

ond, in injuries involving the respiratory tract and oral cavity, including chest injuries and upper extremity surgery, intratracheal cyclopropane is used with carbon dioxide absorption. In poor risk cases, regional anesthesia and oxygen is employed. For abdominal and lower extremity operations, in good risk patients, spinal anesthesia is the anesthetic of choice. In borderline risk patients, balanced spinal anesthesia is preferred. By balanced spinal anesthesia is meant a combination of well chosen premedicating drugs followed by a minimum dose of spinal agents supplemented by a low concentration of cyclopropane with oxygen. . . . In the bad risk patient, when spinal anesthesia is contraindicated, small doses of premedicating drugs followed by gas-oxygen with or without regional anesthesia are used. . . .

"We now come to consideration of the civilian casualties in war. In general, they are treated in the same manner as the civilian casualty in peace time. . . . Morphia and barbiturates will be given at first aid stations. Cases of gas poisoning with irritation of the lungs will of necessity require regional anesthesia or 2½ per cent solution of pentothal sodium intravenously with the administration of oxygen for respiratory difficulties. No volatile inhalation anesthetic will be used in these cases. . . . For the treatment of naval personnel in the sick bay itself, the risks of explosion and the lack of help narrow the choice of anesthetics to nitrous oxide, pentothal, regional and spinal anesthesia. . . . At the battalion aid and collection stations morphia and rapid acting barbiturates will be administered for pain relief by medical officers. In the surgical trailer hospitals associated with the surgical hospital, the treatment of shock will be instituted by the anesthetist in charge. Minor emergency operations will be performed with intravenous pentothal sodium and nitrous-oxide-oxygen with

a portable carbon dioxide absorption apparatus. Spinal anesthesia may be used at this unit if a move is not anticipated within twelve hours. At the evacuation hospital, where the major part of the surgery will be carried out, cases of shock will receive the attention of the physician anesthetist in charge, and here the patient will be given essentially the same anesthetics and methods of introduction which are employed in the general hospital. . . .

"The general hospital in the zone of the interior is the final unit in the line of evacuation to which the wounded will be finally evacuated. Here the same facilities for anesthesia which exist during peace time will be available. . . . The safest anesthetic is the one with which the anesthetist is the most familiar, and that in which he has been trained. . . . Ether is the safest anesthetic in the hands of the occasional anesthetist. . . . Nitrous oxide will be most useful for short operations and as preliminary to the induction of ether. . . . According to Lundy the quick acting barbiturates administered intravenously will be used more often than any other type of anesthetic. . . . The use of cyclopropane-oxygen will be limited to the evacuation and base hospitals because of its explosive properties. . . . Regional anesthesia, either local infiltration with novocaine or plexus block, will be used wherever possible to alleviate the necessity of rendering the patient unconscious when this would react badly upon his general condition. . . . Among the U. S. forces in this war spinal anesthesia will be used more frequently than any other method in operations below the diaphragm." 3 references.

J. C. M. C.

MALLINSON, F. B.: *Anaesthesia Problems in Children*. M. Press. 208: 416-419 (Dec. 23) 1942.

"There seems to be a widespread belief amongst medical men that it is an

easier matter to administer an anaesthetic to a child than to an adult. The former procedure, in actual practice, has a number of difficulties essentially its own. Amongst the more important of these are: (1) The problem of psychic trauma and psychic shock. (2) The effects of the high basal metabolic rate of the child. (3) The consequences arising from the feebleness of respiratory effort of the child. (4) The question of status lymphaticus. (5) The added likelihood of ether convulsions occurring in childhood. . . . No child should ever have to submit to the ordeal of induction of anaesthesia while conscious, where this can possibly, in reason, be avoided. The ideal to be aimed at is that the child should fall asleep before operation and awaken again afterwards in its own bed. Two chief methods for the accomplishment of this ideal are available. (1) The Rectal Method. Avertin is exceedingly safe in children. . . . Paraldehyde may be used similarly. . . . (2) The Oral Method. Nembutal is the most frequently used drug to produce basal narcosis by mouth. . . . The principle of basal narcosis as it has been described . . . should not be restricted to major surgery. . . . When basal narcosis is not practicable, the observance of the following points will do much to mitigate the dangers of psychic trauma. (1) A frank and cheerful attitude in the anaesthetic room should be invariable. (2) All preparations should be made in front of the patient where he can see if he chooses to look. Anything savouring of deception will inevitably cost the anaesthetist the confidence of his young patient. (3) The employment of physical restraint should only be a last resort. . . . (4) When commencing induction, the approach to the patient should always be from the front—never pounce on him from behind—and a sensible explanation of what is going to happen (to which the child is entitled) should

be made with a pleasant smile and unhurried manner. (5) Allow the child to sit on the trolley well propped up until consciousness is lost. The feeling of helplessness induced by the supine position is a potent factor in increasing fear. (6) A very small or intensely nervous child is often best anaesthetised until unconsciousness develops in the arms of a nurse who has his confidence. Parents and relatives must be rigidly excluded, as their nervous reactions in what is for them a trying and perhaps alarming-looking situation, will do more harm than any reassurance by their presence might do good. . . .

“Basal metabolic rate is far higher in childhood than in any other period of life. This has two important consequences: (1) A high oxygen consumption. . . . Basal narcosis, by reducing the basal metabolic rate, makes nasal gas-oxygen in dental work simple. If, however, basal narcosis is not available, the anaesthesia is best supplemented as soon as consciousness is lost. . . . This will enable the oxygen in the mixture to be increased. . . . (2) High degree of reflex irritability. This explains the ever present difficulty of maintaining an even depth of anaesthesia in general surgery in children. This difficulty is again much reduced by the employment of basal narcosis. The younger the child the less able is it to maintain respiration against resistance for any length of time. Below the age of 4–5 years special attention needs to be paid to this matter if the so-called ‘semi-closed’ methods of anaesthesia . . . are going to be employed. In many cases, particularly in infants, ‘open ether’ may often be the safest way of avoiding trouble from this cause. Even with this method no reinforcing towels or gamgee should be used and a constant stream of oxygen should be admitted under the mask. . . . If it is desired to use the Boyle or similar machine the following three

conditions must be fulfilled: (1) Absence of resistance to respiration. This means: (a) an adequate flow of gases, at least five litres per minute; (b) the shortest, widest-possible length of tubing from the machine to the facepiece, and the simplest and straightest type of expiratory valve with the lightest possible type of operation. . . . (2) Adequate facility for the patient to eliminate his CO_2 (3) High oxygen content. There should never be less than 25 per cent of oxygen in the gas mixture, frequently 50 per cent to 60 per cent may be needed to keep the patient's colour really pink. Cyanosis is not to be tolerated for an instant. It is held by many anaesthetists that wherever possible, in surgery on infants or very young and feeble children, local analgesia should be used . . . alone after careful premedication. . . .

"The post-mortem diagnosis of status lymphaticus has been extensively used to explain sudden death on the operating table in children, where no other adequate reason can be formulated. This would seem to have some justification; but only up to a point. . . . It can be stated that lymphatism does not constitute a bar to general anaesthesia, nor does its discovery at autopsy following death under anaesthesia necessarily establish, automatically, a reason for that death. The presence of lymphatism should be sought for before anaesthesia and recognized as an added hazard thereof. . . . Precautions that need to be taken in cases showing signs of lymphatism who are about to undergo anaesthesia may be summarized as follows: (1) The patient should have rest in bed and quiet for three to four days before operation. Sedatives to this end may be needed. (2) An adequate glycogen build-up should be attained during this time by the liberal exhibition of glucose. (3) An injection of ephedrine gr. $\frac{1}{12}$ to $\frac{1}{2}$, according to age, should be given ten

minutes before operation to improve vascular tone. (4) Chloroform is to be avoided at all costs, and ethyl chloride if possible. (5) The following apparatus should always be at hand and instantly available to combat sudden collapses: (a) Intratracheal tubes and laryngoscope. (b) A source of oxygen under controlled pressure. (c) Intravenous fluids and facilities for their rapid administration. . . . The following measures are suggested to avoid the occurrence of ether convulsions. (1) Careful regulation of operating room temperature and humidity, especially in hot weather. (2) Avoidance of macintosh drapes on the body. (3) Avoidance of excessive rebreathing. (4) Care in maintenance of free airway and adequate oxygenation. (5) In circumstances where convulsions are considered likely, a very careful watch should be kept for premonitory twitches of the eyelids and face. If these occur the following treatment may save life: (a) Raise the head. (b) Withdraw the anaesthetic. (c) Substitute inflation of the chest with 100 per cent oxygen under pressure. Intubation, if it can be rapidly performed, will help enormously. (d) . . . inject pentothal sodium intravenously up to 0.5 Gm. or more until the convulsions are arrested."

J. C. M. C.

WATKINS, R. M.: *Anesthetics in Appendicitis; from the Cleveland Appendicitis Survey. II.* Ohio State M. J. 39: 43 (Jan.) 1943.

"A brief summary of the study of 19,401 cases of acute appendicitis, appendicitis with peritonitis and appendicitis with abscess has been reported and recently in the Ohio State Medical Journal we have begun a series of more detailed reports from the survey. . . . Our study covered the twelve years from January 1, 1930 to January 1, 1942 and we have witnessed great changes both in the types of anesthesia