SPECIAL ARTICLE

MALPRACTICE AS RELATED TO THE ANESTHESIOLOGIST

JOHN D. MURPHY, M.D., AND STEVENS J. MARTIN, M.D.

NUMEROUS articles, addresses and editorials concerning the general subject of professional liability and the physician appear scattered throughout the domestic and foreign medical literature. The majority of these, though lacking in statistical value, often vague in substance and frequently neither resolving debatable points of law as related to medicine nor clearly defining the position of the physician before the law do, nonetheless, sound a warning to the physician of today. They present the problems he faces in the realm of liability and offer such solutions as a confused state regarding the subject will permit. The position of the anesthesiologist is well known today and the hazards he faces in the routine performance of his specialty are many. Before presenting his problems and possible solutions, malpractice and liability will be discussed briefly.

The term malpractice has been defined by Jetter [1] (from Black's Law Dictionary) as "bad, wrong or injurious treatment of a patient professionally, resulting in injury, unnecessary suffering or death to the patient and proceeding from ignorance, carelessness, want of proper professional skill, disregard of established rules or principles, neglect or a malicious or criminal intent." Malpractice may be either criminal or civil. Criminal malpractice denotes a violation of penal law in the management of a case by a physician who thereby subjects himself to prosecution by the State. Examples of criminal malpractice include falsification of a birth or death certificate, failure to report treatment of criminal violence or the alteration of features or fingerprints of a criminal.

This presentation is concerned with civil malpractice wherein a physician has inflicted injury or death upon a patient by his treatment, but not in violation of any statute of criminal law. Therefore, the state may not prosecute him, but he may be sued in the civil courts for malpractice. According to Gonzales [2] and others, in order for a malpractice action against a physician to be a valid court action, four points must be proven. These are often referred to as the four D's. In their natural order, they are:

(1) *Duty.* It must be shown that there existed in fact a duty to the injured person (hereafter known as the plaintiff) from the doctor (hereafter known as the defendant). The existence of the physician-patient relationship ordinarily creates a duty to exercise that degree of care, diligence and skill which other physicians in the community of the same specialty would exercise in the same or similar circumstances.

(2) *Dereliction.* A dereliction of the duty must be established. Did the physician apply to the therapy of the patient the knowledge, skill and judgment which the average physician in the same community would use under similar circumstances? [3] Any deficiency in professional knowledge or skill must be proven in court by expert medical testimony, except in those unusual cases where the court has determined that from the mere fact of the injury itself, a jury can infer negligence on the part of the physician. This is the doctrine known to lawyers as *res ipsa loquitur.* It has been applied in those situations where the court has concluded that either the injury or the circumstances of the injury were such as do not ordinarily occur unless someone has been negligent, and that it was caused by an agency or instrumentality within the control of the defendant and not due to any voluntary action or contribution on the part of the plaintiff. Under such circumstances, the jury is permitted to infer that the defendant was negligent even though there is no direct proof of his negligent acts,

Received from the Department of Anesthesiology, St. Francis Hospital, Hartford, Connecticut, and accepted for publication July 18, 1958.

(3) *Direct Causation.* A direct relationship must be established between the damage or injury sustained by the patient and the lack of adequate skill or the presence of negligence displayed by the defendant in his diagnosis and/or treatment. Such causation or "proximate cause," in legal terminology, must also be established by expert medical testimony.

(4) *Damage.* In most jurisdictions it must be established that some *physical* damage or injury was sustained by the plaintiff. Mental duress or damage unaccompanied by physical injury is not sufficient in most jurisdictions to permit a recovery for damages by the plaintiff.

All four of the above points must be proven by the plaintiff. It would appear on the surface that a malpractice action against a physician is no easy task, but such is not always the case. The interpretations have been liberal and the application in some malpractice cases of the doctrine of law known as *res ipsa loquitur* places a heavy burden on the physician faced with a suit. Another doctrine of the law applied in certain cases is known as *respondeat superior* which refers to a master's responsibility for the negligence of his servant. These two doctrines of law and their specific application in suits against anesthesiologists will be dealt with more fully. Suffice it to say that the anesthesiologist practicing his specialty today is faced with certain hazards peculiar to his specialty and certain problems of liability which in the light of recent decisions in the courts, have become of vital concern to him.

Professional Liability

Professional liability may now be looked upon as a definite occupational hazard of medicine. Regan [4] has said that in some localities, malpractice claims have become so frequent that any patient with less than a perfect end result is a potential malpractice-suit instigator and no physician regardless of his excellence or the purity or benevolence of his motives is immune from malpractice actions. Likewise his qualifications or motives afford him no defense, although they may be of value in persuading a jury that the doctor has not been guilty of malpractice. A recent survey by the legal department of The American Medical Association [5] has shown that the number of malpractice suits as well as the size of awards or judgments in favor of the plaintiff are on the up-swing not only in this country but in others, notably Canada and England. In only one of every seven or eight malpractice actions is there negligence shown on the part of the physician, other than as the jury is permitted to infer such negligence under the doctrine *res ipsa loquitur.* The physician loses one of every four cases in the courts.[6] Men in the fields of both law and medicine are becoming alarmed over the situation as it now exists, especially over the extension in our courts of the doctrine of *res ipsa loquitur.* This has now come to be known as the "rule of sympathy."

It is basic in law that he who accuses must prove, it being easy to accuse and most difficult to defend. Such proof must be by expert medical testimony and not by jury speculation as has been the recent trend. The fallacy in the extension of the doctrine of *res ipsa loquitur* exists whenever a bad result follows some surgical, diagnostic or other procedure, the other requirements for the application of the doctrine of *res ipsa loquitur* enumerated above are present, and the courts presume that the reason must be some negligence on the part of the physician. This will result in entitling a lay jury to weigh and to speculate without expert proof, between the defendant physician's explanation and the natural sympathy for the injured plaintiff. Such procedures lead to disastrous results for the defendant physician. It is now felt by some that in order to defend the rule requiring proof of negligence by expert testimony, organized and effective pressure must be exerted upon both the courts and legislatures.[6]

Many reasons have been advanced for the present status of liability claims against physicians. The general lay public may possibly have an honest misunderstanding regarding what to expect from medical care. There may also be physicians who unnecessarily leave themselves vulnerable to malpractice actions through unfamiliarity with or an inaccurate knowledge of the principles of malpractice. Dillon [7] and others feel that the increase in personal injury claims in other areas such as automobile accidents may prompt similar claims against physicians. Irresponsible remarks or criticisms by one physician concern-

ing another are a definite hazard and have been the motivating factor behind the instigation of several malpractice suits. Other common factors which increase liability claims against physicians include failure to heed a patient's complaints or to respond to his desires, callousness, charging excess fees and premature instigation of suits by physicians to collect fees from *dissatisfied* patients.

Many physicians unwittingly lead patients to believe that risks of surgery and anesthesia are nonexistent. Articles published in the lay press and magazines dealing with high costs, fee splitting and malpractice promote antagonism while favorable articles on drugs and procedures imply to the public that a less than perfect therapeutic result is equivalent to negligence.[8] Likewise, incorrect or irresponsible diagnoses of the causes of injury or death add to the already heavy burden of defense.[7] To be sure, malpractice actions are not always motivated by thoughts of gain or avoidance of fee payment, whether reasonable or not. There are situations wherein claims are based upon real maltreatment and negligence. Of course, in such cases, adequate compensation is obligatory, both morally and legally. However, cases that are of great concern are those without merit from the onset such as nuisance claims, as well as those which come before a court or jury with at least some reasonable doubt as to their validity.

The specialty of anesthesiology has come of age and the anesthesiologist may be held wholly and fully responsible for his own actions at any time. He may no longer be able to seek refuge behind the cloak of security once offered by the hospital or the surgeon. Beginning in the early 1940's, anesthesiologists were being sued entirely alone, the surgeon being called only as a witness.[9] In the Proceedings of the Royal Society of Medicine, April 1949, the Section on Anesthetics presents a detailed and over-simplified analysis of the origin of negligence.[10] There is a fundamental and special personal relationship between the anesthesiologist (or any other physician) and his patient. The mere fact that he is a physician immediately creates a legal duty toward his patient, as he holds himself out as having particular qualifications that imply the possession of special knowledge and skill. His duty in the eyes of the law is *"to take care."* He must treat with an ordinary and reasonable degree of skill, exercise care and diligence, and use his best judgment, not necessarily *the* best judgment, at all times. He must do that which is expected of like practitioners in his community although such geographical limitations do not hold as valid for a specialist, the anesthesiologist, as for the general practitioner. His duty "to take care" also implies a duty not to be negligent. These duties do not cease to exist merely because there is no contract between the physician and the patient. There need be no written or even verbal agreement. However, this implied contract does not make the physician a guarantor that the patient will be cured or even benefited, rather only that he shall use his best effort. There is certainly room for speculation that such is the case today.

In law, it is possible to be negligent without being careless, as laymen ordinarily use this term, and likewise in administering an anesthetic agent, it is equally possible to make an error in judgment without being negligent.[11] As an example of the former, an anesthesiologist with little training carries out a dangerous and unnecessary procedure with the greatest of care, but which results in the death of the patient. He may well be held at law to be negligent for undertaking such a procedure in the first place without having the proper training. When the injury is serious, a court or jury is more prone to conclude that the defendant was negligent. In cases where there is a possibility of error in judgment without negligence, a judge or court will often instruct a jury that the law does not require perfection of a physician, nor prophetic insight, no infallible judgment. The anesthesiologist's position is a rather difficult and unusual one and the more complex his work and tools become, the greater must be his possibility for human error.

Anesthesiology is not only a science but also an art. No anesthesiologist can pretend that he is always at the peak of his potential, watchful, alert and quick to respond. There are days when he must admit that, for whatever reason, his vigilance is flagging, he is tired or worried and his skill though potentially as high as ever is, in actual operation, below nor-

mal. When presented with an unexpected emergency he is unprepared and slow to react, his perception of danger blunted. It is at such times that he is most vulnerable to the hazards of his specialty—the moments of real risk.[10] The anesthesiologist must see at all times that his patient is given a fair chance to receive and survive the anesthetic procedure.[12]

Fundamental Responsibilities of The Anesthesiologist

There are three general phases of modern anesthetic activity in which the anesthesiologist has certain fundamental duties and responsibilities toward his patient.[13, 14] They are: (A) Preoperative visitation and evaluation of patient, (B) Anesthetic administration, and (C) Postanesthetic period.

(A) *Preoperative Visitation and Evaluation.* The anesthesiologist's preoperative responsibilities are often taken too lightly. Many times too much reliance is placed upon another's history-taking and physical examination when actually an additional examination by the anesthesiologist may be necessary to evaluate physiologic deficits. The anesthesiologist must discuss the patient's previous anesthetic experiences, drug idiosyncracies and the type of anesthetic agent and technique that will most likely be employed, barring unforeseen circumstances. Questions should be answered, but no commitments made. The patient should be left with a feeling of confidence and security as well as a knowledge that some risks are involved. A written consent, preferably with a witness, is mandatory.

There is no need to rely on secondhand information and to do so is foolhardy. In one study quoted by Regan,[4] it was found that during a ten year period in a large metropolitan area, of those suits brought against anesthesiologists which were lost, one of the most frequent causes was failure to have *evidence* of a preliminary examination on the chart. A brief notation on the patient's chart by the surgeon as to significant findings, if any, either in the history or physical examination is *mandatory.* These data should be confirmed or challenged by the anesthesiologist. There is no better supportive evidence, should any question arise, as to the efficacy of premedication or any other aspect of the anesthetic management. Absence of such written record must, no matter how pure the intentions, cast grave doubt.

Of special importance in the preoperative evaluation of the patient is the presence of chronic bronchitis, pulmonary fibrosis, coronary artery disease with or without myocardial involvement, or valvular disease any of which may place the patient in a perilous condition in the presence of undue stress or a sudden hypoxic insult.[15] Any history of backache, headache, hoarseness, peripheral nervous system diseases, or previous complication with anesthesia is important to note during preanesthetic rounds. Suits have been initiated and the defendant anesthesiologist defeated when chloroform was administered to a patient with known, but unelicited heart disease; when death resulted from a known but unsuspected allergy to an agent; and when postoperative pneumonia resulted from the use of inhalation agents in the face of an acute upper respiratory infection.[16]

Malpractice suits have also been lost on the basis of insufficient laboratory data. The absolute minimum was believed generally to be determination of hemoglobin or hematocrit and a routine urinalysis. Because of the frequency of allegations brought in regard to the dislodging of teeth during anesthesia, a superficial examination may be invaluable, followed by dental x-rays if feasible and considered necessary. Again, a notation on the chart is indicated concerning the nutritional status of the teeth and the presence of dental caps, etc. Special care should be exercised for all emergency surgical patients. Preliminary workup is often hurried and slipshod. While vomiting during anesthesia may be due to many causes, it always indicates that the stomach was not empty. "What and when did you eat last?" must become a routine question. The answer will often determine subsequent anesthetic management. There are well documented cases especially of caesarean section and vaginal delivery where the patient was on "nothing by mouth" for eight hours, yet partially digested food was found in the *stomach and bronchus* at *autopsy.*[15]

The anesthetsiologist may see a patient who has been evaluated preoperatively by some other responsible person the previous afternoon

or evening. Upon such initial meeting, he now becomes fully responsible for all information contained in the patient's chart. It is his duty to read and acquaint himself with all findings. If it happens that the surgeon has written that no spinal anesthetic be given on request of the patient and the anesthesiologist either fails to note this fact or changes the patient's mind while on the operating table (and under the influence of premedication) he may upon the instigation of a suit by such patient find himself liable for assault and trespass.[17, 18]

(*B*) *Anesthetic Administration.* Once the patient reaches the operating room, the anesthesiologist's real work begins, and his duty to the patient "to take care" endures. From this time until the patient is well along the road to recovery, the potential hazards he faces are unlimited. His primary responsibility is protection of his patient by preventing, correcting or minimizing physiologic aberrations of the vital systems of the body. Attention to the smallest details is essential. Dollinger [19] has pointed out in detail the numerous effects of malposition of the patient during anesthesia. Of particular importance in regard to postoperative nerve palsies are hyperabduction of the arm (brachial plexus damage), prolonged use of stirrups (pressure injuries of the thigh and ankle), dangling feet or arms (foot drop or wrist drop), steep prolonged Trendelenburg position (shoulder and wrist injuries), and careful support of the skeletal axis during transfer or turning of an unconscious patient. Since any injury to the anesthetized patient outside of the operative site may be the responsibility of the anesthesiologist, he must protect his patient from such injury. The padding of points which of necessity are exposed to pressure is a very helpful prophylactic measure.[20] A case in point is that of Ybarra vs. Spangard [21] in which the plaintiff brought suit against the hospital, the anesthesiologist, the surgeon and a nurse for injuries incurred to her shoulder and arm during an appendectomy. Although the Trial Court entered a judgment of nonsuit as to all the defendants, the Supreme Court of California reversed the decision holding that the doctrine of *res ipsa loquitur* was applicable. They reasoned in part as follows: "We merely hold that where a plaintiff receives unusual injuries while unconscious and in the course of medical treatment, all of those defendants who had any control over his body or the instrumentalities which might have caused the injuries may properly be called upon to meet the inference of negligence by giving an explanation of their conduct." [21] In applying this doctrine, the defendants are considered to have the superior knowledge of the circumstances surrounding the injury and all defendants are accountable for their actions even though the plaintiff cannot select the particular acts by the particular person which led to his injury. In fact, exclusive control of an instrumentality does not limit the application, for the court states that it is sufficient that the plaintiff show an injury resulting from an external force applied while he lay unconscious in the hospital, an admittedly broad interpretation.

Before beginning the administration of the anesthetic agent, a base line of pulse, blood pressure and respirations must be obtained and *recorded.* The anesthesiologist must be sure his equipment and apparatus is in proper working condition. He does not guarantee that such apparatus is in perfect order,[22] but will be liable for any latent defect that a reasonably careful examination might reveal or if he proceeds with the use of some obviously defective equipment. In one case, which was settled out of court for $1,700, the anesthetist attached an erroneously connected ether Y-tube to an endotracheal tube resulting in liquid ether entering the patient's lungs with subsequent development of pneumonia and death.[9, 23] There is at least one case on record of a sudden death during induction where no blood pressure had been recorded because the anesthetist's sphygmomanometer was broken.[24]

All patients should be securely strapped on the operating table. A fall resulting in broken bones or permanent injuries could hardly be justified. Likewise, the patient must never be abandoned or unattended. If strapping or restraining is inconvenient, as in positioning a patient for intrathecal anesthesia, and the anesthesiologist must leave the patient for any reason (i.e. to scrub), then some person must be delegated to stay with and watch the pa-

tiont until his return. A third person, preferably a nurse, must at all times be present when dealing with female patients.

The subcutaneous injection of thiopental through improper venipuncture or its erroneous intra-arterial injection may lead to claims of permanent damage. Should extra-vascular injection occur, the situation is best explained to the patient briefly and reassurance given. This is good prophylaxis. The ability to place a needle in a vein is presumed to be an elementary act learned early in the physician's training and actions alleging mismanagement in this area are defended with difficulty.[25]

Should there be disagreement concerning the proposed anesthetic agent or procedure, the anesthesiologist must be firm, rational and reasonable in his defense of the best agent or technique. Where there may be reasonable differences of opinion, the surgeon's decision may still prevail, but where the anesthesiologist would not recognize as sound procedure the technique or agent insisted upon by the surgeon, the anesthesiologist must refuse to follow the dictate of the surgeon. The fact that the anesthesiologist under such circumstances administers the anesthetic under duress and upon instructions from a superior would not be a defense, and even the notation upon the chart of the anesthesiologist's protest would not afford him protection. The advisability of noting the circumstances on the patient's chart has many ramifications and remains a moot point, although Mushin advocates such written testimony as a prophylactic measure should subsequent complications arise.[25]

The anesthesiologist assisting an overenthusiastic surgeon whose regard for the patient's general condition may leave something to be desired, fails in his duty if he does not warn the surgeon of impending danger or that the patient is slipping from his grasp. He should not hesitate to make his opinion felt. He may even be so presumptuous as to suggest that either the procedure be abbreviated or terminated at once. Failure to give such warning is negligence. The anesthesiologist must be in control of his patient at all times. A case may be cited concerning a gravely ill patient with a strangulated hernia who died because surgery was prolonged 90 minutes for teaching purposes.[10] In another instance, imbecility from cerebral hypoxia resulted when the anesthetist was maneuvered out of reach of the patient by enthusiastic visitors desiring a better view of the operative field.[10] The anesthesiologist at the head of the table must stand his ground. In the case of Lawson *vs* Crone and Hall,[24] the anesthetist was held not liable for allowing the surgeon to perform an operation which he had advised against. The court said in part, ". . . his advice had been disregarded and the operation was being performed contrary thereto and was not subject to his control." With the developing responsibility of the anesthesiologist, this may not still hold true. The anesthesiologist must exercise his own medical judgment in the area of his own responsibility. Prudence dictates that contact should be made in person with the surgeon prior to the induction of anesthesia.

Other sources of danger to the patient as well as of possible legal action include: [9, 24]

(1) Dermatitis and facial burns from a rubber mask soaked in antiseptics.

(2) The introduction of trichlorethylene into a soda lime circuit.

(3) Inhalation of extracted or dislodged teeth.

(4) Aspiration of a throat pack of gauze.

(5) Failure to use a gastric tube in the presence of suspected intestinal obstruction.

(6) Failure to exclude obvious sources of ignition.

(7) Use of the palm of an anesthetized patient in second stage of anesthesia to support a syringe, usually pentothal, with the possibility of breakage and lacerations.

(8) Administration of cyclopropane during dental surgery requiring the use of a drill.

(9) Prolonged and forceful digital pressure behind the mandible during obstruction of the airway (facial nerve branch involvement).[27]

(10) Sudden death from inadvertant injection of a toxic dose of anesthetic agent into the spinal canal during caudal anesthesia.

(11) Heavy-armed assistants leaning on the patient's chest.

(12) A kinked endotracheal or infusion tube.

(13) Fracture of an old endotracheal tube.

(14) Imperforate slip joints or connectors.

(15) Mislabeling of anesthetic or other potent drugs or failure to note labels thereon with resulting erroneous administration as to type or dosage.

(16) Sudden death from administration of cocaine-adrenalin mixtures.

(17) Overdosage of anesthetic agent.

(18) Anesthetic mismanagement leading to a *tendency* for cardiac arrest.

(19) Improper technique in performing blocks, notably brachial plexus (pneumothorax).

(20) Soaking of ampoules containing local anesthetic agents in an antiseptic solution (this is tantamount to malpractice in England).

(21) Excessive pressure from a face mask (supraorbital neuritis).

(22) Improper protection of the eyes (corneal abrasions, conjunctivitis).

(23) The use of hot mouth gags or other instruments causing burns of the face.

Recently a new liability hazard has been recognized in the field of anesthesiology.[24] The technique of controlled respiration using muscle relaxants coupled with minimal analgesia has prompted the instigation of at least two suits against anesthesiologists. It was alleged in one case that the patient was awake and heard discussions regarding the prognosis of the case; in the other, the patient experienced pain, but was unable to convey his feelings to the anesthesiologist. The outcome of these actions is awaited with alarming interest. A precedent possibly may be set and the specialty again find itself limited in the use of an excellent type of anesthetic management because of the threat of legal implications, should any mishap occur.

One of the most common accidents which occur is the chipping or dislodging of teeth during endotracheal intubation of the patient. The hazard in such a situation is not the act itself, but rather a failure to search for the tooth by roentgenography or bronchoscopy, and to inform the patient as soon as possible of what happened, how it happened, and what steps are necessary, if any, to correct the situation.[28] It is the uninformed patient, the patient who is taken by surprise or the patient who hears of his mishap through lay sources, that is most likely to be resentful, to feel neglected or abused, and to justify his feelings with a malpractice action. In the face of proper skill and care on the part of the anesthesiologist using adequate equipment and with a definite indication for intubation, there is little to fear in defending any suit alleging negligence. The "leaning of the law," based on previous court decisions, is that the breaking or dislodging of teeth in the course of endotracheal procedures is an accepted hazard inherent in the procedure.[29] In Meyer vs. St. Paul Mercury Indemnity Co.,[30] an action was brought against a dentist, an anesthesiologist, and a hospital corporation for harm resulting from the dislodgment of the plaintiff's tooth. In conclusion the court stated: "There is nothing to be found in the record of this case to show that Dr. K (the anesthesiologist) did not use the proper and usual technique and employ the same skill as other practitioners in her field in handling the instrument she was required to use. . . ."

Explosions in the operating room are an ever-present hazard and prevention is by far the best and perhaps the only cure. In nearly all instances the doctrine of *res ipsa loquitur* will be invoked by the court and the burden of proof then falls on the one who says that there was no negligence—the anesthesiologist. The court sees only that the plaintiff entered the hospital with no injury,[3, 16] and now has an injury resulting from something that happened in the hospital, which, in common experience, would dictate should not normally occur unless someone had been negligent. The defendant must show that the accident was due to some unpreventable cause which reasonable care and diligence would not be likely to uncover. The Joint Commission on Accreditation of Hospitals has set certain standards for an anesthesia department which must be met for approval.[31] These include proper grounding of equipment, of floors, and of personnel, absence of cautery or other dangerous electrical equipment in the presence of explosive agents or mixtures and the prominent posting of safety regulations.

The anesthesiologist stands alone with reference to the responsibility for the administration of incompatible blood to his patient once such blood has reached his hands. He must assure himself that the blood to be given is the proper type and Rh factor by checking the label on the bottle for name, number, and grouping. This duty must never be delegated to operating room or other personnel present.

The anesthesiologist must be most conscientious in the matter of records. Any physician who prescribes and administers a dangerous drug (anesthetic agents and their adjuncts being examples par excellence) could hardly feel it more than a matter of conscience to record the order of administration, date, time and quantity. Yet the number who fail in so

elementary a duty is far from few. The casual attitude is all too frequent in regard to notations on the patient's chart as to technical data, agents and dosage, time of administration, and possible explanations for gross deviations that occur during the course of anesthesia. Illegible, poorly kept, and incomplete records of an anesthetic administration can only reflect badly on the anesthesiologist's conduct and damage his reputation, regardless of the care he may in fact have displayed in the performance of his duty. Such records may belie any plea he may later make as to his good intentions. Good notes have time and again supported the defendant physician who stood in peril—whose skill and care were in question. A true account of the course of anesthesia, whatever complications take place or changes in technique made, is the best evidence of a well managed, skillful administration, not a testimony of a bungled or mishandled case as some in the field must believe.

(C) *Postanesthetic Period.* Duty "to take care" does not cease when the patient leaves the operating room. Whether the next stop be a postanesthesia recovery room or the ward bed, the anesthesiologist must take every necessary precaution to see that his patient has a free airway, both in transit and on arrival, and is in as optimal physiological condition as the state of consciousness permits.

(1) Complications After General Anesthesia—Within the realm of the anesthesiologist's responsibility are supervision and instruction of recovery room personnel. The degree of additional attention he shall render to the postanesthetic patient will in large measure depend upon the patient's general condition during surgery and the potential and/or actual complications. Of particular danger is the transport of an unconscious patient at night by unqualified personnel. The anesthesiologist must take it upon *himself* to insure the patient's safe delivery to the ward and never delegate this responsibility to orderlies, nurses, etc. Negligence in the aftercare of a patient was not proved by the fact that he was found cyanotic and gasping for breath on the ward without an attendant at the instant he was so found.[32] There must be proof that negligence if any was the proximate cause of death to sustain an action. In this instance it was shown that the patient's condition was good upon arrival at the bedside and when the anesthesiologist left.

According to the report of Friedman in 1955, there were 3.29 deaths for every 100,000 anesthetics administered in the United States.[33] Without careful and detailed investigation including a complete autopsy, they are difficult to defend. Ordinarily, expert medical testimony is necessary to establish direct causation in deaths wherein the anesthetic management is implicated. If there is conflicting testimony by experts, it may be left for the jury to decide, for if medical men are unable to determine the cause of death then the jury must choose between the conflicting medical opinions, and reach a decision on the basis of the testimony given. The doctrine of *res ipsa loquitur* was first invoked in an anesthetic death in the case of Cavero *vs.* Franklin General Benev. Soc. (1950).[34] In this instance, legal action for an unexpected death following a tonsillectomy under general anesthesia was brought against a nurse anesthetist, a surgeon, and the hospital. The court held that the three conditions of *res ipsa loquitur* doctrine were fulfilled saying in part: ". . . the child's death was due to something which ordinarily does not occur in the absence of negligence, that it was caused by an agency or instrumentality within the control of the defendants and that it was not due to any voluntary action or contribution on the part of either the plaintiff or the child. . . ." Although in the legal definition of *res ipsa loquitur,* as indicated by the previous statement of the court, there are certain prerequisites which must be found to exist in addition to injury before it can be applied; nevertheless all too frequently the jury is unable to grasp these legal refinements and concludes that negligence occurred merely from the fact of a fatality alone.

The rule of *res ipsa loquitur* should not apply when medical evidence gives a satisfactory reason for the patient's death. There must be evidence of negligence. In Forbis *vs.* Halzmon (1936),[35] the defendant anesthesiologist was charged with negligence in the administration of the agent ethylene causing the death of the patient by asphyxiation. The defendant's oxygen tank became exhausted during the

procedure and during the five minutes necessary to change tanks, the defendant held the mask over the patient's face. He admitted he did not close the ethylene tank during this period. A medical expert testified that the deceased "died of asphyxiation resulting from the administration of ethylene gas without oxygen." The testimony was all in agreement that the breathing of such gas without oxygen for a few minutes would probably be fatal.

All anesthetic deaths should be reported promptly and every effort made to determine accurately and conclusively the cause of death. Any evaluation of sudden deaths under anesthesia should be based on autopsy findings to eliminate as far as possible mislaid blame on the anesthetic agent or the ineptitude of the anesthesiologist. Only following a thorough autopsy which fails to reveal a positive cause of death must there be presumption of any lack of skill or care on the part of the anesthesiologist.[36] In other cases the defendant anesthesiologist has been cleared on the basis of: a hypersensitivity to chloroform which would not be revealed by the ordinary preoperative examination (Welk *vs.* McGehee);[37] the presence of a "fatty degeneration" of the heart at autopsy that likewise could not have been discovered preoperatively, and in which the subsequent administration of ether contributed to the patient's death (Levy *vs.* Vaughan);[38] the absence of a causal connection amounting to negligence between the administration of nitrous oxide for a brief procedure and the sudden death of the patient (Spain *vs.* Burch);[39] and the lack of evidence that an improper method or amount of agent was used in the injection of nupercaine into the peritonsillar tissue resulting in the prompt death of the patient (Johnson *vs.* Arndt).[40]

(2) Complications After Spinal Anesthesia—Probably the most hazardous technique in the practice of anesthesiology today in regard to postanesthetic liability is the administration of spinal anesthesia. The frequent application of the doctrine of *res ipsa loquitur* in cases alleging negligence in the performing of spinal anesthesia, especially in the western United States, has led many in the field to feel that they must be nearly a guarantor of results (Wasmuth).[41, 42] This, of course, is far from the ideal circumstances for the practice of any type of medicine. Normally, in spinal injury cases (usually partial paraplegias), the plaintiff should produce expert testimony in order to prove any negligence on the part of the defendant, but when the doctrine of *res ipsa loquitur* is applied, the plaintiff need only produce evidence (perhaps a pair of crutches or a wheelchair) from which reasonable men, not necessarily medical men, can infer that on the whole, the injury, or the accident which produced the injury, was one which, in common experience, would not ordinarily occur except for the negligence of someone. The plaintiff also need not show that he was completely inactive (absence of movement during an intrathecal injection), but only produce evidence removing any *inference* of his responsibility. Perhaps the fact that he was premedicated would suffice. Under these conditions the burden of proof that no negligence was involved falls squarely on the shoulders of the anesthesiologist. Courts ordinarily frown upon the application of this doctrine in malpractice cases because laymen are not qualified to pass judgment on whether a physician was or was not negligent. The proper application occurs in those cases where a common knowledge and experience teaches that the result was one which would not have occurred if due care had been exercised or in the absence of negligence. Thus, a jury is permitted even in the absence of expert testimony to draw an inference of negligence.

A general ignorance about and fear of "spinals" plus postanesthetic discomforts such as spinal headaches, as well as comments from friends and relatives concerning their difficulties with the procedure have all tended to bring about an increase in this type of malpractice suit. The doctrine of *res ipsa loquitur* was not applied in a case involving the breaking of a spinal needle in the back of a patient, but because it was established that the needle was located outside the channel of soft tissues and against the bony spine, a prima facie case of negligence arose sufficient to call upon the defendant anesthesiologist for an explanation of his conduct (Wiley *vs.* Wharton *et al.*).[43] In this case, there was no complaint of the method used in administering the anesthesia, but rather of negligent conduct in pursuing the method. In Ayers *vs.*

Parry,[42] the doctrine was again held not applicable when the patient experienced pain in the leg and then fainted upon the injection of a spinal anesthetic agent. A partial paralysis of the extremity followed. Expert testimony stated that such a painful reaction was not uncommon and that the plaintiff no doubt was suffering from injury to nerve roots in the lower end of the spinal canal. The court said in part: ". . . When the expert testimony offered by the *plaintiff* ascribes the cause to the toxic quality of the injected drug as distinguished from the negligence of the anesthetist, that evidence is binding upon the court and the jury would not be permitted to speculate to the contrary." In Severis *vs.* Haas,[41] the doctrine of *res ipsa loquitur* was held applicable when, following the spinal anesthesia for vaginal delivery, the patient suffered a partial paralysis of one leg. Expert testimony was given to the effect that the procedure was proper and skillful in all respects (site, drug, dosage, indication, etc.) and that due care was used in its administration. While the Court of Appeals upheld judgment in favor of the defendant by stating that the law has never held a physician accountable for every untoward result that might occur, the California Supreme Court granted a new trial stating that the plaintiff had established a prima facie case of negligence based on the testimony of the attending obstetrician and a consulting neurosurgeon. In another case,[16] the mother-in-law and the husband of the patient refused the use of a spinal anesthetic for the removal of a needle in her thigh. The surgical and anesthetic consent had been signed and when the defendant stated that he could not use an explosive agent because of the need for a fluoroscope, that an inhalation agent was contraindicated because of the possibility of retching or vomiting leading to tension of the patient's recent appendectomy wound, and that a large amount of local anesthetic agent would be needed which might cause a slough of the thigh tissues, the case against him was promptly dropped. If the courts continue their present interpretations and applications of the doctrine of *res ipsa loquitur,* it may soon become necessary for the defendant anesthesiologist to prove not only that he was free of negligence in his spinal administration and technique, but also that spinal anesthesia was *preferred* over inhalation anesthesia for any given case.

The Nurse Anesthetist

Since nurse anesthetists administer 20 per cent of all anesthesias in this country,[33] some general facts and principles that apply to them in regard to liability and their relation in the eyes of the law to the surgeon, anesthesiologist and hospital may be informative and profitable. The administration of an anesthetic by a nurse is legally permissible in one of two ways; either by a statute such as the medical or nurse practice act of a state, or by legal decisions such as those of the Attorneys General of the States of Iowa and New York.[45]

Nurses administering anesthesia must be qualified by adequate and approved training and experience and their work must be supervised and directed by a licensed physician. They are neither qualified nor expected to exercise medical judgment. Nurse anesthetists are not practicing medicine when the prescribed anesthetic agent is administered in accordance with the directions of the surgeon or other physician in charge (Frank *vs.* South and Chalmers-Francis *vs.* Nelson).[46, 47] In the latter case, the court found that the nurse anesthetist was not doing an act of independent legal significance and that the surgeon had the power and the duty to direct her actions during the operation.

The nurse anesthetist may become personally liable for her own negligence irrespective of any liability on the part of the surgeon, but the surgeon has the right to assume that the nurse anesthetist, when furnished by the hospital, is competent and adequately trained. Whether in any particular case the nurse anesthetist is the agent of the hospital or the operating surgeon may be a question of fact for a jury. No person can merely by reason of position or relationship to another, escape legal liability for injury resulting from their negligence. In general, when a servant, the nurse anesthetist, has two masters, a general one—the hospital, and a special one—the surgeon or attending anesthesiologist, the power of immediate control and supervision is the determining factor in

placing responsibility for any negligence of the servant.[48]

The nurse anesthetist has, in general, the same responsibilities and duties as the anesthesiologist, but the latter is required to exercise medical judgment and has a broader medical knowledge as well as more intensive training. She is fully responsible for the mechanical phase of anesthetic administration, for the attention to the state of the patient's vital signs and for all pertinent data on the patient's chart. She may not begin the administration of an anesthetic before the arrival of the surgeon, whereas the anesthesiologist has the legal right to do so being an independent agent responsible for his own actions.[16]

The recent improvement in standards and knowledge of nurse anesthetists has placed them in a difficult professional position.[16, 45] While not claiming to have superior knowledge or ability to that of a physician trained in the specialty, they feel in many instances more qualified than a surgeon who perhaps administered his last anesthetic agent as a medical student or intern. That such is the case, the surgeon will readily admit. At the present time, the surgeon is demanding that the hospital assume financial and legal responsibility for the technical actions of its employed nurse anesthetists. He no longer wants the anesthetist under his control and supervision. The law now states that the hospital *must* assume these responsibilities.

The trend, then, is toward the hospital as a master meeting the responsibility for negligence by its nurse anesthetist servants under the doctrine of *respondeat superior*. In Kemalyan *vs.* Henderson,[49] a suit was brought against the surgeon and the hospital for the negligent administration of ether by a nurse anesthetist. Although the jury's verdict was in favor of the plaintiff, the court held the nurse anesthetist *not* to be the borrowed servant of the surgeon because testimony was produced that the surgeon was not in the room during the induction of anesthesia and that no instructions were given or supervision exercised by him. In the case of Jackson *vs.* Joyner,[50] however, the defendant physician was held liable for the negligence of the nurse anesthetist. The court stressed that the physician had the power of immediate control and supervision over the activities of the nurse anesthetist and stated, "The power of control is the test of liability under the doctrine of *respondeat superior*." In Morrison *vs.* Henke,[51] the general rule is established that nurses are the servants of the hospital during the post operative course and treatment of a patient.

The House Staff

Little is to be found in the medico-legal literature concerning suits against or the implication in suits of internes and residents. Their legal status has never been specifically passed upon by the courts, nor has legislature seen fit to define their power and duties. The resident is considered to have the full legal status of a licensed practitioner, while an intern may not necessarily have such status. The Medical Practice Act of the specific state in which a house officer is employed may be of some help in deciding his particular legal status. The law generally holds a house officer to be a servant inasmuch as he spends most of his days and nights at the hospital to render administrative or medical service and the hospital is responsible for liability arising out of his acts in the performance of duties customarily performed by him.[4] However, when acting under the *direct* supervision of a physician or surgeon during the course of an operation or other procedure, the hospital may be absolved from responsibility and any acts then become those of the physician or surgeon who has charge of the work—the "true author."

Malpractice

The old adage that "an ounce of prevention is worth a pound of cure" could be no more applicable than in the realm of professional liability. From the discussion thus far, it is clear that the anesthesiologist is confronted with a multitude of problems, the careless handling of which invites malpractice suits. The particularly dangerous areas have been alluded to already: anesthetic explosions, nerve palsies, dislodging of teeth during endotracheal intubation, injection of the wrong drug or an overdose of the right drug, failure to elicit a patient's allergies or other pertinent findings prior to anesthesia, incomplete rec-

ords, obvious negligence and injuries resulting from spinal anesthesia. While there are many other problems which pose a lesser threat, those mentioned either by their very nature or because of the interpretations placed upon them by the courts and juries will prove difficult or impossible to defend. Regan [4, 52] and others advocate strongly *malpractice prophylaxis* as the first line of defense. While it may be impossible to prevent the instigation of a suit, it is possible to be in an absolutely unassailable position to defend any unjustifiable action. Meritorious or justifiable claims should be settled out of court if possible. But it is even more strongly urged that unjustified or nuisance claims be contested as thoroughly as possible.[8] It is tempting for the physician to rid himself of those claims by a small settlement out of court, thereby eliminating the annoyance of time and income lost from practice. This attitude can only encourage the public to seek "easy money" through other similar claims. A determined opposition in a court regardless of the cost of the defense is the biggest deterrent to invalid claims.

That the majority of physicians are in favor of malpractice prevention programs, well organized, was found in a recent survey by the Law Department of the American Medical Association.[53] Most physicians responding felt that such claims prevention programs were of "some" to "considerable" value. The majority also felt such programs should be conducted on a county society level. Subjects that were felt to be most in need of emphasis were:

(1) Education of the physician in the subject of law as applied to the practice of medicine.
(2) Promotion of better physician-patient relationship.
(3) Avoidance of unnecessary criticism of treatment rendered by other physicians.
(4) Education of the physician with reference to his ethical responsibilities.
(5) Maintenance of complete, up-to-date records.

The survey also showed that many physicians did not know if their state had such a program and if so, on what level it was conducted. Over 95 per cent of the respondents felt that physicians should *not* be immune when negligence was involved in a case. A total of 92.3 per cent of the respondents were covered by some form of professional liability insurance and 86 per cent of physicians now in practice had never been faced with a malpractice claim.

Malpractice prophylaxis includes a number of do's and don'ts, the most important of them applying to the anesthesiologist being: [4, 54]

(1) Know the legal duty to the patient and be as well versed as possible in the specialty.
(2) Keep as nearly ideal medical records as possible. They become extremely important if trouble develops.
(3) Avoid any statement which might be construed as an admission of fault. The effect of such a remark when reported to a jury is nearly impossible to rescind. When a suit is impending do as little talking as possible, particularly to the patient or his counsel. A concise and factual explanation to the plaintiff is all that is necessary. Anything more is unsafe. Do not deal in conjectures and opinions—simply state facts.
(4) Exercise tact in handling a patient. The average patient will not tolerate a haughty attitude or supercilious treatment.
(5) Do not hesitate to obtain consultation if the patient or the family seems dissatisfied with progress. The results should be in writing.
(6) Always obtain a written consent for anesthesia.
(7) Never abandon a patient or leave a patient unattended.
(8) Keep abreast of advances in the specialty.
(9) Know the statute of limitations and its significance. It is one year in Connecticut. This knowledge will guide and help determine the optimum time to instigate suits for the collection of unpaid fees.[55, 56]
(10) Check the condition of apparatus and equipment frequently and observe all safety measures.
(11) Under no circumstances should one attend a female patient without the presence of a third party. This point cannot be stressed enough.
(12) Do not reveal, as a rule, the existence or extent of liability insurance.

In essence then, the anesthesiologist should use every care no matter how busy or tired he might be and no matter how routine the procedure he is undertaking. He must not proceed until he is satisfied that all is well. He should use his best judgment at all times. In order to defend his actions, good medical practice must be supplemented with ironclad *proof* of what was done and how well it was done. Ignorance or carelessness in regard to malpractice prophylaxis today is inexcusable.

As Hilton [9] has pointed out, the important points in insuring safety should a malpractice action arise are: [57] (1) skill, (2) judgment, (3) care, (4) records, (5) silence.

Some brief remarks concerning professional liability insurance may be of interest. Malpractice rates are higher than ever before (Jetter).[1] It has become increasingly difficult for many physicians to obtain such insurance. The insurance carriers are dissatisfied for several reasons. There has been an increase in losses due to inflation and the recent hypercritical attitude of the public, juries, and courts. The volume of sales for this type of insurance is small. There is a growing dissatisfaction on the part of physicians.

Certain criteria should be kept in mind in selecting a carrier for malpractice insurance (Sadusk): [58]

(1) The stability of the carrier, past and future.
(2) Presence of adequate reserves.
(3) Availability of a group program sponsored by a county, state, or national medical society.
(4) Sufficiently high coverage available to meet a possible high judgment.
(5) Absence of hidden charges and requirements to buy additional insurance.
(6) Sufficient volume of business in the area to insure the prompt service of experienced agents or claims adjustors.

Sadusk feels that for a physician engaged in particularly hazardous fields of medicine such as vascular surgery, neurosurgery, or *anesthesiology* (the procedures in any of which regardless of skill may lead to paraplegias), coverage up to $300,000/$900,000 is necessary.[59]

Summary

An attempt was made in this presentation to summarize briefly experiences and pertinent legal decisions reported in the current literature referable to malpractice as related to the anesthesiologist. Particular emphasis was given to the points necessary to be proven for malpractice action against a physician, professional liability, the significance of the doctrines of *res ipsa loquitur, respondeat superior,* and the "borrowed servant." Reference was made to the fundamental and legal responsibilities of the anesthesiologist in the modern practice of anesthesia which include the preoperative visitation and evaluation of the patient, anesthetic administration and postanesthetic care. Recent decisions concerning the nurse anesthetist and house staff of a hospital have also been discussed. The need for malpractice prophylaxis was outlined along with the criteria in selecting a carrier for malpractice insurance.

The authors are indebted to Messrs. John Lansdale, Jr. and George I. Meisel, and the research staff of Squire, Sanders & Dempsey for their examination of the manuscript and suggestions as to the legal aspects discussed.

REFERENCES

1. Jetter, W. W.: Civil Malpractice—Basic Principles with Suggestions for Preventing Malpractice Claims, M. Clin. North America **37**: 1565 (Sept.) 1953.
2. Gonzales, T. A., Vance, M., and Helpern, M.: Legal Medicine and Toxicology, ed. 2. New York, D. Appleton-Century Co., 1952.
3. Editorial: Bull. Am. Coll. Surgeons **41**: 441 (Nov.–Dec.) 1956.
4. Regan, L. J.: Malpractice and The Physician, Wisconsin M. J. **54**: 12 (Jan.) 1955.
5. Smith, H. W.: Legal Responsibility for Medical Malpractice, J. A. M. A. **116**: 942 (March 8) 1941.
6. Morris, R. C.: Res Ipsa Loquitur, J. A. M. A. **163**: 1055 (March 23) 1957.
7. Dillon, J. B.: Prevention of Claims for Malpractice, ANESTHESIOLOGY **18**: 794 (Sept.–Oct.) 1957.
8. Sadusk, J. F., Jr.: Professional Factors in Medical Malpractice Claims, J. A. M. A. **161**: 442 (June 2) 1956.
9. Hilton, J. H. B.: Medico-legal Aspects of Anaesthesia, Canad. M. A. J. **69**: 641 (Dec.) 1953.
10. Section of Anaesthetics: Proc. Roy. Soc. Med. **42**: 697 (April) 1949.
11. Levitt, W. M.: Anaesthetist and Liability in Negligence, Anaesthesia **8**: 74 (April) 1953.
12. Farquharson, H.: Problems of Anaesthetist; Hazards in Use of Anaesthetics, Canad. M. A. J. **59**: 317 (Oct.) 1948.
13. Martin, S. J.: Present-Day Anesthesiologist, J. Iowa M. Soc. **40**: 438 (Sept.) 1950.
14. Martin, S. J.: Contributions of Anesthesiologist to Medical Profession, J. Arkansas M. Soc. (April) 1957.
15. Camps, F. E.: Medico-Legal Investigation of Some Deaths Occurring During Anesthesia, New England J. Med. **253**: 643 (Oct. 13) 1955.
16. Tarrow, A. B.: Medico-Legal Aspects of Anesthesiology, Anesth. & Analg. **36**: 64 (May–June) 1957.
17. Medico-Legal Abstract: J. A. M. A. **159**: 1235 (Nov. 19) 1955.

18. Medico-Legal Cases (1936–1940): A. M. A. 1942.
19. Dollinger, A. M.: Role of Position in Anesthesia, J. A. N. A. A. 11: 345 (Oct.) 1956.
20. Slocum, H. C.: Effects of Malposition in Anesthesia, Med. Arts & Sc. 8: 23 (March) 1954.
21. YBARRA *vs.* SPANGARD, 25 Cal. (2d) 486, 154 P. (2d) 687 (1944).
22. Hawkins, W. G.: Medico-Legal Hazards of Anesthesia, J. A. M. A. 163: 746 (March 2) 1957.
23. Fisher, T. L.: Anaesthetic Accident, Canad. M. A. J. 70: 203 (Feb.) 1954.
24. Graves, H. B.: Medico-Legal Responsibilities of Anesthetist, Canad. Anesth. Soc. J. 4: 428 (Oct.) 1957.
25. Mushin, W. W.: Medico-legal Hazards in Anaesthesia; Clinical Aspects, Anaesthesia 9: 232 (Oct.) 1954.
26. LAWSON *vs.* CRANE AND HALL, 83 Vt. 115, 74 Atl. 641 (1909).
27. Fuller, J. E., and Thomas, D. V.: Facial Nerve Palsies After General Anesthesia, J. A. M. A. 162: 645 (Oct. 13) 1956.
28. Keating, V.: Anesthetic Accidents, ed. 1. London, Lloyd-Luke Ltd., 1956.
29. Law Department: J. A. M. A. 157: 853 (March 5) 1955.
30. MEYER *vs.* ST. PAUL-MERCURY INDEMNITY CO., 225 La. 618, 73 So. (2d) 781 (1953).
31. J. Am. A. Nurse Anesth. (Nov.) 1953–(Nov.) 1957.
32. Hayt, E., Hayt, L. R., and Groeschel, A. H.: Law of Hospital, Physician and Patient, ed. 2. Hospital Textbook Co., 1952.
33. Friedman, G. A.: Anesthesiology and Law, M. Times 83: 925 (Sept.) 1955.
34. CAVERO *vs.* FRANKLIN GENERAL BENEV. SOC., 36 Cal. (2d) 301, 223 P. (2d) 471 (1950).
35. FORBIS *vs.* HOLZMAN, 5 Cal. (2d) 407, 55 P. (2d) 201 (1936).
36. Brudzynski, C.: Investigation of Anesthetic Deaths, Ann. Western Med. & Surg. 6: 511 (Aug.) 1952.
37. WELLS *vs.* MCGEEHEE, 38 So. (2d) 196 (La. Ct. App. 1949).
38. LEVY *vs.* VAUGHN, 42 App. D. C. 146 (1914).
39. SPAIN *vs.* BURCH, 169 No. App. 84, 154 S.W. 172 (1913).
40. JOHNSON *vs.* ARNDT, 186 Minn. 253, 243 N.W. 67 (1932).
41. Wasmuth, C. E.: Consent to Surgical Procedures, Cleveland-Marshall Law Review (May) 1957.
42. Wasmuth, C. E.: Court Dictation of Choice of Anesthesia, Cleveland-Marshall Law Review (Sept.) 1957.
43. WILEY *vs.* WHARTON ET AL., 68 Ohio App. 345, 41 N.E. 2d 255 (1941).
44. HUBER *vs.* TILDEN ET AL., 133 N.E. 2d (App. Ct. Ind.) 1956.
45. Hayt, E.: Legal Aspects of Anesthesia Administration by Nurses, J. Am. A. Nurse Anesth. 25: 11 (Feb.) 1957.
46. FRANK *vs.* SOUTH, 175 Ky. 416, 194 S. W. 375 (1917).
47. CHALMERS-FRANCIS *vs.* NELSON, 6 Cal. (2d) 402, 57 P. (2d) 1312 (1936).
48. Medicine and the Law: J. A. M. A. 163: 657 (Feb. 23) 1957.
49. KEMALYAN *vs.* HENDERSON, 277 P. 2d 372 (Sup. Ct. Washington 1954).
50. JACKSON *vs.* JOYNER, 236 N.C. 259 S.E. (2d) 589 (1952).
51. MORRISON *vs.* HENKE, 165 Wis. 166, 160 N. W. 173 (1916).
52. Regan, L. J.: The Doctor, The Patient, and The Law, ed. 3. St. Louis, C. V. Mosby Co., 1956.
53. Medicine and the Law: J. A. M. A. 164: 1583 (Aug. 3) 1957.
54. Regan, L. J.: Malpractice, Occupational Hazard, J. A. M. A. 156: 1317 (Dec. 4) 1954.
55. Sandor, A. A.: History of Professional Liability Suits in the U. S., J. A. M. A. 163: 459 (Feb. 9) 1957.
56. Medicine and the Law: Professional Liability and Statutes of Limitation, J. A. M. A. 164: 187 (May 11) 1957.
57. Main, W.: Medico-legal Hazards in Anesthesia, Anaesthesia 9: 242 (Oct.) 1954.
58. Sadusk, J. F.: What Price Medical Malpractice Insurance, New York J. Med. 56: 1677 (May–June) 1956.
59. Sadusk, J. F., Jr.: Hazardous Fields of Medicine in Relation to Professional Liability, J. A. M. A. 163: 953 (March 16) 1957.