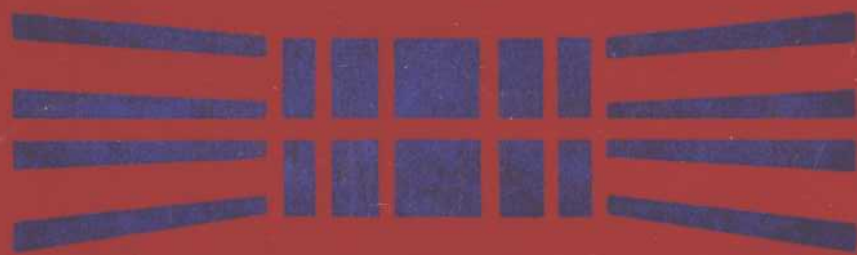

HANDBOOK OF

**CLINICAL
ANESTHESIA**



**Paul G. Barash
Bruce F. Cullen
Robert K. Stoelting**

J. B. Lippincott Company

HANDBOOK OF
Clinical
Anesthesia



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HANDBOOK OF *Clinical Anesthesia*

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Preface

We developed the textbook of *Clinical Anesthesia* with the intention of providing a comprehensive, usable reference in anesthesiology that would meet the needs of both the veteran practitioner and those in training in the specialty. We are proud that the enthusiastic reception of the first edition indicates that we have accomplished this goal.

However, in the continuum of anesthesia education, the anesthesia practitioner or trainee may be overwhelmed by the volume of information that is required in order to competently manage patients. We have designed the *Handbook of Clinical Anesthesia* to serve as a succinct guide for approaches to both common and uncommon clinical problems and thus to help make this passage easier. It must be emphatically stated that the *Handbook* is not intended to replace a full-scale textbook. Rather, the *Handbook* can serve as an extension of *Clinical Anesthesia*, as a "bridge" to the in-depth information that is needed for superb clinical care. Thus, each chapter in the *Handbook* is referenced to the appropriate chapter(s) in *Clinical Anesthesia*. Because the *Handbook* is designed for rapid acquisition of essential information, we have made extensive use of tables to facilitate quick prioritization and understanding of the crucial points pertaining to each clinical problem.

The *Handbook* consists of two major sections. The first section, the text, takes the reader in a systematic fashion through the perioperative period, including preoperative evaluation, intraoperative management and the anesthesia subspecialties, as well as postoperative care. The second section, the appendixes, contains formulas, an ECG atlas, a drug list, and emergency protocols that will be useful for the practitioner as well as the trainee. With the kind permission of the American Heart Association, we have reproduced here all the relevant Advanced Cardiac Life Support protocols pertinent to adult, pediatric, and neonatal resuscitation.

We would especially like to acknowledge the contributors to the textbook *Clinical Anesthesia*. Although the *Handbook of Clinical Anesthesia* is the product of the editors, its chapters were developed from the expert knowledge contained in the work of the original contributors, reorganized and rewritten in a style nec-

essary for a text of this scope. We would also like to thank our secretaries, Jill Fuggi, Karen Cunningham, and Deanna Walker, whose continued help has been a source of support. As always, a special word of thanks is due to our colleagues at J. B. Lippincott—Nancy Mullins, Executive Editor; Richard Winters, Manager of Developmental Editing; and Janet Greenwood, Production Manager—and to Peggy M. Gordon, Production Editor. Their constructive comments during the process of writing and editing this book continue to demonstrate their commitment to medical education.

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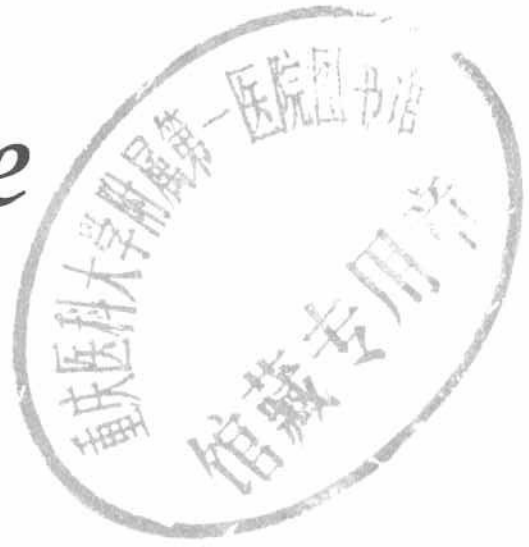
PART I

Preparing for Anesthesia



CHAPTER 1

Evaluation of the Patient and Preoperative Preparation



Anesthesia greatly alters normal physiology in its role to permit safe and pain-free surgery (Vandam LD, Desai SP: Evaluation of the patient and preoperative preparation. In Barash PG, Cullen BF, Stoelting RK [eds]: Clinical Anesthesia, pp 407–438. Philadelphia, JB Lippincott, 1989). The preoperative assessment and preparation of patients should serve to optimize the safety of the anesthetic experience.

I. COMPONENTS OF THE PREOPERATIVE ASSESSMENT

Taking a history from the patient provides an anesthesiologist with valuable information for constructing an anesthetic plan (Table 1-1).

II. PHYSICAL EXAMINATION

The physical examination should emphasize those observations that relate to the possibility of the occurrence of anesthetic complications (Table 1-2).

III. LABORATORY TESTS

Laboratory tests should be ordered when evidence in the history or physical examination suggests that an abnormality exists (Table 1-3). Routine ordering of a battery of tests on all patients is medically unjustified and costly.

TABLE 1-1. Information to be Elicited During the Preoperative Visit and Interview

General state of health (exercise tolerance, weight gain or loss, emotional state)
Previous anesthetics (consult prior hospital records)
Current drug usage
Allergy
Drug abuse and addiction (tobacco, marijuana, alcohol, opioids, cocaine)
Menstrual and obstetric history
System review
Circulation (angina, hypertension, murmur)
Respiration (cough, wheezing)
Central nervous system (epilepsy)
Liver (jaundice, hepatitis)
Kidneys and urinary tract
Gastrointestinal tract (delayed gastric emptying)
Musculoskeletal (arthritis)
Endocrine system (diabetes, adrenal cortical diseases, thyroid disorders)
Hematologic problems (coagulation, anemia)
Dental and oral problems (loose teeth, appliances, temporomandibular joint disorders)

IV. CHOOSING THE ANESTHETIC

The choice of anesthetic is based on the patient's physiological status and planned operation as well as the skills of the anesthesiologist and wishes of the patient. There is little evidence that outcome is influenced by selection of general

TABLE 1-2. Observations During Physical Examination

Auscultation of the heart and lungs
Blood pressure (both arms if indicated)
Peripheral pulses (especially if arterial cannulation is planned)
Examine veins for access
Bony landmarks for regional anesthesia
Evidence of neurological dysfunction
Cyanosis
Mouth and airway
Neck flexion
Mouth opening
Temporomandibular joint
Uvula visible
Dentition

TABLE 1-3. Criteria for Laboratory Tests

Chest x-ray (only when an abnormality is suspected)
Electrocardiogram (>40 years of age or known disease as a baseline)

versus regional anesthesia for operations that can be performed with either technique (e.g., transurethral resection of the prostate, herniorrhaphy). Similarly, outcome does not appear to be significantly affected by the choice of anesthetic agent.

- A. After the history, physical examination, and interpretation of laboratory tests have been accomplished and the patient interview has established a **patient-physician relationship**, a consultation note must be written and **preanesthetic medication ordered** (see Chapter 4).
- B. **Assignment of American Society of Anesthesiologists (ASA) Physical Status Classification.** All studies relating to anesthetic morbidity and mortality have shown a close correlation with the ASA physical status classification (Table 1-4).

V. IMMEDIATE PREPARATIONS FOR ANESTHESIA

- A. Patients should be brought to the holding area in ample time to allow unhurried preparation. The patient's identity is confirmed, and it is verified that preoperative or-

TABLE 1-4. ASA Physical Status Classification

ASA 1	A normal healthy patient
ASA 2	A patient with a mild systemic disease (mild diabetes, controlled hypertension, anemia, chronic bronchitis, morbid obesity)
ASA 3	A patient with a severe systemic disease that limits activity (angina, obstructive pulmonary disease, prior myocardial infarction)
ASA 4	A patient with an incapacitating disease that is a constant threat to life (heart failure, renal failure)
ASA 5	A moribund patient not expected to survive 24 hours (ruptured aneurysm, head trauma with increasing intracranial pressure)

For emergency operations, add the letter E before classification.

TABLE 1-5. Preparation Before Induction of Anesthesia

Pulse oximeter sensor placed
 Electrocardiogram electrodes affixed
 Intravenous catheter placed
 Blood pressure cuff placed
 Peripheral nerve stimulator electrodes placed
 Baseline data recorded

ders have been followed (nothing by mouth, premedication) and there has been no change in the patient's medical condition. In some circumstances, it may be appropriate to place vascular catheters or initiate regional anesthesia in the holding area.

- B. Transfer to the operating table is with assistance and maintenance of personal dignity (shaving and positioning often delayed until after induction of anesthesia). Once placed on an operating table, the patient should not be left unattended.
- C. Preliminary preparation before induction of anesthesia is accomplished (Table 1-5).
- D. **Equipment and drugs** that should always be available regardless of the technique of anesthesia selected are listed in Table 1-6.

TABLE 1-6. Equipment and Drugs Routinely Available**Anesthetic Machine**

Attach an anesthetic breathing system and confirm delivery of oxygen under positive pressure
 Check soda lime and content of vaporizers
 Confirm function of mechanical ventilator
 Confirm function of wall suction

Drugs

Local anesthetic
 Barbiturate
 Anticholinergic
 Sympathomimetic
 Muscle relaxants
 Antagonists for opioids and muscle relaxants

Airway Equipment

Oral and/or nasal airway
 Laryngoscope
 Tracheal tube