthetic was discontinued sufficiently prior to the conclusion of surgery. When procedures of long duration were carried out, recovery time tended to become shorter. Excitement and restlessness signs were not significant, even in the youngest patients.
Cardiac arrest and deaths associated with anesthesia.


Rate of cardiac arrest during a two-year period beginning April 1, 1963 was compared with the calendar year 1957. During the earlier period, 8,227 patients received anesthesia; 18,062 patients were anesthetized in the later period. In 1957, there were 8 cardiac arrests, (1:1025) in the later period there were 22 (1:821).

Two patients expired in the operating room in 1957 (25 percent), 11 in 1963-65 (50 percent). Of the cardiac arrest victims who survived in the operating room, half of the 1957 group and 3 of the later group died in the hospital later.

In the 1963-1965 group, cardiac arrest was ascribed to the patient's disease in four subjects, to surgery in one, to anesthesia in eight, and to other courses exacerbated by anesthesia in the remainder. Physical status of the patients surviving cardiac arrest was an important factor: the better the status, the greater the chance for survival. Patients in physical status less than 2, who had cardiac arrest, did not survive.

Respiratory stimulation with doxapram hydrochloride during the anesthesia recovery period.


The combination of arousal and vasopressor effects as well as respiratory stimulation make doxapram very useful in the care of most postoperative patients but its use requires discretion in determining the rate of infusion. Twenty-one surgery patients were given an average dose of 200 mg. doxapram by intravenous infusion (1 mg./ml.) at the rate of 1 to 8 ml. per minute for 30 to 60 minutes beginning 30 to 45 minutes after cessation of anesthesia.

Arousal and respiratory stimulation was clinically evident in most patients.

The ignition risk with mixtures of oxygen and nitrous oxide with halothane.


Limit concentrations of inflammability of halothane in oxygen and nitrous oxide were determined with various ignition sources. Halothane in oxygen to saturation cannot be fired with spark energies to 5 joules. Eight percent halothane in nitrous oxide requires 0.3 joules for ignition. The maximum static spark is 0.05 joules.

Arterial blood pressure average rise was 16.3 mm. of mercury, and carbon dioxide tension average decrease was 5.8 mm. of mercury.

Side effects included transient increase in systolic and diastolic blood pressure, restlessness and nausea in patients given doxapram at the highest rates, and vomiting. The latter occurred in three patients, of whom two had received meperidine.

Doxapram infusion increased alertness and caused early return of pain perception. Patients given doxapram required analgesic medication earlier than usual, but no patient suffered respiratory depression from analgesic agents.

Doxapram may have had prophylactic value in a small group of patients who were not hypoxic when the infusion was begun.
Pathologic effects of exposure to high oxygen tensions.


Hyperbaric oxygenation has been used to treat hypoxia, infectious and neoplastic diseases in man. The treatment has been encouraging in some hands. Detrimental effects of oxygen at high pressure are also known.

Among deleterious effects reported in animals or man are: pulmonary oxygen toxicity characterized by progressively worsening dyspnea; pneumonia; pulmonary alveolar cell hyperplasia and hypertrophy; neonatal hyaline membrane disease, selective necrosis of the visual cell layer of the retina; an experimentally induced demonstration of damage to the outer layers of the retina and neurologic and neuromuscular defects.

No permanent neurologic deficits or central nervous system lesions attributable to oxygen exposure have been reported in man. Gonadal changes have been described in mice and hamsters. Myocardial and renal tubular damage have been ascribed to high oxygen concentrations, as have teratogenic changes.

Respiratory complications during dental anesthesia.


Respiratory problems are classified into two groups: disorders of function, including respiratory depression, breath-holding, and mouth breathing; and disorders of the airway, comprising nasal obstruction, misplaced oropharyngeal pack, lesions, occupying space, laryngeal obstruction, and tracheobronchial obstruction. The effects of halothane, cyclopropane and methohexital on respiratory depression are described. The problems of trismus, space-occupying lesions, inhalation of blood and debris, and the position of the patient are discussed.