To the editor:

I can appreciate the amount of research and effort that go into writing a technical article that will share and convey knowledge and experience with fellow professionals. There is also an obligation to be clear, concise, factual, and accurate.

This is not the case in "The use of Demerol® as an anesthetic agent" by Bette Walter Jones, CRNA, AANA Journal, October, 1974.

The author states that "The recommended naloxone dosage is 0.4 mg and may be repeated 2-3 times. Given intravenously the effects are noticeable within 1½ minutes. When given subcutaneously or intramuscularly, it acts within 2-3 minutes and will last at least 5 hours." Ms. Jones cites as a reference a Naloxone hydrochloride products catalog, Endo Laboratories, Inc.

I, too, will quote from the same source. "In one study, the duration of action of naloxone was determined in 10 subjects under double-blind conditions. The subjects were given a placebo or 15 mg of naloxone subcutaneously at 1, 2, and 4 hours before a test dose of 30 mg morphine S.C. At each time interval, naloxone antagonized morphine activity as measured with pupillography and single dose opiate questionnaires. For all measurements, the effects of morphine administered 4 hours after the naloxone were diminished for at least 5 hours after the administration of naloxone."

It is extremely important to note that in this study, the subjects were given 15 mg of naloxone. This is 37 times the initial recommended dose. In fact and clinical practice, this far exceeds the recommended dose; in recommended doses it does not have an effective duration of 5 hours. This is one reason that the brochure warns "Since the duration of action of some narcotics may exceed that of Narcan® the patient should be kept under continued surveillance and repeated doses of Narcan® should be administered, as necessary."

WILLIAM H. WRIGHT, CRNA
Biloxi, Mississippi

To the editor:

With regard to the article by James Mellema, et al., "Drug interactions and their effects on the conduction of an anesthetic," which appeared in the October, 1974 issue of the AANA Journal, I wish to disagree with the statement that anticholinergic drugs should not be used to counteract a depolarizing relaxant. This is not true in the case of succinylcholine (Anectine®, Succostrin®, etc.).

If respiratory effort is being made, it is generally safe to give a 1 C.C. dose of Tensilon® to the patient (atropine should be given, usually before the Tensilon®). If there is an improvement in respiratory effort, it is either followed by another (within 10 minutes) 1 CC. dose of Tensilon® or Prostigmin 1:2000.

I give as references:
(2) It is now so stated in the inserts that come with every box of the drug.
(3) This method has been practiced at Johns Hopkins Hospital in Baltimore, Maryland, since 1960.

It is time our classroom instructors stop dogmatically teaching otherwise.

PEGGY J. TERPENING, CRNA
St. Louis, Missouri

the instrument
the
procedure of
D&C.

The uterine curette...designed for the D&C...long, light, a cutting edge that is angled to glean the endometrial tissue, looped so as not to cause rupture of the organ itself.

For the D&C patient Ethrane® (enflurane) possesses equally distinctive characteristics that fulfill your anesthesia requirements for this surgical procedure. Induction is rapid with minimal excitation. Cardiac rhythm remains remarkably stable and is not altered even with elevations in arterial carbon dioxide. Emergence is generally prompt, with patients often fully awake and lucid upon arrival in the recovery room. Protective reflexes return quickly and postoperative nausea or vomiting are uncommon.

Instruments are used with specific procedures in mind. So are anesthetics. Ethrane's ease of administration and normally uneventful recovery make it well suited for your most common surgical procedures including a routine D&C.

WARNING: Motor activity exemplified by movement of various muscle groups and/or seizures may be encountered with deep levels of Ethrane (enflurane) anesthesia. For additional warnings, contraindications and precautions see last page.

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**Actions:** ETHRANE (enflurane) is an inhale anesthetic. Induction, inhalation, and recovery from anesthesia with ETHRANE are rapid. ETHRANE does not appear to stimulate excessive salivation or tracheobronchial secretions, or affect bronchomotor tone. Pharyngeal and laryngeal reflexes are readily obtunded. The level of anesthesia changes rapidly with ETHRANE. ETHRANE reduces ventilation as depth of anesthesia increases. ETHRANE serves as a warning that depth of anesthesia is excessive. Once the blood flow and metabolism studies in normal volunteers during seizure patterns show no evidence of cerebral hypoxia, and recovery appears to be uncomplicated.

Since levels of anesthesia may be altered easily and rapidly, only vaporizers capable of delivering predictable output with reasonable accuracy should be used. Hypotension and respiratory exchange can serve as a guide to anesthetic depth. With deep levels of anesthesia, more marked hypotension and respiratory depression are encountered.

The action of non-depolarizing relaxants is augmented by ETHRANE, so less than the usual amounts of those drugs should be used. The time for recovery from the myoneural effect of these relaxants is greater in the presence of ETHRANE than for other commonly used anesthetics.

The safety of the use of epinephrine topically and subcutaneously has not been established in man.

**Usage in Pregnancy:** Safety in pregnancy has not been established. Reproduction studies have been performed in rats and rabbits, and there is no evidence of harm. Therefore, use should be limited and can be terminated by delivery. This may be accomplished by cesarean section should the fetus be compromised due to the level of anesthesia.

**Indications:** ETHRANE may be used for induction and maintenance of general anesthesia. Adequate data have not been developed to establish its application in obstetrical anesthesia.

**Contraindications:** Seizure disorders (see Warnings). Known sensitivity to ETHRANE or other halogenated anesthetics.

**Warnings:** Increasing depth of anesthesia with ETHRANE (enflurane) produces a change in the electroencephalogram characterized by high voltage, fast frequency, progressing through spike-dome complexes alternating with periods of electrical silence to frank seizure activity. The latter may or may not be associated with motor movement. Motor activity when present consists of twitching or jerks of various muscle groups; it is self-limiting and can be terminated by lowering the anesthetic concentration. This electroencephalographic pattern associated with deep anesthesia is exacerbated by hypercarbia and hypoxia. The pattern serves as a warning that depth of anesthesia is excessive. Once the blood flow and metabolism studies in normal volunteers during seizure patterns show no evidence of cerebral hypoxia, and recovery appears to be uncomplicated.

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**Precautions:** Bromsulfalein (BSP) retention is mildly elevated postoperatively in some cases. There is some elevation of glucose and white blood count intraoperatively. The tension of carbon dioxide in arterial blood does not alter cardiac muscle relaxants are markedly potentiated. Neostigmine does not reverse the direct effect of ETHRANE.

**Adverse reactions:** 1. Motor activity exemplified by movement of various muscle groups and/or seizures may be encountered with deep levels of ETHRANE (enflurane) anesthesia. 2. Hypotension and respiratory depression have been reported. 3. Arrhythmias, shivering, nausea, and vomiting have been reported. 4. Elevation of the white blood count has been observed. It has not been determined whether this is related to ETHRANE or to surgical stress.

**Dose and administration:** The concentration of ETHRANE (enflurane) being delivered during anesthesia from a vaporizer should be known. This may be accomplished by using a vaporizer calibrated specifically for ETHRANE; B) Vaporizers from which delivered flows can easily and readily be calculated.

Maintenance concentration should not exceed 3%. Premedication should be selected according to the need of the individual preoperative patient, taking into account that secretions are weakly stimulated by ETHRANE, and the heart rate remains constant. The use of anti-cholinergic drugs is a matter of choice.

**Induction:** Induction may be achieved using ETHRANE and oxygen alone or with oxygen-nitrous oxide mixtures. Under these conditions some excitement may be encountered. If excitement is to be avoided, a hypnotic dose of a short-acting barbiturate should be used to induce unconsciousness, followed by the ETHRANE mixture.

In general, inspired concentrations of 3-5.5% ETHRANE produce surgical anesthesia in 7-10 minutes.

**Maintenance:** Surgical levels of anesthesia may be attained with 1.5-3.0% concentration. If added relaxation is required, supplementary doses of muscle relaxants may be used. Ventilation to maintain the tension of carbon dioxide in arterial blood in the 35-45 mm range is preferred for hyper- or hyperventilation in order to minimize possible CNS excitation.

The level of blood pressure during maintenance is an inverse function of ETHRANE concentration in the absence of other complicating problems. Excessive decreases (unless related to hypovolemia) may be due to depth of anesthesia and in such instances should be corrected by lightening the level of anesthesia.

**Overdosage:** In the event of overdosage, or what may appear to be overdosage, the following action should be taken:

Stop drug administration; establish an oxygen supply; instigate assisted or controlled ventilation with pure oxygen as circumstances dictate.

**Packaging:** ETHRANE (enflurane) is packaged in 125 and 250 cc amber bottles. No additives or stabilizers are present.


3. Dobkin, et al.
