

Careers... in Anesthesiology



Virginia Appgar, M.D., M.P.H., Med.Sc.D. (Hon.)

ANESTHESIOLOGY AS A specialty for physicians began with the Englishman, John Snow. Probably more famous in medical history for stopping an epidemic of cholera by taking the handle off the town pump, John Snow wrote a most discerning article on "Asphyxia Neonatorum" in 1841, embodying many of the principles used today. A year after the dentist William T. G. Morton's successful surgical use of diethyl ether in 1846, James Y. Simpson, the Scottish obstetrician introduced chloroform as an anesthetic in obstetrics. This drug was brought to a dinner party at the Simpsons by a young chemist who encouraged the guests to inhale it after dinner. When Simpson awoke on the floor beside a staid young lady who was proclaiming, "I'm an angel, oh I'm an angel," he conceived the idea of its use for the relief of the pains of labor and delivery. Although foresighted, this event cannot truly bestow the designation, anesthesiologist, on Simpson. Snow, on the other hand, immediately began studying first chloroform then ether on many varieties of animals under experimental conditions. He kept copious and meticulous notes on the administration of these drugs to human beings and the complications that arose. After first concentrating on chloroform he turned to ether, for the death rate of people who had received chloroform was 5 times that of those who had been etherized. He left 2 volumes of research work, one on each drug, the second one being completed posthumously by his good friend, Benjamin Richardson.

Snow exemplified the true anesthesiologist, though that word was not born until 80 years later. He learned all he could about the drugs that he used to produce anesthesia, experimented with them under controlled conditions in animals, studied preoperative situations and

postoperative complications, laid down principles of resuscitation, and maintained scrupulous professional relations with his patients. His discretion is best exemplified by the way he handled the numerous queries from his women patients after he had anesthetized Queen Victoria for the birth of Prince Leopold on April 7, 1853. When asked, "What did she say as she went to sleep?" he always replied, "Just breathe this in and I'll tell you all." "Anesthesia à la reine" soared in popularity and gave great impetus to Simpson's running battle with the theologians of the day who proclaimed the use of anesthesia for delivery was irreligious. Snow's many accomplishments remained virtually unknown until rediscovered by that pioneer of modern anesthesiology, Ralph M. Waters, of the University of Wisconsin. In 1925, Dr. Waters became the first University Professor of Anesthesiology in the United States. He and his students reintroduced "physiological anesthesia": they perfected the intricacies of carbon dioxide absorption techniques, introduced endotracheal intubation with cuffed tubes allowing manipulation of pulmonary pressures, and discovered and studied the properties of a new, less toxic agent, cyclopropane. The first paper on this gas appeared four years after it was introduced into the laboratory and the clinic, where it was studied in all its aspects. How different from the haphazard discovery and introduction of chloroform!

WHAT IS AN ANESTHESIOLOGIST?

The word "anesthesiology" became more or less official with the publication of the first issue of the journal by that name in July, 1939. Its connotation implied much more than the "mere" administration of anesthetic agents in

the operating room. As seen from the work described here of Snow and of Waters, responsibility rests with this specialist to investigate as thoroughly as possible the mechanisms of action of the agents used, whether pain relieving drugs, relaxants, sedatives, antiemetics, and the like; to be constantly on the watch for new and better agents; and, even more important, to understand to the best of his ability his patient's deranged physiology, especially the respiratory, circulatory and nervous systems. Of all the specialists, he must be the most proficient applied physiologist and pharmacologist. In much of medical practice disease states in patients may take weeks or months to develop, but in anesthesiology serious situations often develop in minutes or seconds.

The anesthesiologist should be a leader in resuscitation. His proficiency in the field has led to his inclusion in if not leadership of a "respiratory team" which handles respiratory emergencies of a wide variety: drug poisonings, asthmatic emergencies, fractures of the larynx, massive emboli, and the like.

The word "anesthetist" is now reserved for those graduate nurses or technical assistants with special training in the administration of anesthetic agents who work under the immediate direction of a physician-anesthesiologist.

WHO SHOULD BE ONE?

To enjoy the field of anesthesiology, one must be a special kind of person. He should be intelligent and mature, with a feeling of personal responsibility to each of his patients. He must work well with other people, for the outcome of many a near-fatal situation depends upon this ability. By "other people" I mean especially the surgeons on whom a livelihood depends and to whom the patient came for definitive treatment; the nursing staff both in the operating room and in the intensive care unit; and the aides and orderlies, whose assistance can be invaluable. He must be sensitive to the over-all situation, responding and acting quickly without the need to be a prima donna. It is well, also, if he enjoys a high degree of empathy with the patient's family and with his research associates. Above all, he should take the time and trouble to earn the patient's complete confidence rather

than relying on a surgeon's high recommendation of him to the patient.

He must have a capacity for keen observation, quick decision, and action. Many episodes of complete laryngeal obstruction, sudden disappearance of a pulse, or marked hypotension can be obviated by keen observation of physical signs such as slight changes in respiration, twitching of facial muscles, or change in heart sounds. Many kinds of electronic monitors are now in use to aid him in these observations, as well as adaptations of instruments for routine physical diagnosis, such as, the penumatic blood pressure cuff and the esophageal stethoscope.

It is fortunate if he has a high degree of manual dexterity. His handling of a needle with minimal discomfort to the patient is highly desirable. Whether for intravenous administration of anesthetic agents, fluids, or blood, or for introduction of regional anesthetic drugs, his skill is determined by his dexterity, thorough knowledge of anatomy, and respect for the sensitivity of the periosteum. Hobbies, such as, wood-working, or playing a piano or stringed instrument, help to keep this facility in practice.

In common with all physicians, he must be honest, with unquestioned integrity, sensitive to the psychological aspects of each situation, and blessed, we trust, with a sense of humor.

RESIDENCY AND REQUIREMENTS

To call oneself a specialist in anesthesiology, an approved residency should have been completed. There are, at present, 286 residencies in anesthesiology in the United States, which provide training for 1,787 physicians. In June, 1963, these residencies were 71 per cent filled, comparing with 62 per cent in pathology, and 78 per cent in radiology, the most closely related "service" specialties. The number is gradually increasing as the stiff requirements of the Residency Review Committee of the Council on Medical Education and Hospitals of the American Medical Association are being met.

A physician seeking a residency in anesthesiology should look for the following 4 points: (1) an adequate number of teaching staff; (2) a regular pursuit of basic sciences relating to anesthesiology with possibility of further research fellowship if desired; (3) an opportuni-

ty to anesthetize a wide variety of patients; and (4) an opportunity to use a wide variety of anesthetic agents and techniques.

1. By a teaching staff is meant anesthesiologists who are physically present on the operating room floor and who are free to assist the residents with their clinical problems. All too often the anesthesiologists listed in a medical school or hospital catalogue are engaged in private practice or in research and are not available to teach the residents who are handling the bulk of the ward or service patients. In an active anesthesia service, there should be at least one anesthesiologist per resident; in many departments this ratio is 2:1. A system whereby older residents teach younger residents is highly undesirable in any specialty during the routine hospital schedule. However, at night, the availability of senior residents for instruction of junior residents gives the former an opportunity for teaching and the latter the encouragement that he, too, will some day be proficient.

2. Instruction in basic sciences such as physiology, pharmacology, anatomy, and biochemistry is fundamental to the study of clinical anesthesia. In some residencies, a block of time is assigned to their study, while in most, lectures occur weekly or semi-weekly throughout the residency. In 3-year residencies, an opportunity is provided for 6 to 12 months' research work in one of these subjects, as well as other clinical specialties, such as cardiology. This research work is highly desirable for those going into academic positions, but I do not think it is obligatory for clinical practitioners of anesthesiology.

3. It is obviously not feasible for every hospital with an approved residency to offer experience to the resident to anesthetize both newborn infants and geriatric patients, emergency patients, and those with chronic illness, patients needing eye surgery or obstetric delivery. The department head in charge of resident teaching should do his utmost to see that the resident has a broad training in the needs of patients in every specialty demanding his services, through affiliation with other hospitals if necessary.

4. There is a tendency to fit patients to an anesthetic technique rather than choosing an agent or technique for that particular patient. The resident is apt to find himself experienced in only a limited number of drugs and tech-

niques. The teaching staff should at least make sure that each resident has ample experience in regional as well as general anesthesia.

It is worthwhile, if possible, for a future resident to visit the anesthesia service of his choice and talk with some of the incumbent residents as well as with the chief of service, who may describe the quality of teaching in glowing terms. In general, the more the financial remuneration, the less the teaching of residents and the more "scut" work is involved. Residency training should prepare one to be a good anesthesiologist, not just to pass a set of examinations.

There are 2 certifying bodies in the United States that conduct written and oral examinations. The American Board of Anesthesiology requires 2 years of approved residency, with a third year soon to be added. Written and oral examinations are given twice yearly. After 3 failures of the written examinations, reapplication must be made. After 3 failures of the oral examination, an additional year of residency is necessary before re-examination. The fee for the examinations in 1964 is \$150. It is expected that 100 per cent of the applicant's time will be spent in anesthesiology. Certification is granted after a 2-year residency and 4 years of practice, or a 3-year residency and 1 year of practice, in addition to successful completion of the examinations. Graduates of schools outside the United States and Canada must take the examinations and a year of internship, in addition to the residency.

The American College of Anesthesiology, sponsored by the American Society of Anesthesiologists, has somewhat less rigid requirements. Examinations are on a more practical plane and only 50 per cent of time in the specialty is required. The present fee is \$75. American Board of Anesthesiology diplomates are accepted into College membership without examination and with payment of a fee of \$10. Fellowship in the International Anesthesia Research Society is awarded without examination, but by vote of the membership after a committee appraisal and recommendation.

OPPORTUNITIES

After completion of a residency, a variety of types of practice is available. The lone anesthesiologist in a town with a new hospital enjoys great prestige and can choose the extent

of his practice. Temporary assistance may be found in the presence of a general practitioner who has displayed interest and ability in the specialty, and from a part-time or full-time anesthetist-nurse who will keep the equipment and drug armamentarium in order. When the volume of his work warrants it, he may invite a colleague to join him, also on a private fee basis. Night work can then be shared, and vacations and attendance at meetings alternated.

In cities, group practice of anesthesiology is very successful if the group is compatible. Usually, all contribute their fees into the group and senior and junior partners receive a predetermined percentage after expenses have been paid. A minimum guarantee is sometimes made to new members. Group practice is especially desirable if an obstetric service is to be covered. Anesthesia for obstetrics is usually the last service to be rendered by anesthesiologists because of its irregular hours and interference with scheduled operations. With a group of 8 members or more, one anesthesiologist may spend a full 24 hours in the maternity hospital, followed by a free 24 hours. For the time spent with the average patient, working with obstetric anesthesia can be more than usually remunerative.

There is a growing number of positions open in the academic field. At the present writing, there are 37 departments of anesthesiology and 42 divisions of anesthesiology in the department of surgery in the 88 medical schools in the United States and Puerto Rico. While the remainder have no formal organization, each of these employs a number of full or part-time specialists who share in teaching, service to patients, and research. The type of remuneration varies widely, from a share in private fees to a full-time salary from the medical school. For the inquisitive anesthesiologist, academic work offers the most stimulation and challenge, though sometimes at a financial sacrifice.

Net income should equal that of other specialists of similar training and ability. As mentioned before, the nearest comparable specialties are radiology and pathology, though the risk to the patient is considerably more in anesthesiology. No other specialist can so quickly, though inadvertently, cause the death of his patient.

The only liability of which I am aware is

that the patient rarely comes to the anesthesiologist as the primary physician. His services are usually obtained through the surgeon or obstetrician. Only if one becomes proficient in therapeutic nerve blocks do patients seek him out originally. Naturally, after he has once anesthetized a patient, his services are often requested again if all went well.

ANESTHESIOLOGY AS A CAREER FOR WOMEN

From the foregoing description of anesthesiology and its demands, it is evident at once that women physicians are ideally fitted for this specialty. Of necessity, tact and diplomacy are part of their nature (with a few exceptions). Team work comes easily. Manual dexterity is a by-product of those who are expert at sewing or knitting. While it is unlikely that many women will be the mechanical gadgeteers that many men are, the mechanical tasks in anesthesiology are not difficult and can be learned with ease. They revolve chiefly around tanks of compressed gases, reducing valves, and oxygen therapy equipment. There is plenty of room, however, for the electronically-bent anesthesiologist of either sex with the many monitoring devices now in use.

For the unmarried woman physician, I see no reason why she should not be as expert and as successful in anesthesiology, both financially and professionally, as her male counterpart. In medical communities where women are the exception, she has a considerable edge over women in other specialties, possibly because of the association which surgeons have with women in anesthesia in the form of nurse anesthetists. Imagine a surgeon's surprise, however, when he finds himself working with another equally trained specialist, rather than someone to whom he gives orders and for whom he is legally responsible!

For the married woman, and especially one with young children, a residency in anesthesiology poses certain problems, particularly in relation to time schedules in a busy teaching hospital. Since the surgeon "cuts at 8 o'clock," the resident must be in the operating room, dressed in cotton uniform, with conductive shoes, at 7:15 a.m. After making final preparations for her first patient of the morning, she begins the anesthesia at about 7:30. Shortly thereafter the patient is positioned, "prepped,"

Dr. Virginia Apgar of Tenafly, N.J., was appointed to the research staff of The National Foundation in July, 1959, to head the newly formed Division of Congenital Malformations. She is a noted specialist in the problems of newborn infants and is the creator of the "Apgar Score." The test has become standard procedure in hospitals in many countries.

Before joining The National Foundation's research staff, Dr. Apgar was professor of anesthesiology at Columbia University College of Physicians and Surgeons. She was the first professor of anesthesiology and the first woman to hold a full professorship at that institution. She has been an attending anesthesiologist at the Presbyterian Hospital in New York City, and a consultant anesthesiologist at Valley Hospital in Ridgewood, N.J. and both Goldwater Memorial and Triborough hospitals in New York City. Dr. Apgar has assisted in the delivery of over 17,000 infants.

Besides her more than 40 contributions to the medical literature on anesthesiology, resuscitation, and congenital anomalies, she has written numerous articles on these subjects for laymen. She is widely known as a medical lecturer in the United States, Canada, England, Australia, and New Zealand, and has assisted in training some 250 physicians in the science of anesthesiology.

Medical societies to which Dr. Apgar belongs include the Harvey Society, Alpha Omega Alpha, American Association for the Advancement of Science, the Allan O. Whipple Surgical Society, Teratology Society, American Society of Human Genetics, Genetics Society of America, and the Twenty-five Year Club of the Presbyterian Hospital. She holds certificate no. 50 of the American Board of Anesthesiology. A fellow of the American College of Anesthesiology, she has served on the organization's Board of Governors and was its chairman in 1951 and 1952. She is also a fellow of the New York Academy of Medicine and of the New York Academy of Sciences.

Honors held by Dr. Apgar are Mt. Holyoke College's Alumnae Award, 1954; New York Infirmary's Elizabeth Blackwell Citation for distinguished service to medicine by a woman, 1960; and the Distinguished Service Award given by the American Society of Anesthesiologists for contributions to the specialty, 1961 (awarded October 1962). She was awarded an honorary Doctor of Medical Science degree by Woman's Medical College of Pennsylvania in 1964.

and draped for the 8:00 a.m. incision. After the operation is completed, she accompanies her patient to the recovery room and remains there until satisfied that his physiological signs are stabilizing.

Then come rounds of the patients who will be operated on that afternoon. After a quick lunch comes the afternoon anesthesia assignment, more rounds of the patients scheduled for surgery the following day. These are as important as the anesthesia itself and should not be done hurriedly. Also, when possible, she sets up her anesthesia machine for the first patient of the morning, making sure all drugs and equipment she will need are at hand. That night, she is on first call for emergencies, necessarily sleeping in the hospital. The next day, the time schedule is the same but second call at night allows for more sleep. The third day, her afternoon schedule will usually be lighter and she may go home for the night,

off call. Of course, there are many variations of this plan. The larger the teaching staff, and the more the number of residents, the easier this schedule becomes.

In practice, solo practitioners have the hardest life, being on call every day for 24 hours. In group practice, night call usually leaves one night in three free. In academic anesthesiology, night call is usually less than in private practice. Each patient, before anesthesia, should be visited by the physician who is to anesthetize him.

There are short cuts in this specialty, as in all. I know one very successful (financially) anesthesiologist who makes his preanesthetic rounds by telephone or takes the surgeons word for the condition of the patient. Such a practice is indefensible and reprehensible.

Such a schedule of work has indeed been met by married women in all kinds of family situations, but it is difficult to be responsible

for one's small children and do justice to one's patients. A variety of family helpers may ease the situation: in-laws, full-time household help, or a children's nurse living in the household. An understanding husband is invaluable for he must be indeed unusual to be tolerant of so little family life. Married women anesthesiologists with children are not, in general, popular as members of a group practice. They are, of necessity, less dependable than men. The family crises that inevitably arise must usually be met by them, not their husbands.

Recently, I have met groups of young women who are medical students, are married, and raising a family. Since most of their husbands are medical students also, they live in a nearby apartment dormitory for married couples. There is a day nursery for the youngest children and much co-operation about baby-sitting. I wonder how these families are going to thrive when they make their way to separate hospitals for their internships and residencies. But to these young people, nothing is impossible.

Full-time teaching of anesthesiology is somewhat more feasible for the married woman. Research days or blocks of research time lighten the pressures of clinical work. Usually, much of the teaching of medical students and interns falls to the woman physician on the staff because of her patience, perspicacity, and indefinable "sixth sense." These teaching hours are especially rewarding, for they bear the dividends of interesting other young physicians in the specialty. Few administrative positions in anesthesiology have been held by women. This is not to infer that they are not open to women, but that there are compara-

tively few positions—actually only 79 in this country and Puerto Rico.

Part-time positions are sometimes available. These are to be found chiefly in hospitals with very little emergency work. Veterans' hospitals, orthopedic hospitals, and those where surgical treatment of tuberculosis is still performed, are the most likely ones.

As with anyone entering the field of medicine, it may be necessary to interrupt 7 years' average preparation for practice. With married women physicians who naturally want to start a family at some point, I think the best time for an interruption would be between the completion of an internship and the beginning of a residency in anesthesiology. The competition for good internships is so keen directly after the completion of the last year of medical school, that I think one would miss out by taking time off at that point. The good applicant for a residency still has a comfortable choice of location. Once she accepts a residency, however, in fairness to the hospital chosen, it is expected that she will postpone further pregnancies until the residency is completed.

The percentage of women physicians in the specialty is distinctly higher than in most other specialties. Eleven per cent of members in the 1963 American Society of Anesthesiology directory are women. The average for all types of practice is just under 6 per cent.

The future of this specialty for women physicians depends to a considerable extent on the quality of the work of the many women residents now in training. I have no fears for the future, for "Never underestimate the power of a woman."

This is the second in a series of articles on career choices prepared especially for women medical students and house officers. The articles will be compiled in a booklet to be made available to our junior members and all others interested.

This material has been realized through the work of the AMWA subcommittee of the Medical Education and Practice Committee.