Is the administration of anesthesia the practice of medicine?

In the Amicus Curiae brief filed in the Hyde case, the AANA pointed out several cases (Frank v. South, the Dagmar Nelson case and State v. Borah) as standing for the proposition that the practice of nurse anesthesia is not the practice of medicine. Many people are confused about what nurse anesthetists do, and I am sure that CRNAs are often thought to be practicing medicine. Nurse anesthetists, however, are practicing nursing, not medicine. They are engaged in what has been a recognized nursing function for more than 90 years.

Some confusion exists because, if I, a layman, were to administer an anesthetic, I would be found guilty of the illegal practice of medicine. But does this mean that only doctors can administer anesthesia? Absolutely not. From a legal standpoint, the fact that the administration of anesthesia may come within the definition of the practice of medicine does not mean it cannot constitute the practice of nursing (or the practice of dentistry, for that matter), as well.

Several fallacies come to mind in considering whether anesthesia is the practice of medicine. One fallacy is that the practice of nursing was somehow carved out of the practice of medicine. Nursing is its own profession; it developed over centuries and existed long before medical practice acts were enacted. We must not forget that nursing has its own functions, performed by nurses because they are appropriate nursing functions and not because someone gave them to nursing. A similar fallacy is the notion that nursing and medicine are separated by a boundary, clearly marked. Because nursing is a separate profession there are areas of overlap with medicine, just as there are overlaps between the practice of medicine and dentistry, medicine and psychology and medicine and pharmacology.

The question we need to ask is not whether nurse anesthetists practice medicine but whether they practice nursing. Anesthesia is a proper nursing function and that is the only relevant issue.

One of the first cases to consider the legality of the practice of nurse anesthesia was the case of Frank v. South (Kentucky, 1917). Margaret Hatfield was a nurse anesthetist, six years in practice. She had successfully administered over 1,200 anesthetics and was working with a surgeon when the Jefferson County Board of Medicine brought an injunction against her for the illegal practice of medicine.

The court found that nurse anesthesia practice was well accepted on a national basis (it pointed to the Mayo Clinic as a place where nurse anesthesia practice was used extensively). The court in Frank v. South considered specifically whether anesthesia was the practice of medicine. The Court stated that Kentucky's medical practice act was not designed for the protection of physicians, but for the protection of the public. It was not designed to give a monopoly to physicians.

The Court pointed out that some of the activities which were covered by the medical practice act were also covered by the practice of nursing, the practice of dentistry and the practice of pharmacology. It was not the intent of the legislature in regulating medicine to give physicians a monopoly to the exclusion of other professionals in these areas. Then the court concluded that Margaret Hatfield was not practicing medicine. Clearly the fact that a procedure is covered by the medical practice act does not mean that another profession cannot engage in the same procedure.

State of Arizona vs. Borah

Twenty-one years later, the Arizona Supreme Court decided the case of the State of Arizona v. Borah. Arizona statutes allowed nurse anesthetists to give anesthesia under the supervision of a physician or a surgeon. Borah was a dental surgeon...
permitted by the Arizona dental practice statute to administer anesthetics. Borah had been using a physician to administer his anesthetics and he now wanted to use a nurse anesthetist. So he sued the State Attorney General as the representative of the state. He asked the court to decide whether he could use a nurse anesthetist in his practice.

This court went through very much the same reasoning as the court in Frank v. South did. Anesthesia was covered by the medical practice act and by the dental practice act. The Arizona court said that these licensing acts were not designed to give monopolies to a particular group but were intended to recognize the proper practice within each of these professions. It held that since the legislature had decided that a dentist or a dental surgeon was knowledgeable about anesthetics and was capable of administering them and directing their use, that he should have the same right to supervise and direct nurse anesthetists as a physician.

Earlier cases

There was an earlier case showing the relationship between two separate professions. In re: Carpenter involved, not nurse anesthetists, but a dentist and a physician. This was a case that arose over the probate of somebody's estate. The executor refused to pay a bill from a dentist on the grounds that the dentist had been treating a cancer in the deceased's mouth. The executor claimed that the dentist was practicing medicine without a license, that the bill was illegal and that he did not have to pay it.

The court again, noted that there was an overlap of the professions, but as the dentist did what he was entitled to do as a dentist, the bill, therefore, must be paid.

Nelson v. Chalmers-Frances, decided in 1936, also dealt with this issue. In the official court report of the case there is a note that one Kenneth Gould, an attorney from Cleveland, Ohio had filed an amicus brief representing the NANA, which was the name of the American Association of Nurse Anesthetists at the time.

The Dagmar Nelson case held two things. First it looked at what was the established practice in the health care community towards the giving of anesthetics, and it noted that what Dagmar Nelson and all other nurse anesthetists were doing was within established practice. Second, it said that what Dagmar Nelson was doing was also acceptable because she was merely carrying out the established orders of the surgeons and physicians under whom she operated.

Expanded role nursing

With the recent emphasis on nursing in an expanded role, other areas of nursing are now facing the same legal attacks as nurse anesthetists faced half a century ago. In 1975, Missouri expanded its nurse practice statute to allow nurse practitioners. The legislature eliminated a provision in the statute that previously required direct supervision of a physician for nurses administering treatment plans.

The Missouri Medical Registration Board challenged nurses in a clinic, operating under a protocol, who were giving pap smears, pelvic examinations and looking for contra-indications for contraceptive usage. The Board claimed that the nurses were engaged in the illegal practice of medicine because they were diagnosing. The case came before the Missouri Supreme Court in Sermchief v. Gonzales.

The Court's holding was very interesting. The Court said that both parties had asked the Court to "define and draw that thin and elusive line which separates the practice of medicine from the practice of professional nursing in modern day delivery of health services." The Court refused because it seemed quite clear that when the legislature amended the nurse practice acts, this was exactly the sort of activity that the legislature intended to permit.

I was also very pleased to see this position reflected in the attitude of the Louisiana State Board of Nursing in a recent letter to the AANA. This letter reaffirmed the Board of Nursings' opinion that CRNAs who meet the requirements of the Louisiana statute and have been appropriately prepared may administer regional anesthetics. The reaffirmation followed a hearing by the Louisiana Board of Medical Examiners regarding the administration of regional anesthesia by CRNAs. The Board of Nursing wrote: "The Board of Nursing recognizes that the Board of Medical Examiners, by statute, can state what it believes to be the practice of medicine. However, the Board of Nursing, by statute, can state what it believes to be within the realm of the practice of nursing."

Because the medical and nursing professions developed separately, there are many functions which can be performed by both groups. Do physicians illegally practice nursing when they take a blood pressure or give a penicillin shot? What the courts have been saying, is that if what a nurse is performing is a proper nursing function, that is enough. Whether the same function may also be the practice of medicine is not the nurse's concern.
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- **Decreases afterload**, to lessen myocardial work, especially in patients with coronary artery disease and/or hypertension (with adequate left ventricular function)

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- Consistent reduction and control of intraocular pressure, consistent analgesia, and precise control of the depth of anesthesia
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- Stability of heart rhythm
- Compatibility with epinephrine, does not add to the arrhythmogenic potential of epinephrine needed for hemostasis
- Low biodegradation, only 2.4 percent of enflurane taken up during anesthesia is recovered as urinary metabolites

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Anaquest Ethane (enflurane)


DESCRIPTION

Enflurane is a hexafluoroethane (HFE) derivative. Enflurane is an inhaled anesthetic agent with a chemical formula of C₂H₂F₆. It is a colorless, odorless, and non-flammable gas that is readily soluble in blood and lipid tissues.

CONTRAINDICATIONS

Enflurane should not be used in patients with known or suspected anesthetic hypersensitivity. It should also be avoided in patients with a history of cerebral hypoxia.

SIDE EFFECTS

The use of enflurane may cause hypotension, bradycardia, and decreased cardiac output. It may also cause respiratory depression, nausea, and vomiting.

PRECAUTIONS

Enflurane should be used with caution in patients with cardiovascular disease or respiratory disease. It should also be used with caution in patients with a history of hypoglycemia or hepatic disease.

DOSAGE AND ADMINISTRATION

The dosage of enflurane should be individualized based on the patient’s medical condition and response to therapy. Monitoring of blood pressure, heart rate, and respiratory rate is essential during anesthesia.

SAFETY

Enflurane is associated with a low incidence of adverse effects. However, patients should be monitored closely for signs of respiratory depression and cardiovascular instability.

INTERACTIONS

Enflurane may interact with other medications that cause hypotension or bradycardia. It may also interact with medications that affect metabolism, such as barbiturates.

SUPPLIED

Enflurane is supplied as a frozen liquid in 1,000 ml amber-colored bottles for inhaled use with a vaporizer.

When necessary, enflurane may be used in combination with other anesthetic agents or drugs to achieve the desired level of anesthesia.

When enflurane is administered to a patient, it should be carefully monitored for any adverse reactions or drug interactions. The patient should also be monitored for the development of hypotension, bradycardia, or respiratory depression.

Anaquest Ethane (enflurane)


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After three years as an Army Intensive Care Nurse, Captain Mary Muench applied for the Nurse Anesthetist course: “For what I want, Army anesthesia is perfect. It gives me more mental stimulation. There’s plenty of variety in cases, and being an Army officer is very exciting.”

Because Army nurses are commissioned officers, they’re given much more responsibility and comprehensive training. Captain Muench explains: “Your first nine months are bookwork, and that’s longer than they give you in most civilian programs.

“Army Nurse Anesthetists always score high on the national boards. And they can now get a Master’s Degree for their Army education.”

If you’re ready to test your skills as a leader, have a BSN, and are registered to practice in the United States or Puerto Rico (or if you’re still a student), write: Army Nurse Opportunities, P.O. Box 7713, Clifton, NJ 07015.
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**Before Surgery**

- Produces prompt tranquilization; allays apprehension
- Provides adequate sedation and a cooperative patient

**During Surgery**

- May reduce incidence of epinephrine-induced arrhythmias
- Contributes to cardiovascular stability

**DESCRIPTION:**

2 ml. and 5 ml. ampoules

Each ml. contains:

- Droperidol 2.5 mg.
- Lactic acid for pH adjustment to 3.4 ± 0.4
- 10 ml. water

Each ml. contains:

- Droperidol 2.5 mg.
- With 1.8 mg. methylparaben and 0.2 mg. propylparaben, and lactic acid for pH adjustment to 3.4 ± 0.4.

**FOR INTRAVENTOUS OR INTRAMUSCULAR USE ONLY**

Droperidol is a neuroleptic (tranquilizer) agent.

**INDICATIONS:** INAPSINE (droperidol) is indicated:

- To produce tranquilization and to reduce the incidence of nausea and vomiting in surgical and diagnostic procedures; for premedication, induction, and as an adjunct in the maintenance of general and regional anesthesia; in neuroleptanalgesia in which INAPSINE (droperidol) is given concurrently with a narcotic analgesic such as SUBLIMAZE (fentanyl). The user should familiarize himself with the special properties of each drug, particularly the widely differing durations of action. In addition, when such a combination is used, resuscitative equipment and a narcotic antagonist should be readily available to manage apnea. See package insert for fentanyl before using. Narcotic analgesics such as SUBLIMAZE (fentanyl) may cause muscle rigidity, particularly involving the muscles of respiration. This effect is related to the speed of injection. Its incidence can be reduced by the use of slow intravenous injection.

**WARNINGs:** Fluids and other countermeasures to manage hypotension should be readily available. As with other CNS depressant drugs, patients who have received INAPSINE (droperidol) should have appropriate surveillance. If INAPSINE (droperidol) is administered with a narcotic analgesic such as SUBLIMAZE (fentanyl), the user should familiarize himself with the special properties of each drug.

**CONTRAINDICATIONS:** INAPSINE (droperidol) is contraindicated in patients with known intolerance to the drug.

**PRECAUTIONs:** The initial dose of INAPSINE (droperidol) should be appropriately reduced in elderly, debilitated and other poor-risk patients. The effect of the initial dose should be considered in determining incremental doses. Certain forms of conduction anesthesia, such as spinal anesthesia and some peridural anesthetics, can cause peripheral vasodilation and hypotension because of sympathetic blockade. Through other mechanisms, INAPSINE (droperidol) can also affect circulation. Therefore, when INAPSINE (droperidol) is used to supplement these forms of anesthesia, the anesthetist should be familiar with the physiological alterations involved, and be prepared to manage them in the patients selected for this form of anesthesia.

If hypotension occurs, the possibility of hypovolemia should be considered and managed with appropriate parenteral fluid therapy. Repositioning the patient to improve venous return to the heart should also be considered when operative conditions permit. It should be noted that in spinal and peridural anesthesia, tilting the patient into a head-down position may result in a higher level of anesthesia than is desirable, as well as impair venous return to the heart. Care should be exercised in moving and positioning of patients because of the possibility of orthostatic hypotension. If volume expansion with fluids plus other countermeasures do not correct the hypotension, then the administration of pressor agents other than epinephrine should be considered. Epinephrine may paradoxically decrease the blood pressure in patients treated with INAPSINE (droperidol) due to the alpha-adrenergic blocking action of droperidol.

Since INAPSINE (droperidol) may decrease pulmonary arterial pressure, this fact should be considered by those who conduct diagnostic or surgical procedures where interpretation of pulmonary arterial pressure measurements might determine final management of the patient. Vital signs should be monitored routinely.

Other CNS depressant drugs (e.g. barbiturates, tranquilizers, narcotics, and general anesthetics) have additive or potentiating effects with INAPSINE (droperidol). When patients have received such drugs, the dose of INAPSINE (droperidol) required will be less than usual. Likewise, following the administration of INAPSINE (droperidol), the dose of other CNS depressant drugs should be reduced.
Inapsine® (droperidol) Injection

The premedication that does more than premedicate

INAPSINE (droperidol) should be administered with caution to patients with liver and kidney dysfunction because of the importance of these organs in the metabolism and excretion of drugs. When the EEG is used for postoperative monitoring, it may be found that the EEG pattern returns to normal slowly.

Since INAPSINE (droperidol) is frequently used with the narcotic analgesic SUBLIMAZE (fentanyl), it should be noted that fentanyl may produce bradycardia, which may be treated with atropine; however, fentanyl should be used with caution in patients with cardiac bradycardia.

ADVERSE REACTIONS: The most common adverse reactions reported to occur with INAPSINE (droperidol) are mild to moderate hypotension and occasionally tachycardia, but these effects usually subside without treatment. If hypotension occurs and is severe or persists, the possibility of hypovolemia should be considered and managed with appropriate parenteral fluid therapy. Postoperative drowsiness is also frequently reported.

Extrapyramidal symptoms (dystonia, akathisia, and oculogyric crisis) have been observed following administration of INAPSINE (droperidol), and are a part of the symptom complex of extrapyramidal symptoms which can be either the result of inadequate dosage of INAPSINE (droperidol) or other parenteral analesics. This might be due to uncontrolled alterations in sympathetic activity following large doses; however, it is also frequently attributed to anesthetic or surgical stimulation during light anesthesia.

DOSAGE AND ADMINISTRATION: Dosage should be individualized. Some of the factors to be considered in determining the dose are age, body weight, physical status, underlying pathological condition, use of other drugs, type of anesthesia to be used, and the surgical procedure involved. Vital signs should be monitored routinely.

Usual Adult Dosage

I. Premedication—(to be appropriately modified in the elderly, debilitated, and those who have received other depressant drugs) 2.5 to 10 mg. (1 to 4 ml.) may be administered intramuscularly 30 to 60 minutes preoperatively.

II. Adjunct to General Anesthesia—Initially, 1.25 to 2.5 mg. (0.5 to 1 ml.) of INAPSINE (droperidol) may be administered, usually intravenously (see warning regarding use with concomitant narcotic analgesic medication and the possibility of widely differing durations of action).

Note: When INAPSINE (droperidol) is used in certain procedures, such as bronchoscopy, appropriate topical anesthesia is still necessary.

IV. Adjunct to Regional Anesthesia—2.5 to 5 mg. (1 to 2 ml.) may be administered intramuscularly or slowly intravenously when additional sedation is required.


U.S. Patent No. 3,161,645
NDC 50458-010-02; NDC 50458-010-05; NDC 50458-010-10
March 1980, Revised June 1980

*See full prescribing information for complete description.
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CAREFUL DOSAGE TITRATION...
REVERSES NARCOTIC-INDUCED DEPRESSION, YET MAINTAINS EFFECTIVE ANALGESIA

0.4 MG/ML

NARCAN®

(NALOXONE HC1)

1-ml ampul
10-ml vial

Following narcotic-supplemented anesthesia, a gradual upward titration with NARCAN® (naloxone HC1) helps achieve the desired degree of narcotic reversal, allowing adequate ventilation and alertness without significant pain or discomfort. By restoring the patient's protective reflexes, NARCAN reduces the risk of postanesthetic complications. Patients can often leave recovery sooner and be returned to their rooms—a practical advantage both for the patient's concerned family or friends and for the busy medical staff.

For initial reversal of postoperative respiratory depression in adults, NARCAN (0.4 mg/ml) should be injected in increments of 0.1 to 0.2 mg (1/4 to 1/2 ml) intravenously at two- to three-minute intervals. The duration of action of some narcotics exceeds that of NARCAN. It is important, therefore, to monitor patients carefully and give repeated doses of NARCAN as needed.

NARCAN (0.4 mg/ml) is available in 1-ml ampuls and 10-ml vials. Also available, NARCAN® NEONATAL INJECTION (naloxone hydrochloride). Each 2-ml ampul contains 0.02 mg/ml.

For brief summary of prescribing information, see next page.

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Du Pont Pharmaceuticals, Inc.
NARCAN® INJECTION
NARCAN® NEONATAL INJECTION (naloxone hydrochloride)
Narcotic Antagonist
Brief Summary of Prescribing Information

INDICATIONS AND USAGE NARCAN® is indicated for the complete or partial reversal of narcotic depression, including respiratory depression, induced by opioids including natural and synthetic narcotic analgesics, methadone, and the narcotic-antagonist analgesics, butorphanol, pentazocine and butylscopolamine. NARCAN is also indicated for the diagnosis of suspected acute opiate overdosage.

CONTRAINDICATIONS NARCAN is contraindicated in patients known to be hypersensitive to it.

WARNINGS NARCAN should be administered cautiously to persons including newborns of mothers who are known or suspected to be physically dependent on opioids. In such cases abrupt and complete reversal of narcotic effects may precipitate an acute abstinence syndrome.

The patient who has satisfactorily responded to NARCAN should be kept under continued surveillance and repeated doses of NARCAN should be administered, as necessary, since the duration of action of some narcotics may exceed that of NARCAN.

NARCAN is not effective against respiratory depression due to non-opioid drugs.

PRECAUTIONS In addition to NARCAN, other resuscitative measures such as maintenance of a free airway, positive ventilation, cardiac massage, and vasopressor agents should be available and employed when necessary to counteract acute narcotic poisoning.

Several instances of hypertension, hyperthermia, ventricular tachycardia and fibrillation, and pulmonary edema have been reported. There have occurred in postoperative patients most of whom had pre-existing cardiovascular disorders or received other drugs which may have similar adverse cardiovascular effects. Although a direct cause and effect relationship has not been established, NARCAN should be used with caution in patients with pre-existing cardiac disease or patients who have received potentially cardiotoxic drugs.

Carcinogenesis, Mutagenesis, Impairment of Fertility Carcinogenicity and mutagenicity studies have not been performed with NARCAN. Reproductive studies in mice and rats demonstrated no impairment of fertility.

Use in Pregnancy: Pregnancy Category B: Reproduction studies performed in mice and rats of doses up to 1,000 times the human dose, revealed no evidence of impaired fertility or harm to the fetus due to NARCAN. There are, however, no adequate and well controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response, NARCAN should be used during pregnancy only if clearly needed.

Nursing Mothers: It is not known whether NARCAN is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when NARCAN is administered to a nursing woman.

ADVERSE REACTIONS Abrupt reversal of narcotic depression may result in nausea, vomiting, sweating, tachycardia, increased blood pressure, and tremulousness. In postoperative patients, larger than necessary doses of NARCAN may result in significant reversal of anesthetic, and in excitation. Hypotension, hypertension, ventricular arrhythmia and fibrillation, and pulmonary edema have been associated with the use of NARCAN postoperatively (see PRECAUTIONS & USAGE IN ADULTS: POSTOPERATIVE NARCOTIC DEPRESSION). Severe reactions have been reported to occur infrequently after the administration of naloxone; however, a causal relationship has not been established.

OVERDOSAGE There is no clinical experience with NARCAN overdose in humans.

In the mouse and rat the intravenous LD50 was 150 ± 5 mg/kg and 109 ± 4 mg/kg respectively. In subcutaneous toxicity studies in newborn rats the LD50 (95% confidence limits) was 296 ± 27-296 μg/kg. Subcutaneous injection of 100 mg/kg/day in rats for 3 weeks produced only transient salivation and piloerection following injection; no toxic effects were seen at 10 mg/kg/day for 3 weeks.

DOSAGE AND ADMINISTRATION NARCAN may be administered intravenously, intramuscularly, or subcutaneously. The most rapid onset of action is achieved by intravenous administration and it is recommended in emergency situations.

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. Intravenous Infusion NARCAN may be diluted for intravenous infusion in normal saline or 5% dextrose solutions. The addition of 2 mg of NARCAN in 500 ml of either solution provides a concentration of 0.004 mg/ml. Mixtures should be used within 24 hours. After 24 hours, the remaining unused solution must be discarded. The rate of administration should be titrated in accordance with the patient's response.

Parenteral drug products should be inspected visually for particulate matter and discoloration prior to administration whenever solution and container permit. NARCAN should not be mixed with preparations containing brusatol, metabisulfite, long-chain or high molecular weight anions, or any solution having an alkaline pH. No drug or chemical agent should be added to NARCAN unless its effect on the chemical and physical stability of the solution has first been established.

USAGE IN ADULTS Narcotic Overdose—Known or Suspected An initial dose of 0.4 mg to 2 mg of NARCAN should be administered intravenously if the desired degree of counteraction and improvement in respiratory functions is not obtained, it may be repeated at 2 to 3 minute intervals. If no response is observed after 10 mg of NARCAN have been administered, the diagnosis of narcotic-induced or partial narcotic-induced depression should be questioned. Intramuscular or subcutaneous administration may be necessary if the intravenous route is not available.

Postoperative NARCOTIC DEPRESSION For the partial reversal of narcotic depression following the use of narcotics during surgery, smaller doses of NARCAN are usually sufficient. The dose of NARCAN should be titrated according to the patient's response. For the initial reversal of respiratory depression, NARCAN should be injected in increments of 0.1 to 0.2 mg intravenously at two to three minute intervals to the desired degree of reversal, i.e., adequate ventilation and alertness without significant pain or discomfort. Larger than necessary dosage of NARCAN may result in significant reversal of anesthesia and increase in blood pressure. Similarly, too rapid reversal may induce nausea, vomiting, sweating or circulatory arrest.

Repeat doses of NARCAN may be required within one or two hour intervals depending upon the amount, type, i.e., short or long acting, and time interval since last administration of narcotic. Supplemental intramuscular doses have been shown to produce a longer lasting effect.

USAGE IN CHILDREN Narcotic Overdose—Known or Suspected The usual initial dose in children is 0.01 mg/kg body weight given i.v. If this dose does not result in the desired degree of clinical improvement, a subsequent dose of 0.1 mg/kg body weight may be administered. If an i.v. route of administration is not available, NARCAN may be administered I.M. or S.C. in divided doses, if necessary. NARCAN can be diluted with sterile water for injection.

Postoperative NARCOTIC DEPRESSION Follow the recommendations and cautions under ADULT POSTOPERATIVE DEPRESSION. For the initial reversal of respiratory depression NARCAN should be injected in increments of 0.005 mg to 0.01 mg intravenously to two to three minute intervals to the desired degree of reversal.

USAGE IN NEONATES Narcotic-Induced Depression The usual initial dose is 0.01 mg/kg body weight administered I.V., I.M. or S.C. This dose may be repeated in accordance with adult administration guidelines for postoperative narcotic depression.

HOW SUPPLIED: 4 mg/ml of NARCAN® (naloxone hydrochloride) for intravenous, intramuscular and subcutaneous administration.

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Minimal recall

Amnesic effects also start within minutes and generally last 20 to 60 minutes. Most patients have diminished recall—or no recall at all—of their endoscopy. Use with extreme care in elderly and very ill patients and in those with limited pulmonary reserve. Resuscitative facilities should be readily available and narcotic dosage reduced by at least one-third or, in some cases, eliminated.

Injectable VALIUM® IV diazepam/Roche®

In the moments before endoscopy
Based on the provided information, it appears to be a section of a medical document discussing the use of Valium (diazepam) in various clinical scenarios. The text includes warnings, precautions, and usage guidelines for patients. It also mentions the injectable form of Valium and its administration methods. The document emphasizes the importance of proper training and supervision when using this medication.

The text contains a list of references at the end, indicating that it is a formal medical document intended for healthcare professionals. The references listed include studies and publications that support the information presented in the text.

The document highlights the risks associated with the use of Valium, such as respiratory depression, alcohol withdrawal, and the potential for paradoxical reactions. It also notes the importance of close monitoring and dosing adjustments in patients with specific conditions, such as those with respiratory or cardiovascular issues.

Overall, the document serves as a comprehensive guide for the safe and effective use of Valium, emphasizing the need for careful consideration of the patient's medical history and current health status before administration.
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Premedication with Ativan® (lorazepam) Injection may well be the most logical choice for longer surgical procedures where extended sedation and/or lack of recall are especially desirable. A single injection of Ativan Injection provides dependable sedation for 6-8 hours. When surgery runs longer than anticipated, or unexpected delays occur, repeated injections may not be required.

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Administered as recommended, Ativan Injection allays preoperative apprehension, relieves anxiety, leaves patients calm but cooperative and diminishes recall of events surrounding surgery. There is little, if any, IV irritation at proper dilution, and only minimal effects on blood pressure, pulse or respiratory rate.

The dosage of Ativan® (lorazepam) Injection should be individualized for each patient. For those in whom reduced recall and excellent sedation are desired, doses of 0.05 mg/kg up to a maximum of 4 mg should be administered. For patients in whom lack of recall is not desired, and for the elderly or debilitated, the dose should be reduced.

See important information on following page.
DESCRIPTION: Ativan® (lorazepam) Injection, a benzodiazepine with antianxiety and sedative effects, is intended for IM or IV use. It has the chemical formula 7-chloro-5-(2-chlorophenyl)-1,3-dihydro-2-hydroxy-5H-1,4-benzoxazepine.

Lorazepam is a nearly white powder almost insoluble in water. Each mL of sterile injection contains 0.2 or 4 mg lorazepam. 0.8% polyethylene glycol 400 in propylene glycol with 2.0% benzyl alcohol as preservative.

CLINICAL PHARMACOLOGY: For administration of lorazepam IM or IV, the patient is being observed for reaction to the drug. As with any benzodiazepine, the duration of sedation will depend on the dosage and individual patient variability. Phases of sedation include:

1. Initial anesthesia
2. Bulging eye
3. Tilt
4. Paralysis
5. Unconsciousness
6. Anticipation
7. Sedation
8. Death

In the absence of uremia, coma, or other significant illness, anticonvulsant therapy is not usually indicated for prolonged lorazepam sedation. Lorazepam sedation may be used as a preoperative sedative. However, sedation with lorazepam is not recommended in the presence of hepatic or renal disease, because of the potential for pharmacokinetic drug interactions.

Several factors influencing the course of lorazepam sedation are:

- Drug dosage
- Route of administration
- Pre-existing liver function
- Pre-existing renal function
- Concomitant medications

ADVERSE REACTIONS: Clinical experience with lorazepam injection has demonstrated that few, if any, adverse reactions have been observed with normal IM or IV administration. These adverse effects may be the result of the drug itself, the patient's condition, or the specific technique used. Adverse reactions may include:

- Sedation
- Lethargy
- Dizziness
- Nausea
- Vomiting
- Tachypnea
- Respiratory depression
- Hypotension
- Bradycardia
- Hypersensitivity reactions

In rare cases, lorazepam injection may cause anaphylaxis or other allergic reactions. Lorazepam injection should not be used in patients with a history of allergy to benzodiazepines.

OVERDOSAGE: The signs and symptoms of lorazepam overdose vary with the dosage of lorazepam administered, the route of administration, and the duration of the administration. Lorazepam is usually administered for a short period of time. However, if lorazepam is administered for an extended period of time, a patient may be at risk for lorazepam overdose. Lorazepam overdose may be treated with supportive care and supportive measures. Lorazepam injection is not indicated for long-term treatment of anxiety or depression.

Hypersensitivity reactions are also possible with lorazepam injection. Lorazepam injection may cause anaphylaxis or other allergic reactions. Lorazepam injection should not be used in patients with a history of allergy to benzodiazepines.

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1. Synthesis of norepinephrine is as follows: tyrosine is hydroxylated to dehydroxyphenylaline (DOPA). DOPA is decarboxylated to form dopamine which is then taken up by the neurosecretory vesicles and hydroxylated to form norepinephrine.

2. Three mechanisms of norepinephrine inactivation are: the first is reuptake into the adrenergic neuron by the norepinephrine pump. The second is metabolism of norepinephrine which escapes into the circulation by catechol-o-methyl transferase (COMT) to normetanephrine which is converted to VMA by MAO. The last is conversion of norepinephrine to 3, 4 dihydroxymandelic acid to VMA to COMT.

3. Alpha stimulation promotes the following: vasoconstriction, hypertension, intestinal relaxation and uterine contraction. Beta stimulation results in tachycardia, increased contractility and automaticity, increased insulin release, vasodilation, hypotension, bronchodilation, and uterine relaxation.

4. Test results used to determine the presence of pheochromocytoma include: urinary metabolites; free catecholamines of less than 100 mg/24 hours, metanephrine less than 1 mg/24 hours and VMA less than 7 mg/24 hours; elevated blood sugars are common; a hematocrit greater than 45% indicating contracted fluid volume; and hypercalcemia may be present if MEN exists.

5. Anesthesia considerations for pheochromocytoma include: avoidance of wide fluctuations in blood pressure by use of deep general anesthesia with better than average muscle relaxation; alpha blockade followed by beta blockers if necessary; avoidance of hypoxia or hyperventilation; and adequate volume expansion.

AANA Call for Research Papers

The AANA Program Committee is extending an invitation for research papers for presentation at the 53rd AANA Annual Meeting and Professional Sessions August 9-14, 1986 Washington, D.C.

For further information and to obtain an application form, contact Glen C. Ramsborg, CRNA, MA Deputy Executive Director American Association of Nurse Anesthetists 216 Higgins Road Park Ridge, Illinois 60068

Deadline for application is July 15, 1985