

Anesthesiology
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Fifty Years of Intravenous Anesthesia

To the Editor:—As the year 1977 represents the 50th anniversary of the first use, by the German obstetrician E. Bumm, of the barbiturate "Pernocton" as an intravenous anesthetic agent, it appears to be a suitable time to reconsider one of the most important papers ever written on the subject of intravenous anesthesia, namely that by a surgeon, F. J. Halford. In this paper, Dr. Halford decried the use of barbiturate anesthesia because of the high incidence of respiratory failure and death that followed its use in patients who were wounded in the fateful December 7, 1941, attack of Pearl Harbor. Would today's anesthetist agree with Dr. Halford's conclusions?

Consider the anesthetic practice during the Vietnam war as a comparable situation. Severely injured men received an average of 3–4 l lactated Ringer's solution and 20 units of blood during the initial surgical treatment. Part of this volume was given before induction of anesthesia to ensure adequate resuscitation. At the 1st Australian Field Hospital, thiopental was used as the induction agent for all general anesthesia. The average induction dose used was 5.5 mg/kg body weight, which is not greatly different from the dose commonly used in healthy patients.

Dr. Halford's paper contains the statement, "These patients were prepared with perhaps a minimum of plasma, and whole blood transfusions." It is hard to see

how it could have been otherwise when one considers the quantities involved. No casualty figures are given in Dr. Halford's paper, presumably for reasons of security. However, based on the Vietnam experience, for each 100 severe casualties, 400 l of electrolyte solution and 2,000 units of whole blood would have been needed. The basic fact, which is known to today's anesthetists, is that there is no anesthetic agent, or method of administering any anesthetic agent, that will obviate the need for maintenance of circulating blood volume. It would appear, then, that the foremost problem confronting an anesthetist concerned with a badly injured man is not what anesthetic agent to use, but how resuscitation is to be achieved in the quickest, most efficient manner. When that has been done the anesthetist has virtually a free choice of anesthetic agents, and methods.

W. H. J. COLE, F.F.A.R.A.C.S., M.Sc.
Lt. Colonel, R.A.A.M.C.
114 Grey Street
East Melbourne
Victoria, 3002, Australia

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Estimation of Vital Capacity

To the Editor:—Doctor Greenhow describes a simple method for determining "modified vital capacity" in unconscious patients.¹ I believe that this method measures a volume that approximates the maximal inspiratory capacity rather than vital capacity. Without discarding the practical value of the method, one can obtain more accurate assessment of the true vital capacity in unconscious patients by provoking a cough by moving the tracheal tube and measuring the inspiratory volume that follows the forced expiration induced by the maneuver.

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DR. JOSÉ DANIEL ZAMORA
Department of Anesthesiology
Central University of Venezuela
Caracas, 106, Venezuela

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Hazards of Blind Wiring of a Facial Fracture

To the Editor:—Stabilization of a displaced and unstable zygomatic fracture by placement of a transantral

Kirschner wire is a rapid but blind technique. An annoying complication of this technique was managed by

Drs. Lee *et al.* rather well.¹ Alternate methods of zygomatic stabilization include open reduction and fixation at the fracture sites; antral support with gauze packing or Foley catheter balloon inflation; and extra-skeletal pin fixation. Since the Kirschner wire technique is blind, the course of advancement of the wire is not certain. In addition to skewering a nasal endotracheal tube, such wires may come to rest between the pilot tube and the endotracheal tube and may be extended laterally to impede mandibular motion by contact with the coronoid process. One additional hazard in this dangerous technique with a threaded wire is wrapping of a peripheral branch of the facial nerve around the Kirschner wire. There is a potential for avulsion far proximal to the site of entry of the Kirschner wire. A Kirschner wire might accidentally be di-

rected or curve toward an orbit, resulting in dire consequences. In summary, the hazards of this technique far outweigh the speed it allows. The anesthesiologist should be alerted to these potential problems.

MARK BOWDEN, D.D.S., M.D.
500 Central Medical Building
Lexington, Kentucky 40503

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Heated Humidification for Infants during Anesthesia

To the Editor:—We commend Bennett *et al.*¹ for the excellent results achieved in maintaining body temperature in neonates during anesthesia and operation by using ambient temperature, Vi-drape®, a warming mattress, and warming of blood. Anesthetic gases were not heated, and it is unclear whether they were humidified. We are concerned that this report implies that heated humidification of anesthetic gases delivered through a T-piece circuit is not necessary. We evaluated the benefits of a new heated humidifier* in 29 infants and small children undergoing anesthesia and operation using a Jackson Rees' modification of the Ayre's T-piece.² An ambient temperature of 23.9 C, warming blanket at 37.5 C, and any blood administered warmed to 37.5 C were used in all patients. The control group of 13 infants was managed without heating or humidification of the anesthetic gases. In the control group, 11 of 13 patients showed decreases in body temperature averaging 1.72 F. In the study group of 16 patients in which the heated humidifier was used, only four of 16 patients showed decreases in body temperature, and the group as a whole averaged a 0.71 F gain. Heated humidification is not only helpful in maintaining body temperature, but prevents damage to the ciliated epithelium of the tracheobronchial tree caused by dry anesthetic gases.³

Bennett *et al.*¹ also concluded that complaints from the operating room personnel of the high ambient temperatures were a small price to pay for minimizing the deleterious effects of hypothermia in the

newborn. However, when using ambient temperatures above 26 C we have experienced difficulty from increased sweating of operating room personnel causing prolongation of the surgical procedure and possible contamination of the surgical site. Although we agree that ambient operating room temperature is the most important factor in maintaining body temperature in infants and children, we strongly recommend that heated humidification be used as an adjunct when employing a T-piece circuit.

CHARLES T. WALLACE, M.D.
Associate Professor
J. DAVID BAKER, III, M.D.
Assistant Professor
Department of Anesthesiology
Medical University of South Carolina
80 Barre Street
Charleston, South Carolina 29401
CARROLL S. BROWN, M.D.
Staff Anesthesiologist
North Trident Regional Hospital
Charleston, South Carolina 29401

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[The Editor regrets the delay in publication, which resulted from a clerical oversight.]

* Harlake Series 328 Respiratory Humidifier.