

come accustomed during his illness; (2) allow lateral position of the patient on the operating table, on his sound side; (3) prevent loss of blood, as the thoracic wall is a very vascular bed; and (4) deal with the copious amount of sputum. Diagnostic and therapeutic aspirations can all be performed by local infiltration of novocaine or one of its derivatives. Rib resections can be done under local anesthesia, but some patients object to the cutting of the rib and a general anesthetic must be given. Maingot has found pure nitrous oxide oxygen anesthesia with a premedication of morphine and scopolamine very satisfactory. To overcome the collection of too much sputum, the patient is placed in a slight head down position. The mucus-producing quality of ether is a contraindication for its use. Ethylene is a good general anesthetic and seems to meet all these requirements. It has an added advantage of allowing a higher intake of oxygen. Cyclopropane maintains the highest percentage of oxygen in the circulating blood, which is so important in patients with reduced vital capacity. Unfortunately, in a certain percentage of patients who have cardiac lesions, it is contraindicated and may prove fatal by producing ventricular fibrillation. Positive pressure anesthesia should be used when the pleural cavity is opened. Endotracheal anesthesia and suction must be employed in the presence of copious amounts of sputum. Behrend has successfully used intravenous sodium pentothal with inhalation of 100 per cent oxygen in empyema complicated by bronchial fistula." 89 references.

J. C. M. C.

LUNDY, J. S.; ADAMS, R. C., AND SELDON, T. H.: *Usefulness of Various Anesthetic Agents in General Practice*. *Journal-Lancet* n.s. 64: 405-407 (Dec.) 1944.

"In attempting to indicate the usefulness of the anesthetics available at the present time, several factors must be considered. . . . We are assuming that in many . . . cases no experienced anesthetist will be available and that the situation may even be such that no physician or nurse can be obtained to give the anesthetic and that a layman may be called to assist. The physician may be entirely alone in providing care for the patient. The place where the anesthetic is to be administered will of necessity not be a hospital; it may be in an office, it may be in a home, it may be near the physician's office or at a distant point. . . . From the medicolegal angle the physician in charge of the case is responsible for the result of the anesthetic unless it is administered by another physician to whom the responsibility for the choice of anesthetic and its administration has been delegated by the operating physician. Juries decide these issues because most laws generally followed were made before the widespread use of anesthetics became common. The scarcity of physician anesthetists has made it impracticable to make specific laws to cover anesthesiology. . . . In so far as possible, the agents and methods will be considered in the order of their preference for use in your hands. The most preferred method is infiltration of the line of incision with a solution of procaine hydrochloride. A 0.5 per cent solution generally is used. Anesthesia for a great many painful procedures can be produced by infiltration. The technic in general is to infiltrate the tissue to be incised. One step frequently neglected is infiltration of the most superficial layer of the skin. Satisfactory anesthesia cannot be obtained unless this is done. Then, too, a few minutes—five to ten—should be allowed for the solution to soak through the nerve endings and nerve trunks in order to produce a good de-

gree of anesthesia. For patients who are sensitive to procaine, metycaine may be used since the chemical formula of each of these agents is quite different. If the tissues are infected, one may infiltrate a ring of tissue around the proposed site of the incision so that the needle will not be passed through the infected tissues, or block anesthesia may be employed.

"Among the many advantages of local anesthesia or block anesthesia are easy portability of the apparatus and its inexpensiveness. It can be reinforced and made to last as long as necessary; it is not associated with fire hazard; it may be used in almost any case, and it can be used where no assistant is available. . . . Under extreme circumstances, even spinal anesthesia may be used in cases in which little assistance is available; however, it should be used only under emergency circumstances. Continuous caudal anesthesia may be used in selected obstetric cases. . . . For the most part, I believe that the method is not likely to be highly successful in the hands of one who uses it only occasionally. One way to enhance the effect of local or regional anesthesia is by the administration of a premedicant such as morphine, and a barbiturate in doses just sufficient to fortify the patient and to make him placid. . . . It should be pointed out that, if sulfonamides are being administered, the use of procaine hydrochloride as a local anesthetic may render a part of the sulfonamide inactive. This, however, is a temporary effect and, in general, it can be ignored. . . . One should never be in too great a hurry to read a label and make sure he is using the right drug. He should be enthusiastic enough over local anesthesia to insure having sharp needles and not needles that are old and ready to break. His outfit for local anesthesia, if he is carrying it with him from place to

place, should be checked frequently. It should be clean and sterile so that no unnecessary handicap will be encountered when the outfit has to be used. If local anesthesia proves inadequate for the particular purpose, it may be necessary to employ another method. One of the most satisfactory is the intravenous injection of a small dose of morphine. . . . The dose of morphine to be used usually is not less than one-eighth grain (0.008 gm.) for an adult and one-sixth grain (0.01 gm.) often may be used. A quarter of a grain (0.016 gm.) is often used for very large, robust patients, but for the most part it is well to inject a smaller dose and to repeat the injection at intervals of ten or fifteen minutes until a reasonably good-sized total dose has been administered—even as much as one-third grain (0.02 gm.). If the patient still has a great deal of pain, an intravenous anesthetic such as pentothal sodium may be used. It is often effective in conjunction with local anesthesia and with adequate doses of morphine. . . .

"If the surgeon's job is not too exacting in an emergency, he may be able to insert the needle in a vein and have someone else inject the anesthetic agent as and when he directs. Maintenance of a good airway under these circumstances is all important and the surgeon or physician must be prepared to provide such an airway should it become obstructed at any time and, if possible, teach whoever is helping him how to maintain it under the particular circumstances. Intravenous anesthesia is not recommended for obstetric cases or for patients who suffer from diseases characterized by dyspnea, or in cases in which there is a serious cardiac lesion or any lesion that may cause respiratory obstruction during anesthesia. If intravenous anesthesia is not available, as a rule, in this temperate zone in which we live,

ether may be administered by the drop method. This, we consider, in general, next in usefulness and in safety to local anesthesia. . . . Chloroform also may be used. It is not as safe as ether but many physicians are familiar with its use, and if it is used only as an analgesic it is for the most part satisfactory. We would not recommend ethyl chloride; however, if it is the only anesthetic agent available for general anesthesia, it should be administered very sparingly and, if possible, by the drop method rather than by spraying it on the mask. Gas anesthesia is available only in offices and hospitals, as a rule. . . . We previously have commented on the misuse of gas machines. Fire and explosion hazards with anesthetic gases must be guarded against as a mixture of nitrous oxide, oxygen and ether is very inflammable and explosive, as are mixtures containing ethylene or cyclopropane. Rectal anesthesia is not satisfactory for general use. It may, however, be used to produce analgesia or as a substitute for heavy preliminary medication. . . . Recently the use of curare (Intocostrin) has been advocated. . . . For the most part, this drug has been used in connection with cyclopropane anesthesia in an effort to keep the dose of cyclopropane small and make it unnecessary to use more than a trace of ether. Reports are appearing from time to time as more experience is gained with this drug and its use in combination with other anesthetic agents. Its use for this purpose is a new procedure. We are not prepared yet to advise its use until more experience has been gained; then, in all probability, it will be necessary that someone be present to carry on artificial respiration when the drug is used. So, in general practice, it is not yet clear how valuable curare will be. . . . In general practice one does not have as great a choice of anes-

thetic agents and methods as in hospital practice but still there are enough agents and methods that may be used so that the general practitioner can be much more prepared today to relieve pain than he ever was before.
5 references.

J. C. M.

PENDER, J. W.: *Logical Methods for Anesthesia*. S. Clin. North America (Philadelphia Number) 1460-1471 (Dec.) 1944.

"Probably the greatest problem in abdominal surgery is adequate exposure of the operative site. Even with extreme relaxation of the muscles of the abdominal wall the attachments of the internal organs make their manipulation through the incision difficult. This one factor makes the use of some potent muscle-relaxing method almost imperative and excludes for the average surgeon the use of less potent but perhaps more pleasant agents and methods. . . . The following are suggested methods of anesthesia for the average case for abdominal surgery: Lower Abdomen . . . Spinal anesthesia. Upper Abdomen . . . (1) General anesthesia with a potent agent. (2) Spinal anesthesia supplemented with an analgesic dose of a not too unpleasant agent. . . . Surgery on the extremities has been found, both in civilian and military practice, to be very satisfactorily done under intravenous anesthesia. . . . Orthopedic procedures on the vertebrae usually necessitate having the patient face down on the operating table. This is a most unfavorable position for adequate respiration since the muscles of respiration have to raise almost the entire weight of the body during each inspiration. With the head turned sharply to the side an adequate airway is often difficult to maintain in this position. For these two reasons it is always best to have an intratracheal airway in place be