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The Relationship Between Physician Personality Type and Medical Malpractice Risk

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The Relationship Between Physician Personality Type and Medical Malpractice Risk

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at Virginia Commonwealth University

by

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Abstract

THE RELATIONSHIP BETWEEN PHYSICIAN PERSONALITY TYPE AND MEDICAL MALPRACTICE RISK

By Thomas H. Casey, Ph.D.

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at Virginia Commonwealth University.

Virginia Commonwealth University, 1995.

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The purpose of this study was to investigate possible relationships between a physician's personality type and his or her risk of receiving a medical malpractice claim or lawsuit. Patients frequently initiate a malpractice claim for reasons other than the perception of an injury. Often it is the result of a misunderstanding caused by ineffective or insufficient communication with the physician. Different personality types are known to communicate differently.

Six research questions were explored in this analytical-descriptive study. The population was the physician faculty of the Medical College of Virginia. The Myers-Briggs Type Inventory (MBTI) was completed by 236 faculty. Information on medical malpractice claims for this sample was provided by the

faculty professional liability insurance plan. A stratified and systematic sample of 100 MBTI respondents consented to complete the Tennenhouse Risk Prevention Skills learning system.

There were significant, but moderate, correlations between male Intuitive types and female Feeling types and scores on the Tennenhouse system. There was a significant, but small, correlation between Sensing types and malpractice claims. The relationships between older physicians, claims, and low scores on the Tennenhouse system were significant. The relationships between age, gender and scores on the Tennenhouse system were significant; females received higher scores than males, and younger physicians performed better than older physicians. There was a significant relationship between physicians with claims against them and low scores on the Tennenhouse system.

CHAPTER ONE: INTRODUCTION

The rising cost of health care in the United States has been a topic of concern for government, employers, and citizens for more than a decade, but little ground seems to have been gained towards making any significant changes in this area. The problem is complex, involving ethical as well as financial considerations. While most people would concede that all Americans should have access to some form of health care, there is a lack of agreement about the answers to such questions as who should pay for it, what level of service should be provided, and who will do the providing to whom?

It was not within the scope of this study to explore in depth the U.S. health care system or to suggest alternatives for its delivery and financing. The Clinton administration presented one such plan, introduced in late 1993 to the U. S. Congress in the form of a bill known as the Health Security Act (The White House Domestic Policy Council, 1993). However, some of the basic issues underlying the national dilemma in health care were discussed in this study to provide insight into how physician malpractice claims contribute to health care costs.

The cost directly attributable to physician medical malpractice is not the largest percent of health care expenditures. Nevertheless, it is significant enough to inspire the growth of physician risk management programs. These programs attempt to lower malpractice costs through educational and practice management techniques designed to prevent or mitigate the possibility of a successful lawsuit. The literature suggests that certain behavioral traits of a physician may increase the possibility of a malpractice lawsuit regardless of the quality of care delivered or the competency of the provider. This study examined the relationships between physician personality types and the risk of being involved in a medical malpractice claim or lawsuit. The results of the research can be used by physicians to understand that certain behaviors may increase the possibility of a lawsuit. Decreasing the number of claims or lawsuits decreases legal costs and malpractice insurance premiums, thereby reducing a portion of the cost of health care.

Statement of Problem

In 1989 U.S. companies spent $176.8 billion, over 50% of pretax corporate profits, to provide health care benefits for employees (Marwick, 1991). Total spending nationwide that same year for health care services was $604 billion, almost 12% of gross national product (GNP), significantly up from 8.5% of GNP in 1976 (Levit, Lazenby, Letsch, & Cowan, 1991). During the

next two years national health expenditures continued to increase and by the end of 1991 accounted for $751.8 billion or 13.2% of GNP (Letsch, 1993). According to the Division of National Cost Estimates of the Health Care Financing Administration (1990), health care spending could escalate to $1.5 trillion by the year 2000. But "the rising cost of health care in itself is not necessarily a problem; it becomes a problem when growth in income and revenue used to pay for health care does not keep pace with health care cost increases" (Levit, Lazenby, Letsch, & Cowan, 1991, p. 128). Clearly it is a problem then, because health care costs increased more than twice the overall rate of inflation during the 1980s (Coddington, Keen, Moore, & Clarke, 1991).

Cost Containment Strategies

A variety of strategies have been proposed and a few have been initiated to hold down the spiralling costs. The concept of managed care and the subsequent proliferation of health maintenance organizations (HMOs) and preferred provider organizations (PPOs) in the last decade signalled efforts by insurance companies and industry to cut expenditures by changing to a prepaid system for health care providers instead of the traditional fee-for-service structure (Koch, 1988). Basically, pre-selected providers enrolled by the HMOs or PPOs are paid a flat fee for care delivered to patients subscribing to these plans. Another cost reducing measure was the introduction of diagnosis-related groups (DRGs) in 1983. This was an early attempt by the government to curb

hospital charges by shifting to a prospective reimbursement payment system for services rendered to Medicare inpatients (Ginzberg, 1990). From a list of almost 500 DRGs, each patient is classified into one DRG for which the hospital is paid a fixed predetermined amount for providing care.

In an attempt to establish a national health care policy that would address the dilemma of inadequate coverage, the Pepper Commission (Rockefeller, 1991) recommended a modest 2% increase in national spending for health care that, it was claimed, would both buy health coverage for all Americans and retard the growth rate of costs. In addition, the proposal was intended to reduce expenses for employers already offering employee health insurance because costs would be shared with the government. More recently, the Health Security Act developed by President Clinton focuses on providing comprehensive benefits to all Americans while controlling rising costs. The Health Act accomplishes this primarily through competition, consumer choice, and incentives for health plans to compete for patients through lower prices and superior quality (The White House Domestic Policy Council, 1993).

Another cost controlling measure is the Resource Based Relative Value Scale (RBRVS), designed to reduce the payments to physicians who treat Medicare patients (Lee, Ginsburg, LeRoy, & Hammons, 1990; Michigan State Medical Society, 1993). Fees paid to physicians constitute a significant portion of the expenditures for health care services. The government is using the

RBRVS to limit reimbursements to some specialists while providing monetary incentives for primary care and family medicine physicians. Shifting utilization away from the more highly compensated practitioners in this manner should lower the overall cost of physician services.

Physician Costs

"As the health care reform debate intensifies, it is becoming more apparent that critics are pointing to physicians as the primary culprits for rising health care costs" (Norbeck, 1993, p. 235). The portion of the health care dollar attributable to physician services is about 20% (Coddington, Keen, Moore, & Clarke, 1991; Foreman, 1993; Michigan State Medical Society, 1993). However, physicians order or prescribe more than 70% of personal health expenditures (Letsch, 1993). Starr pointed out that "the gatekeeping authority of doctors gives them a strategic position in relation to organizations. In effect, the profession's authority puts at its disposal the purchasing power of its patients" (1982, p. 26). Because physicians control so much of health care expenditures, this study focused on the portion of those costs which impact the physicians themselves, specifically the costs associated with medical malpractice.

During the 1980s, the growth in spending for physician services outpaced the growth in total health spending, rising to a level of $118 billion by the end of the decade (Levit, Lazenby, Letsch, & Cowan, 1991). Part of this

growth can be attributed to an atmosphere of crisis in medical malpractice litigation and liability insurance that sent tort claims and damage awards mounting higher, and concomitantly pushed malpractice premiums to astronomical levels (Hiatt et al., 1989). Physician professional liability premiums increased 236% from 1975 to 1985 (Korcok, 1986). A survey conducted by the American Medical Association in 1987 revealed that $5.7 billion of the amount spent on physician services was for medical malpractice insurance premiums and damage payments (Hudson, 1990). By 1992 the cost for malpractice insurance alone had increased to $7 billion (Garnick, Hendricks, & Brennan, 1991; Silverstein, 1993).

In addition, the American Medical Association estimates that defensive medicine costs almost $25 billion per year (Jost, 1993). Defensive medicine is a precaution that many doctors take by ordering more tests and diagnostic procedures than may be necessary, either as protection against the perceived threat of a lawsuit or as evidence in court that they have been thorough in the treatment of a patient. "These added costs eventually show up on employers' health insurance bills as higher premiums" (Vibbert, 1990, p. 12).

Medical Malpractice

Lee and Etheredge (1990) claimed that 37% of U.S. physicians have had a malpractice suit filed against them in their careers, contributing to the rapid increase in the cost of malpractice insurance premiums. Ostergard (1993) put

the future probability of being sued at least once at 50%. The incidents of suits are greater (60%) for some specialties like Obstetricians and Gynecologists who pay up to $190,000 annually for malpractice insurance in Dade County, Florida (Garr & Marsh, 1986; Haight, 1990). As Koch (1988) added, "malpractice suits have encouraged defensive medicine, wherein overutilization and extra fees are simply passed on to the consumer in higher insurance rates" (p. 356). This merely adds to the costs of health care, and virtually all the medical malpractice cost component is borne by the patients (Danzon, Pauly, & Kington, 1990).

The basic malpractice process involves the patient's perception of an injury, the patient's reaction to the injury (including the decision to litigate), and the disposition of the settlement (Penchansky & Macnee, 1994). The vast majority of medical malpractice claims are settled out of court, with fewer than 5% of all malpractice claims being tried to verdict (Hirsh, 1990). A study of 30,000 hospital records in the state of New York revealed that the actual number of medical malpractice incidents far exceeded the number of legal claims filed by victims (Jost, 1993). The reasons that so few injured patients file claims has not been widely researched (Localio et al., 1991). The most common type of medical malpractice claim is a failure to diagnose or a delay in diagnosis (Bowman, 1992). The next most common claims are for problems related to surgery (Montgomery, 1994).

Although medical malpractice liability accounts for only 5.6% of the total spent on physician services (Hudson, 1990), it represents billions of dollars that could be diverted elsewhere if only the frequency and costs of litigation could somehow be reduced. "Increasingly, patients and families who experience tragic disappointments in their expectations of medicine attempt to assuage their grief, helplessness, and despair by suing - that is, blaming - the physician" (Gutheil, Bursztajn, & Brodsky, 1984, p. 49). Surprisingly enough, the real reasons for suing are unclear, but they are usually not motivated by physician error alone, and may actually be related to certain characteristics of physicians and other factors outside the realm of medical competence (Lester & Smith, 1993; Taragin, Wilczek, Karns, Trout, & Carson, 1992).

Little attention has been given to the question of why patients decided to sue (Hickson, Clayton, Githens, & Sloan, 1992). The most common reasons given by patients who stop seeing a doctor are related to the physician's interpersonal skills rather than his or her medical competence (Piesto & Redding, 1988). Boyarsky (1990), in writing to physicians, stated that "from the point of view of malpractice prevention, it helps to know about lawyers, the law....It is far more useful, however, to know about ourselves, our medical habits, and our patients" (p.14). He went on to suggest that litigation can be avoided by minimizing patient misunderstanding, as well as by examining and

overcoming poor habits like incomplete documentation and inadequate or inappropriate communication.

Risk Management

The high cost of liability insurance was one of the reasons why the concept of risk management (RM) was introduced into physician practice plans in the last decade.

> Risk Management is a system for the detection, evaluation, and resolution of risks that involve financial loss from injury to people and property. Risk management is concerned with the prevention of loss to physical and human resources, security, occupational health and safety, environmental and administrative areas. (Kenney & Valentino, 1991, p. 193)

A primary function of risk management is to educate physicians about ways to avoid litigation. Bad attitudes and miscommunication with patients cause far more lawsuits than the bad results that may occur from any medical procedure (Haight, 1990). There are many caveats in the RM literature (Finley, 1987; McNerney, 1989; OSMA Task Force on Professional Liability, 1989a; OSMA Task Force on Professional Liability, 1989b; Recinos, 1987) dealing with such things as the need for better communication with the patient, confidentiality, informed consent, compassion, and the maintenance of complete

medical records. Basically, these efforts focus on modifying specific physician behaviors without really examining the cause of those behaviors. Thus, the current techniques of physician risk management, in medical jargon, may only treat the symptom instead of curing the disease.

Although there have been some probes into the relationship between the frequency of malpractice claims and medical competence (Localio et al., 1991; Sloan, Mergenhagen, Burfield, Bovbjerg, & Hassan, 1989; Taragin et al., 1994) or other selected demographic characteristics of the physician (Schwartz & Mendelson, 1989; Taragin et al., 1990a; Taragin et al., 1990b), there has been little empirical evidence to demonstrate that claims are a valid indicator of physician ability (Charles, 1993; Entman, Glass, Hickson, Githens, & Whetten-Goldstein, 1994; Sloan, Mergenhagen, Burfield, Bovbjerg, & Hassan, 1989). There have been no published investigations into whether the personality types of some physicians make them more or less vulnerable to the risk of a medical malpractice lawsuit. If such a relationship can be identified, it could add a very useful chapter to the risk manager's book of educational techniques for reducing litigation. By concentrating on the population whose personality types are at risk, the risk manager could help those doctors identify certain behavioral traits that may contribute to a lawsuit. Since personality type is

considered relatively unalterable, however, efforts to recognize and modify undesired behavior will only be successful if physicians are willing to cooperate.

Rationale for Study of Problem

This study contributed to the application of risk management by providing additional information about the behaviors of physicians that may increase or decrease the probability of claims of medical malpractice. Risk management is relatively new to physicians, and many of the techniques used in physician education have come from lawyers who inform them about habits in communication and documentation that can lessen the probability of a lawsuit (Karp, 1991; Tennenhouse, 1991). Whereas this is certainly helpful and necessary in an RM program, the inherent friction between doctors and lawyers may be expected to impede the learning process. Indeed, "the tension of these opposing forces [doctors and lawyers] has led one judge to compare his role as arbiter to that of 'a noncombatant in ancient Rome about to attempt a crossing of the arena in the Coliseum'" (Javitt & Lu, 1992, p. 258).

Perhaps in addition to the legalistic and didactic part of an RM program, it would be helpful to make the physician aware of predisposing personality characteristics that could render him or her vulnerable to a malpractice claim. Of particular interest would be knowledge about the type of personalities that innately possess the communication and documentation skills to lessen the risk

of a malpractice claim or an unsatisfactory verdict in a trial. The wise physician could then use this knowledge to modify his or her behavior or develop aspects of his or her personality type that would improve and strengthen those skills. In essence, the physician would be participating in the RM educational process with assistance from, but not total dependence upon, the attorney.

There have been few studies attempting to relate medical malpractice risk to physician demographic variables, and all have used malpractice claims or lawsuits as a measure of risk. No published study has been found that explored possible relationships between physician personality types and claims, or has used something other than claims to assess risk. As Taragin, Carson, Wilczek, Karns, Trout, and Duff (1990b) concluded, "the literature is unclear regarding the relationship between physician characteristics and the risk of being involved in a malpractice claim" (p. 723A).

Some of the demographics used as variables in such studies have included gender, medical degree (M.D. or D.O.), age, board certification, specialty type, physician error, medical school, and geographical location of practice (Schwartz & Mendelson, 1989; Sloan, Mergenhagen, Burfield, Bovbjerg, & Hassan, 1989; Taragin, Carson, Wilczek, Karns, Trout, and Duff, 1990a). The paucity of research in this area can probably be ascribed to the recent emergence of medical risk management programs, which only began to

appear in earnest as a result of the medical negligence crisis in the mid 1970s, when malpractice claims and insurance premiums began to soar (Friend, 1991; Korleski, 1990; Richards & Rathbun, 1983).

This study used the Myers-Briggs Type Indicator (MBTI) (McCaulley, 1977; McCaulley, 1978a; Myers & McCaulley, 1985) to categorize personality types of physicians and investigate the relationship between certain personality characteristics and the risk of being involved in a medical malpractice claim. The frequency of claims, an obvious measure of risk, and its relation to the MBTI personality types was examined. Medical malpractice risk was also measured using aspects of the physician's communication skills, both written and oral. "To reduce the liability risk, a health care professional must be well trained in the use of words" (Tennenhouse & Kasher, 1988, p. 3).

The Tennenhouse Risk Prevention Skills program was used to assess whether the physician possessed the verbal skills necessary to be effective in preventing medical malpractice claims or reducing the impact of litigation. The Tennenhouse instrument presents situations involving the use of communication and documentation in a clinical setting. It queries the physician for responses to certain questions, and then rates his or her answers based on the potential for a malpractice claim (Tennenhouse & Kasher, 1988). Although the Tennenhouse instrument has not been used in conjunction with the MBTI before, it has been implemented by many risk management programs across the country

(Tennenhouse Professional Publications, 1991) as an educational tool to make physicians aware of the communication and documentation skills needed to reduce the probability of lawsuits.

If relationships exist between the number of medical malpractice claims, personality types, and specific risk prevention skills, the information could be used to create a physician personality profile as part of a total risk management program. The physician personality profiles could provide insight into ways of reducing risk by identifying those personality types or characteristics most vulnerable to lawsuits. There appears to be general agreement that risk management can be effective in controlling costs related to physician malpractice claims and insurance premiums (Bowman, 1992; Garnick, Hendricks, & Brennan, 1991; Russell, 1989) which, in turn, helps control overall health care costs. Berglund (1989) summed up the issue quite succinctly:

> Risk management has surfaced as one of the most important choices physicians have. Government, the insurance industry and organized medicine all support risk management activities as a way to minimize the economic and human consequences of medical liability....Good risk management can reduce liability. Reduced liability can restrain inflationary pressure on

the cost of liability insurance. Restraint in premiums can alleviate medical costs. (p. 22)

Statement of Purpose

The purpose of this study was to examine the relationships between the personality types of physicians and their vulnerability to medical malpractice risks. The investigation explored personality types present among physicians, as measured by the MBTI; their skills in the areas of communication and documentation, as measured by the Tennenhouse Risk Prevention Skills program; and the number of malpractice claims and lawsuits filed against them.

Specifically, this study investigated what relationships, if any, exist between physicians' personality types and their skills at preventing medical malpractice risk, between physicians' personality types and the number of malpractice claims and lawsuits against them, and between physician risk prevention skills and the number of malpractice claims and lawsuits against them. It also examined relationships between those variables and demographic variables such as gender, specialty, and age.

Literature and Research Background

There are two broad underlying concepts associated with personality type and medical malpractice risk. The first is of a psychological nature, involving

the idea of personality itself. The second pertains to the legal aspects of medical malpractice. These areas can be more narrowly focused for the purposes of this study to a single, specific theory concerning personality types and to medical malpractice risk management.

Personality Type

In the psychological sense, there is no universally accepted definition of personality (Feist, 1985). Ross (1987) tentatively considered it as a "composite construct that stands for the sum total of people's actions, thought processes, emotional reactions, and motivational needs, through which they, as genetically programmed biological organisms, interact with their environment, influencing it and being influenced by it " (p. 7). Just as there is no one definition, there is also no one accepted theory. Schultz (1986), for example, examined eight different approaches to defining personality that included sixteen theories.

Of these sixteen, only Carl Jung's (1921/1971) theory of personality types has been applied widely through a popular psychometric instrument, the Myers-Briggs Type Indicator (Myers, 1987). This psychological tool is concerned primarily with variations in normal attitudes and behavior, rather than with psychopathology (McCaulley, 1981a). In developing the Indicator, Isabel Myers (1980) echoed Jung's thoughts when she observed that the seeming randomness of human behavior is not random at all, but the logical result of a few basic observable differences in mental functioning. The differences are in

the way people perceive information and the way they make decisions or judgments based upon that perception (Myers & McCaulley, 1985).

Jung (1921/1971) differentiated personality types into eight typological groups, which were later expanded upon by Myers (1985) to include sixteen types. The types are formed by combining preferences from each of the four dichotomies of introversion/extraversion, sensing/intuition, thinking/feeling, and judgment/perception. One of the differences between the Jungian and the Myers models is that the judgment/perception dimension, which was only implicit in the former's theory, was made explicit by the latter's application (McCaulley, 1981a; Yabroff, 1990). Nonetheless, information is gathered through the perceiving functions of sensation or intuition, and decisions are made through the judging functions of thinking or feeling. These functions profoundly and distinctly affect the manner in which people behave (Jung, 1921/1971; Myers, 1980).

Temperament, another concept of personality type, was emphasized by Keirsey and Bates (1984), who believed that the way people perceived information, through sensing or intuition, was the most critical function of all. Jung's behavioral descriptions of type are used in temperament theory because of their great predictive value. By knowing a person's temperament, one can anticipate rather accurately what that individual will do most of the time. Temperament theory is useful because it affords the widest base of accurate

behavioral predictions using but four pairings (intuition/feeling, intuition/thinking, sensing/judgment, and sensing/perception) of the four dichotomous preferences used in the MBTI (Kroeger & Thuesen, 1988). Keirsey and Bates (1984) omitted the extravert/introvert dimension, however, because they thought it was not as significant for predicting general behavior.

The Myers-Briggs Type Indicator (MBTI) has been used extensively since the mid 1980s. The largest studies involving the MBTI were done by McCaulley (1977, 1978a) using longitudinal data compiled by Myers on more than 5,000 medical students and 10,000 nursing students who later entered their respective professions. The results of these studies demonstrate that, although all sixteen types are represented in these populations, some are more prevalent than others. Each medical specialty also attracted certain types more than others.

In his review of MBTI research, Murray (1990) found that the Indicator has become the most widely used personality instrument for non psychiatric populations. It has been employed, among other things, as a device for working with groups to improve communications (McCaulley, 1981a). Styles of communication have been studied by Yeakley (1982; 1983) and others (Dunning & Lange, 1990) using the MBTI. Carlson and Levy (1973) investigated Jungian theory using the MBTI to predict person-situation relationships. The clinical performance of doctors in the areas of communication skill, interpersonal skill,

and physical examination skill was found to be more related to scores on psychological tests like the MBTI than to cognitive test scores and medical school grades (Turner, Helper, & Kriska, 1974). Blaylock (1981) examined the perception of risk taking in decision making among management graduate students, using the MBTI to measure cognitive styles of perceiving and evaluating information. According to Lynch (1985), people with different MBTI preferences generally differ in their attitudes and behaviors in the workplace, which may help to explain the difference in physicians' vulnerabilities to malpractice risk. The ordering of laboratory tests, which adds to the cost of health care, was found to be related to certain MBTI personality types (Ornstein, Markert, Johnson, Rust, & Afrin, 1988); introverts ordered more tests than extraverts, and intuitives more than sensing types.

However, no published study relating medical malpractice risk to personality type has been identified. If the Myers-Briggs Type Indicator is capable of determining a doctor's personality type, and people with different type preferences generally vary in their attitudes and behaviors in the workplace, then it may be possible to determine the types more prone to malpractice claims. Lawsuits result as much from behavioral biases as from medical negligence.

Medical Malpractice Risk Management

The body of literature on this topic is just beginning to emerge, principally because the practice is relatively new. Korleski (1990) noted that health care risk management arose in response to the malpractice crisis of the mid-1970s, when liability insurance premiums increased at alarming rates and some insurance companies stopped writing malpractice coverage altogether.

The reason for the increased claim frequency and damage awards that caused the insurance rates to rise is unclear, although lawyers, the legal system, the medical profession, and the insurance industry have all been accused of creating the problem (Jacobson, 1989; Southwick & Young, 1992). Richards and Rathbun (1983) pragmatically cut to the heart of the issue, ignored who's to blame, and pointed out the major part of the challenge as the prevention of financial losses from litigation regardless of whether they are in the form of direct costs, such as legal fees and insurance premiums, or indirect costs, such as unnecessary medical tests performed as defensive medicine.

"Risk management is the process of planning, organizing, leading and controlling the activities of an organization in order to minimize the adverse effects of accidental loss on that organization at reasonable cost....Regarding physicians, risk management can be defined in two words, 'Communication' and 'Documentation'" (Demos, 1990, p. 35). This theme is recurrent throughout

the risk management (RM) literature (Boyarsky, 1990; Karp, 1991; Klein, 1988; McNerney, 1989; Raines, 1987; Tennenhouse, 1986;).

Orlikoff (1988) looked to the future of risk management when he proposed that preventing or minimizing potential liability exposure was perhaps more important than just responding to liability once it happened. One is reminded of the shibboleth about an ounce of prevention being worth a pound of cure. This RM approach makes sense, if only the physicians can be educated in claims prevention (Tennenhouse, 1991).

Tennenhouse (1988) developed a method for improving the risk prevention skills of health care professionals and their staffs in a clinical practice setting. The method consists of a series of learning systems that assess the communication and documentation skills of physicians, nurses, dentists, office and clinical medical assistants, and clerical staff (Tennenhouse Professional Publications, 1991). This study is only concerned with the physician's skills in those areas, but the instrument follows a general format for all users.

The Tennenhouse Risk Prevention Skills program provides the user with sets of principles and examples designed to improve oral and written communication. The physician then responds to questions about scenarios or situations dealing with these principles in a clinical context. The responses are rated according to the degree of risk for a medical malpractice claim. The

learning program uses a proactive approach to risk management, and is more in line with the current RM philosophy of malpractice claims prevention. Tennenhouse and Kasher (1991) are careful to caution that:

> The rules set forth in Risk Prevention Skills represent the opinions of the authors as to good risk prevention practices. The reader should be aware that some of these rules are controversial, and none have been scientifically proven to have a preventive effect on claims. Nevertheless, Risk Prevention Skills is a pioneering accomplishment which fills an urgent need, and is likely to reduce the liability risk to health care professionals. (p.3)

Research in risk management has been limited to studying various demographic characteristics of physicians and the incidence of malpractice claims in an attempt to find some relationship between the variables (Schwartz & Mendelson, 1989; Sloan, Mergenhagen, Burfield, Bovbjerg, & Hassan, 1989; Taragin et al., 1990a). Taragin et al. (1990b) assessed the association between four physician demographic characteristics and an increase in the rate of claims. The only significant result was that males were twice as likely to have a high rate of claims as females.

Personality Type and Medical Malpractice Risk

Review of the literature indicates that the relationship between physician personality type and medical malpractice risk has not been explored.

Personality type can be usefully measured by the Myers-Briggs Type Indicator, and there is evidence demonstrating differences in communication among the MBTI types. Medical malpractice risk has been measured by the frequency of malpractice claims and by the Tennenhouse instrument, which evaluates physicians on their abilities to reduce risk of litigation by effectively using communication and documentation.

This study posed certain research questions that formed the basis for examining the relationships between physician personality and malpractice risk. If such relationships exist, risk management would have an additional educational tool at its disposal to help reduce malpractice law suits or mitigate the consequences of a trial. By knowing which personality types may be vulnerable to malpractice risk, risk managers could help physicians recognize and perhaps modify certain aspects of their behavior that may cause malpractice claims.

Research Questions

The specific research questions of this study were:

(1) What are the different MBTI personality types among physicians?

(2) What are the risk prevention skills of physicians in the areas of communication and documentation?

(3) What are the relationships between physician personality type and risk prevention skills?

(4) What are the relationships between physician personality type and the number of malpractice claims and lawsuits?

(5) What are the relationships between physician risk prevention skills and the number of malpractice claims and lawsuits?

(6) What are the relationships between other physician demographic variables (e.g., age, gender, specialty) and the number of malpractice claims, and risk prevention skills?

Methodology

This study was non-experimental relationship (correlational) research. The purpose was to examine the relationship between physician personality type and medical malpractice risk. The subjects for this study were drawn from a population of 535 faculty of the School of Medicine at the Medical College of Virginia, Virginia Commonwealth University, who were enrolled in the self-insured professional liability program of MCV Associated Physicians. All the faculty were asked to complete the Myers-Briggs Type Indicator Form G Booklet (Briggs & Myers, 1977) and answer sheet (Myers, 1977). The MBTI Form G contains 126 questions which form the basis for reporting the

individual's personality type. It also asks for demographic data such as name, date of birth, gender, highest grade completed, and occupation. The validity and reliability of the MBTI are well documented (Myers & McCaulley, 1985).

After results from the MBTI were gathered, a random sample of 100 MBTI respondents, stratified by gender and those with malpractice claims against them, were selected to participate in the Tennenhouse Risk Prevention Skills program (Tennenhouse & Kasher, 1988). The Tennenhouse instrument rates responses to 66 specific scenarios or situations involving 22 aspects of record keeping, communicating, and risk management in a clinical setting. Each of the scenarios requires the respondent to select one answer from five choices. The correct responses are those causing the least amount of risk of a malpractice claim or a successful suit.

The Tennenhouse instrument was introduced in 1988, and it has not been formally assessed for reliability or validity. However, it can be supported on its face validity. Also, according to Dr. D.J.Tennenhouse (personal interview, December 6, 1991) the situations were taken from actual malpractice cases and claims and reviewed by attorneys, which supports its content validity. Thus, if validity is regarded as the appropriateness, meaningfulness, and usefulness of specific inferences made from test scores (American Educational Research Association, 1985), then the instrument is valid as a measure of the physician's understanding of risk prevention skills.

The number of medical malpractice claims attributable to all MBTI respondents, as well as certain demographic data, were obtained from the Department of Risk Management at MCV Associated Physicians. The demographic data included length of service at MCV, gender, date of birth, insurance risk classification, specialty, and causes for the malpractice claims.

Procedure

The Myers-Briggs Type Indicator Form G and answer sheet were mailed to all 535 faculty enrolled in the self-insured professional liability plan at the Medical College of Virginia. A cover letter from the investigator explained the nature of the study, possible benefits, and confidentiality of records. Participants were asked to complete the MBTI and return the answer sheet and booklet by a specified date (two weeks from mailing). A follow-up letter was sent if no response was received within three weeks. A second follow-up letter was sent from the Director of Risk Management of MCV Associated Physicians two weeks after that. All respondents' MBTI answer sheets were scored two weeks after the final follow-up letter.

After determining the personality types of respondents, a stratified random sample of 100 physicians was drawn. Because of underrepresentation in the population, all respondents with incidents of malpractice claims as well as a disproportionate number of female physicians were included. A cover letter and a consent form were mailed to the sample population to solicit participation in

the Tennenhouse survey. The respondents who agreed to participate were sent the Tennenhouse Risk Prevention Skills Program. Completion of the Tennenhouse survey, while still voluntary, was aggressively pursued by follow-up letters and telephone calls to ensure an adequate number of responses.

Data from the MBTI were converted to continuous scores for correlational analysis. These and scores from the Tennenhouse instrument were entered into a computer data base along with the demographic data and the number of medical malpractice claims of respondents. Descriptive and correlational statistical procedures were used to analyze and report group data.

Findings and Conclusions

This study examined the MBTI personality types of 236 physicians at the Medical College of Virginia, Virginia Commonwealth University, and investigated the possibilities of a relationship between personality type and medical malpractice risk. The research was conducted specifically to answer the research questions listed earlier in this chapter.

The investigation unaccountably found that the MBTI personality types of physicians in the MCV sample were present in frequencies quite different from the national data. The MCV faculty in the sample was composed of 70% ISTJ, INTJ, ESTJ, and ENTJ types. In contrast, only 26.3% of U.S. medical school physicians fall into these categories (McCaulley, 1977, 1978a). This

difference could not be explained. Perhaps the professional characteristics of the MCV faculty listed in Appendix G could be compared to the characteristics of a more recent sample of U.S. medical school physicians. The McCaulley data were compiled 18 years ago, but they are the most current information available.

The risk prevention skills of the MCV sample, as measured by the scores on the Tennenhouse program, were similar to other groups across the country according to Dr. Tennenhouse (Personal communication, February 5, 1995). Comparing the MBTI types to the scores obtained on the Tennenhouse instrument resulted in some small, but significant, positive correlations with the S/N and T/F dichotomies and recordkeeping skills.

There did not appear to be a strong relationship between personality type and medical malpractice claims. However, Sensing types were more likely to have malpractice claims. There was a significant, negative relationship between the recordkeeping scores on the Tennenhouse program and the number of malpractice claims attributable to the physician.

The age, gender, and specialty of the physician were important demographic variables. Older physicians had more claims against them and lower scores on the Tennenhouse instrument. Females scored higher on the Tennenhouse program. Being in a surgical specialty was significantly related to

the possibility of having a malpractice claim, but it was not related to the Tennenhouse scores.

The research was not conclusive in many of its findings. There was no significant relationship between physician personality type and medical malpractice risk. Although some relationships did exist between some of the demographic variables such as gender and age, the MBTI continuous scores, malpractice claims and scores on the Tennenhouse program, there was little in the results that could be used externally to MCV. The study was important, however, for its approach to the issue of medical malpractice risk, and for the direction it gave to future research in this area.

Summary

Physician services account for a significant portion of health care expenditures. Part of that cost can be attributed to medical malpractice, including professional liability insurance premiums, claim settlements, and defensive medicine. The role of risk management is to reduce the cost of the medical malpractice component. But risk management is a relatively new concept to physicians and many of its techniques have centered around lawyers instructing doctors about how to behave to avoid lawsuits. While the information is undoubtedly drawn from the lawyers' experience and delivered with all good intentions, it probably gets a less than enthusiastic reception from

the physicians. However, if the doctors were made aware of certain personal characteristics associated with such behavior, they would, as scientists, be able to accept the empirical evidence more readily than the anecdotal case studies of the attorneys.

There is little in the literature to suggest that malpractice claims can be related to demographic characteristics of physicians. This is probably because the critical factors leading to malpractice litigation are breakdowns in communication between patients and physician and patient dissatisfaction (Levinson, 1994). Thus, physicians are sued not just for medical negligence but also because of their failure to communicate effectively with the patient. There is nothing in the typical demographic categories of physicians to indicate their ability to communicate effectively.

It is possible that the personality of physicians, rather than clinical competence, may contribute more to their risk of being involved in a malpractice claim. It is known that certain personality types have stronger preferences for communication, and some prefer structured activities like record keeping more than others. It would be helpful for physicians to understand typical characteristics of their personalities, and how they could develop strengths in those areas which may make them more vulnerable to medical malpractice risks.

This study added a new dimension to the knowledge of risk management programs by investigating relationships between physician personality type and medical malpractice risk. Medical malpractice risk was assessed by the number of malpractice claims against the physicians and by their risk prevention skills in the areas of communication and record keeping. The relationships between these variables and between the physicians' demographic characteristics was explored.

Although the research data did not disclose a strong relationship between physician personality type and medical malpractice risk, it did indicate relationships between gender, age, and the physicians' risk prevention skills. Furthermore, the study's literature review strongly suggested that the interpersonal skills of physicians, particularly their communication skills, were primary factors in the patient's decision to file a malpractice claim following a perceived injury. Thus, this study was important for its exploration of the relationships between medical malpractice risk, the personal characteristics of physicians, and the physician/patient relationship. The study further advanced our understanding of medical malpractice risk and gave direction to future research in medical malpractice risk management.

CHAPTER TWO: REVIEW OF LITERATURE

Introduction

The areas of interest in this study encompass two completely different and often conflicting professional domains: medicine and law. The issue that brings them into conflict is medical malpractice, specifically as it pertains to physicians. The medical malpractice crisis that began in the mid 1970s created a fervor in the medical-legal community that manifested itself in an elevated level of animosity between the two groups of professionals and in spiralling costs of health care that were already high. With the quality of their services under scrutiny and with increased pressure from government, business, and consumers to reduce fees and operating costs, the medical profession began reluctantly to try to gain some control of the situation by introducing medical malpractice risk management into physicians' practices.

Since the concept of risk management for physicians is relatively new, there is still a struggle to get doctors to modify specific behavioral patterns to lessen their chances of being sued. As Freidson (1988) noted, besides feeling they are above reproach, physicians are typically geared for action, even to the point that action with very little chance of success is to be preferred over no

action at all. Furthermore, as Kluft (1993) notes, "the doctor-patient relationship is one in which profound psychological and sociological pressures are placed on patients to abandon an adult role, suspend critical judgment, and place themselves in a dependent position subject to the physician" (p. 461). Thus, with so much control placed in the physician's hands, it is difficult for a risk manager to convince a physician that something could be inappropriate or perhaps deleterious about his or her behavior in certain situations. And, typically, the risk managers who are doing the teaching or preaching in most medical organizations tend to be attorneys.

This study was concerned with assessing the personality types of physicians and their relationship to medical malpractice risk. Previous research in this area focused on certain demographic variables of physicians and attempted to investigate the relationship of these variables with the number of malpractice claims. This study pursued the issue by exploring the possible causes of certain behaviors that may lead to risk, and by measuring risk in terms other than the actual number of claims or lawsuits.

If physicians can be made to understand that there may be something inherent in their predisposing personality characteristics that could increase or diminish their likelihood of being sued, then they may be more prone to listen to the advice of the risk manager on certain issues. Modifying behavior becomes more of a logical, scientific matter rather than a didactic, legal, and

annoying imposition. It was important, therefore, that the study use instruments and methods that are constructive, educational, and convincing to physicians. Moreover, the physician must be intimately involved in the process of evaluating his or her own personality and exposure to risk. With those requisites in mind, this study merged two important and seemingly unrelated concepts: personality type and medical malpractice risk management. The review of literature on personality type focused on the theories of C. G. Jung (1921/1971) and the Myers-Briggs Type Indicator (Myers & McCaulley, 1985).

There were several reasons for excluding other personality theories from this study. First, the Myers-Briggs Type Indicator, which was created to implement Jung's theories, has become the most widely used personality instrument for nonpsychiatric populations (Girelli & Stake, 1993; Murray, 1990). While this may not be enough of a reason to adopt the MBTI unequivocally, it does provide several advantages. Popularity alone increases the possibility that most of the physicians will have heard of it or even taken it, thus rendering it less threatening to them and thereby possibly contributing to greater participation in this study.

Then, too, the MBTI is a constructive, non-threatening instrument that, among its other attributes, may promote more effective communications within organizations (Hirsh & Kummerow, 1990). Communication, of course, is a key ingredient in risk management. The MBTI is also easy for the lay person to

become qualified to purchase (it is relatively inexpensive), administer (it is self reporting and can be completed in less than an hour), and to score and interpret the responses. Moreover, there is a wealth of information in the literature about the MBTI and its applications and usefulness in predicting and interpreting particular behaviors.

The review of risk management literature focused on the legal, social, and economic aspects of professional medical malpractice, and on practical matters concerned with preventing or alleviating the threat of a medical malpractice claim or effects of a lawsuit. The field of physician medical malpractice risk management does not have the magnitude of scholarly works and research that the discipline of psychology does. It has not been in existence for very long, and its subject matter is less empirical and more didactic and anecdotal. A review of the meager research in this area is discussed.

Personality Type

No one theory or definition of personality has been accepted by the psychological community (Feist, 1985). As Alexander noted, "How do we know with any degree of certainty anything about the personality of a human being, either the self or another, living or dead" (1990, p. 1)? Obviously, this study will not attempt to examine the entire personalities of physicians. It will only consider that part of psychological theory involving personality as defined

by Jung and measured by the Myers-Briggs Type Indicator. Thus, it is not the total personality, but personality type that is being explored.

The distinction lies with the central concept of personality psychology, the *trait,* which quite broadly, is an enduring psychological characteristic that functions to describe, predict, explain, or understand persons and their behaviors (Lanning, 1991). Personality type, whether it is Jung's typology or others, is an attempt to categorize individual attitudes and behavior patterns to explain the differences between people (Sharp, 1987). Therefore, certain commonly observed traits may cause some people to be grouped into the same type categories as others, and type differences are thus identified by describing consistent sets of traits associated with them (Quenk, 1993). However, it would be a mistake to think that the whole range of an individual's personality can be so easily cataloged. Type theory is useful, as Sharp (1987) denotes, for understanding oneself and the interpersonal difficulties that arise between people. It does not explain the entire individual's psyche.

Jung's Type Theory

In *Psychological Types* (1921/1971) C. G. Jung, a Swiss physician and psychologist, proposed a theory of personality based on his twenty years of work as a clinican observing patients and their behavior. He noticed that there were several general characteristics which appeared in all people to some degree

or another. "It is one's psychological type which from the outset determines and limits a person's judgment" (Jung, 1963/1989, p.207).

According to him, there were two basic psychological types which he termed introverted (I) and extraverted (E). He referred to them as attitude-types and distinguished them by the direction of their interest, or of the movement of libido or psychic energy. In the extravert it flows outward and in the introvert it flows inward. The two attitudes are mutually exclusive and cannot exist simultaneously, although they can and do alternate, so that a person could be an extravert on some occasions and an introvert on others (Hall & Nordby, 1973). Introversion is normally characterized by a hesitant, reflective, retiring nature, while conversely, extraversion is an outgoing, candid, and accommodating nature (Sharp, 1987).

Jung believed that the attitude was a product of nature, that is, one was born with it, and under normal circumstances, the external environment would not change it. "The fact that children often exhibit a typical attitude quite unmistakably even in their earliest years forces us to assume that it cannot be the struggle for existence in the ordinary sense that determines a particular attitude" (1971, p. 332). To him, the key to understanding type lay in the attitudes.

Jung (1921/1971) also described four functions which he called thinking (T), feeling (F), sensation (S), and intuition (N). He called the

thinking and feeling functions rational because they were characterized by reasoning and based on a reflective, linear process that ends in a particular judgment or decision. The sensation and intuition functions he called irrational because they were not based on rational judgment but on the sheer intensity of perception. The term *irrational* in this sense did not mean illogical or unreasonable, but rather beyond or outside of reason (Sharp, 1987).

The function of thinking refers to cognitive thought, connecting ideas with each other to arrive objectively at a concept of understanding or judgment. Feeling is an evaluative judgment function that accepts or rejects an idea based on a value system. Hillman and von Franz (1971) note that by differentiating feeling and considering it a function of consciousness, Jung made a major contribution to the concept of feeling. The irrational function of sensation is perception by means of the physical sense organs, and intuition refers to perception by way of the unconscious (literally the sixth sense). Simply put, sensation establishes that something exists, thinking tells us what it is, feeling tells us its value, and intuition gives us possibilities of what to do with it (Sharp, 1987).

Jung (1921/1971) believed that all four functions "are seldom or never uniformly differentiated and equally at our disposal. As a rule, one or the other function occupies the foreground, while the rest remain undifferentiated in the

background" (p. 518). Although we have access to all functions, we prefer some over others.

Jung combined each of the attitudes with each of the functions to arrive at eight different personality types, each with its own peculiar characteristics of behavior which he described at length. His theory is more complex than the basic model presented here, but the purpose of this discussion was to explain the underpinnings for the Myers-Briggs Type Indicator, the instrument used to answer Research Question (1) of this study by categorizing the personality types of the physicians. Jung laid the groundwork for understanding the personality types of the physicians in this study, and Myers expanded the scope of his work by providing the instrument to put the theory to practical use.

The Myers-Briggs Type Indicator

Impressed with Jung's theory of personality types, and believing that many problems might be dealt with more successfully if it were used, Katharine Briggs and her daughter Isabel Myers (1980) sought to develop an instrument that would reflect preferences for extraversion and introversion and perception and judgment. As Isabel began her book *Gifts Differing* (1980):

> The merit of the theory presented here is that it enables us to expect specific personality differences in particular people and to cope with the people and the differences in a constructive way. Briefly, the theory is that much seemingly chance variation in human behavior is

> not due to chance; it is in fact the logical result of a few basic, observable differences in mental functioning.
>
> These basic differences concern the way people prefer to use their minds, specifically the way they perceive and the way they make judgments. (p. 1)

Perception (P) determines what people see in a situation and judgment (J) determines what they decide to do about it. It is reasonable to assume that differences in either function should result in corresponding differences in behavior, which could explain why some physicians may be more prone than others to medical malpractice suits. In her article on health care teams, McCaulley (1975) points out how these differences can affect the productivity of groups composed of widely varying personality types. One of the reasons the MBTI is so widely used in organizations is that it may help to reduce unproductive interpersonal and intra-organizational conflict (Hirsh, 1991; Isachsen & Berens, 1988). "The Myers-Briggs Type Indicator brought Jung's typology to a high level of practical application" (Yabroff, 1990, p.6). It is widely used by individuals and organizations to improve communications and relationships, resolve conflicts, and to lend insight into team building, leadership styles, and teaching and learning processes (Bridges, 1992; Nagy, 1991; Provost, 1990).

To transform Jung's theory into a type indicator, Myers had to develop the judgment-perception index to identify those behavioral characteristics (sensation/intuition or thinking/feeling) that people exhibited externally (McCaulley, 1981a).

> By developing the perceiving-judging polarity as a separate criterion and then combining it with Jung's basic typological theory and principles, Briggs-Myers implicitly urges users of Jung's original typological theory to be more careful observers of those patterns of behavior relating specifically to the external world. (Spoto, 1989, p. 131)

Someone oriented toward the outside world with a P function is spontaneous, adaptable and flexible, while a person with a J orientation exhibits structure, order, and planning. This is a concept important to this study, since documentation, a structured activity, is a critical task for physicians. There is some controversy (Lowen, 1982; Thomas, 1984) about whether the judgment/ perception scale is really dichotomous, or (Garden, 1991) is useful in identifying which are the dominant and auxiliary functions (either thinking/ feeling or sensing/intuitive). Nevertheless, with the addition of this scale, Jung's eight types were expanded to sixteen, which Myers (1980) and others (Brownsword, 1987; Hirsh & Kummerow, 1989; Keirsey & Bates, 1984; Kroeger & Thuesen, 1988; Lawrence, 1982; McCaulley, 1981a;) have described in detail (see Appendix B).

Temperament Theory

Of particular interest is the temperament theory espoused by Keirsey and Bates (1984; 1987), which mirrors the Myers' adaptation of Jung's theory except on one major point, the Extravert/Introvert attitude. The theory maintains that temperament (the four combinations of Sensing/Judgment, Sensing/Perception, Intuitive/Thinking, Intuitive/Feeling) is the strongest basis for differences among people and the E/I attitude is of less influence (Ware & Yokomoto, 1985). The SJ temperament is characterized by stability, organization, and tradition; the SP displays action, independence, and impulsiveness; the NT values competency, vision, and intelligence; the NF needs self identity, harmony, and personal interaction (Keirsey & Bates, 1984). The simplicity and accuracy of the theory is appealing, and it is useful as a quick means of assessing personality type (Edgley, 1992). "Very simply, temperament determines behavior because behavior is the instrument for getting us what we *must* have, satisfying our desire for that one thing we live for" (Keirsey & Bates, 1984, p. 30).

Tucker and Gillespie (1993) found that the MBTI and the Keirsey Temperament Sorter measured the same constructs. Another correlational investigation of the MBTI and Keirsey instruments produced similar results, indicating that the two measured the same underlying traits (Quinn, Lewis, & Fischer, 1992). Ruhl and Rodgers (1992) replicated McCarley and Carskadon's

1986 study and found both instruments to have nearly identical ratings for overall accuracy in type descriptions.

MBTI research

The most comprehensive studies using the Myers-Briggs Type Indicator were done by Myers on nursing and medical students. McCaulley (1977, 1978a) transformed the raw data into two monographs that described and differentiated in great detail the personality types of numerous medical specialties in various locations of employment. The longitudinal study (McCaulley, 1977) compared the MBTI types of 4,200 medical students to their types after they were in practice for twelve years. McCaulley (1978b, 1981b) also prepared two special reports from the data which condense the details into a manageable format for review. Thus, it was possible to answer Research Question (1) by comparing McCaulley's results with the MBTI sample from the Medical College of Virginia faculty.

Also of significant value were the *Atlas of Type Tables* (Macdaid, McCaulley, & Kainz, 1986) which used almost 60,000 MBTI records to compile a listing of types by occupations and *The MBTI Career Report Manual* (Hammer & Macdaid, 1992). These compendia provided base populations to compare results from research studies.

Other studies dealing specifically with physicians revealed relationships between certain personality types and specialty choice (Friedman & Slatt, 1988;

Taylor, Clark, & Sinclair, 1990). O'Donnell (1982) found the MBTI to be a good predictor of performance on the examinations of the National Board of Medical Examiners. Hart (1982) discovered that psychology majors fell into specific MBTI categories as predicted by theory. The MBTI was used by Henderson and Harris (1991) to determine the personality types of emergency physicians. Lowenthal (1994) found similar MBTI preferences among pharmacy students and practitioners. These studies support Research Question (1) to the extent that the physicians at the Medical College of Virginia fell into typical MBTI categories also.

Some studies lend validity to the ability of the MBTI to predict behavior on other personality, ability, and achievement tests (Bruhn, Bunce, & Greaser, 1978; Hunter & Levy, 1982; Kerin, 1981). Drummond and Stoddard (1992) used the MBTI to examine learning style. Thus, the results from Research Question (3) should conform to expected norms. That is, the physicians who are extraverts and/or feeling types can be expected to score high on most sections of the Tennenhouse instrument where communication skills involve situations of direct contact with the patient. Introverts can be expected to score well on confidentiality issues. Sensing and judging types can be expected to do well on the recordkeeping. Intuitive/thinking types can be expected to have the best scores on risk prevention skills because of their ability to know what is the right answer simply through abstract reasoning. It is clear that certain MBTI

types communicate differently and with varying effectiveness (Dunning & Lange, 1990; Sanford, 1982; Turner, Helper, & Kriska, 1974; Yeakley, 1982, 1983) and some are more structured and careful with details like those needed for medical recordkeeping (Lynch, 1985; Myers, 1987; Myers & McCaulley, 1985).

Other research has shown the MBTI to predict brain hemisphere dominance (Shiflett, 1989; Taggart, Kroeck, & Escoffier, 1991), styles and levels of creativity (Carne & Kirton, 1982; Fleenor & Taylor, 1994), sociability and impulsivity (Sipps & Alexander, 1987; Sipps & DiCaudo, 1988), strategy for handling interpersonal conflict (Percival, Smitheram, & Kelly, 1992), assertiveness (Williams & Bicknell-Behr, 1992), empathetic response (Jenkins, Stephens, Chew, & Downs, 1992), constructive thinking (Spirrison & Gordy, 1994), and risk perception (Blaylock, 1981). If the MBTI is fairly accurate in describing Jung's constructs, it may be able to predict which personality types will perform better on the Tennenhouse Risk Prevention Skills program, an instrument that attempts to assess the individual's communication and documentation skills. Because of the small number of malpractice claims among the faculty at MCV, it was not certain whether the MBTI would be useful in predicting the results of Research Question (4) in this study.

Medical Malpractice Risk Management

"The first rule of risk management is 'apologise, apologise, apologise [sic].' Studies show that in over 70% of incidents which progress to a lawsuit, patients would have been satisfied with someone saying, 'I am sorry this happened.'" (Friend, 1991, p. 23). But the clinical mentality of physicians rarely allows them to personally concede error (Freidson, 1988), and even if they are not always right, they are never in doubt (Prather, Blake, & Mouton, 1990). This is tragic, because almost three-fourths of all medical malpractice claims are against physicians (Orlikoff, 1988). It is no wonder, then, that one of the primary goals of a risk management program is physician education, and some understanding of the medical malpractice law would be helpful to physicians.

Legal Basis for Malpractice

Although a lengthy description of the law of medical malpractice was not warranted in this study, it is necessary to recognize key elements. To begin with, "the history of medical malpractice law is clearly not straightforward and succinct" (Wood, 1993, p. 819). As the medical profession evolved, malpractice claims against physicians emerged as civil suits, either tort (negligence or intentional) or contract (failure to complete an obligation) (Bowman, 1992). In medical malpractice litigation, negligence is the predominant theory of liability. It basically is "conduct which falls below the

standard established by law for the protection of others against unreasonable risk or harm" (King, 1986, p. 9). The objectives of the tort system are to compensate injured patients by shifting losses from the innocent victim to the negligent physician and to motivate doctors to provide better care (Javitt & Lu, 1992; Lawthers et al., 1992; Rolph, 1991). There are four requisite elements which the plaintiff must prove in order to recover: (1) that a *duty* of care was owed by the doctor to the patient; (2) that the physician violated the applicable *standard of care* and failed to render the required duty; (3) that the patient sustained a *compensable injury*; (4) that the injury was *caused in fact* and *proximately caused* from the substandard care (Bennett, Bryant, VanderBos, & Greenwood, 1990; Demos, 1990; Jacobson, 1989; King, 1986).

The key to proving negligence is first proving that an injury occurred as a result of substandard care. Tennenhouse (1976) lists numerous categories for the possible bases for damages. Although there is little evidence of it, some have reasoned that the increase in the number of cases of medical malpractice liability have resulted from courts and juries holding physicians to the higher standards of *strict liability* where a physician could be held liable for adverse outcomes regardless of fault (Jacobson, 1989). The tort system is presumed to deter negligent action by physicians, but there is virtually no empirical evidence that this happens (Hiatt et al., 1989).

Metzloff (1993) remarked that "medical malpractice has proven to be law's Vietnam - an unpleasant quagmire of unending skirmishes and full-scale engagements spread across a shifting battlefield" (p. 1169). In response to the medical malpractice crisis, many medical practitioners have altered their patterns, some by ceasing to offer services to high risk patients (Challoner, Kilpatrick, Dockery, & Dwyer, 1988; Weisman, Morlock, Teitelbaum, Klassen, & Celentano, 1989), some by ceasing to practice medicine in their specialties (Haight, 1990; Rosenblatt & Wright, 1987), some by increasing tests (Weisman, Morlock, Teitelbaum, Klassen, & Celentano, 1989), and others by increasing their fees to cover costs (Danzon, Pauly, & Kington, 1990; Weisman, Morlock, Teitelbaum, Klassen, & Celentano, 1989).

State legislatures have worked to mitigate the impact of adverse medical malpractice verdicts on physicians and have sought to stem the rising cost of professional liability insurance costs by establishing catastrophic funds, setting limits on damages, modifying the statute of limitations, and regulating insurance rates (Imershein & Brents, 1992; Krzys, 1989). President Clinton's plan (The White House Domestic Policy Council, 1993) seeks to effect tort reform by establishing out-of-court panels to settle disputes, by limiting attorneys' fees, and by allowing damages to be paid over time. The plan does not seriously alter the rights of victims, as some legal rights activists were afraid it might (Brostoff, 1993), but it does place a 33% cap on legal fees to the delight of

many consumer groups (Felsenthal, 1993). According to some (Montgomery, 1994; Steinmetz & Steinmetz, 1994), the President's plan is inadequate in terms of limitations and safeguards on the amount of awards.

To protect consumers and in an effort to curb malpractice costs by weeding out incompetent physicians and other health care professionals, the federal government created the National Practitioner Data Bank, which tracks malpractice settlements, licensure and clinical privilege disciplinary actions, and professional society adverse membership actions (Gianelli, 1990; Hoffman, 1991). But ultimately, it falls to the physicians to modify their own behaviors. An effective risk management program can be of enormous benefit to a medical practice if the doctors are aware of its strategies and techniques, and are willing to participate and commit to the concept (Andersen, 1990).

Bonham (1992) notes that operating an effective RM program is crucial to limiting malpractice claims. Indeed, educating and training physicians in RM issues can prevent unnecessary malpractice litigation (Goldsmith, 1993). "The risk management concept...is working. It has shaken many physicians into the realization that careful, accurate documentation and better patient communication techniques are necessary and that avoidance of riskier technical procedures is something to be considered" (Madison, 1990, p. 435).

Risk Prevention Techniques

The lack of information about why some perceived injuries lead to malpractice claims while other similar injuries do not is well known (Penchansky & Macnee, 1994). Malpractice claims provide only a crude means of indicating the quality of care (Localio et al., 1991), and the variation in malpractice claims rates among specialties results from factors other than physician technical performance (Taragin et al., 1994). A study by Dewees, Trebilcock, and Coyte (1991) found no evidence that defensive medicine significantly influenced the frequency of claims filed. Thus, it would appear that the quality of care is not a major determinant of whether a patient initiates a malpractice claim, but unsatisfactory communication between patients and physicians is a critical factor leading to litigation (Levinson, 1994).

Research Question (2) asks for an assessment of the risk prevention skills of physicians. The literature suggests that this may be accomplished in at least two ways. One is to study their record of malpractice claims. The other is to investigate their knowledge or use of communication and documentation. The Tennenhouse Risk Prevention Skills program can be used to do the latter (Tennenhouse & Kasher, 1988; Tennenhouse Professional Publications, 1991). Tennenhouse (1986) asserts that "there are many opportunities for physicians to decrease liability risk by improving their verbal skills and using the greatest care in communicating with patients and their families" (p. 25).

The risk management (RM) literature is replete with references to communication and documentation or recordkeeping (Finley, 1987; Orlikoff, 1988; OSMA task force on professional liability, 1989a; OSMA task force on professional liability, 1989b). To appreciate how the risk prevention skills of physicians were measured in Research Questions (2) and (5), it is helpful to know what these terms entail.

Documentation/Recordkeeping

Documentation or recordkeeping is one aspect of liability risk within the control of the physician. The legal aspect holds that if something is not documented, it was not done (Boyarsky, 1990). Documentation basically involves keeping accurate, legible, concise, timely, unaltered, and objective medical records on the treatment of a patient (Recinos, 1987) - what was done, why, when, and by whom, including patient actions and reactions, progress, and developments in condition (Raines, 1987). Good records are the most important element of defense in a lawsuit (Cohn, Ehrhardt, & Phillips, 1990; McNerney, 1989). Ostergard's (1993) survey of professional liability defense attorneys revealed that illegible and incomplete medical records are major inhibitors to the defense of a lawsuit.

Accurate, complete records cannot only help in the defense of a lawsuit, they can also prevent many suits from being filed simply by disclosing to plaintiffs' lawyers that adequate care had been given (Battaglia, 1992; "First

Rule," 1988). Furthermore, the actual record itself must be readable and orderly with no signs of being covered up or suspiciously altered ("Beware," 1991). Also, while doctors can be very good at documenting discreet bits of information like a physical exam, they are deficient at documenting the patient's entire journey through the system (Hudson, 1992). Barton (1990) states:

> Careless record keeping conveys an image to judges and juries that the defendant is also a careless doctor. Conversely, even though the patient suffered a bad result, or the case was misdiagnosed, a clean, detailed medical record may persuade a jury that the defendant doctor did his or her best for the patient. (p.33)

A sometimes beneficial technique in documentation is the use of informed consent, an attempt to enlist the patient in an alliance with the physician by having him or her sign an understanding of the ramifications of the impending medical treatment. This act has the effect of reducing the alienation from the physician that leads the patient to sue for dissatisfaction (Gutheil, Bursztajn, & Brodsky, 1984).

Communication

Recordkeeping is only one form of communicating, however. "Some litigation is an effort simply to find out what happened, because poor physician-patient communication left unanswered questions" (Raines, 1987, p. 224).

Tennenhouse (1986) and Hickson, Clayton, Githens, and Sloan (1992) confirmed that one of the most frequent reasons patients consult attorneys, sue doctors, and go to court is to learn why an injury occurred. A recent telephone survey by Huycke and Huycke (1994) revealed that miscommunication between patient and provider was a major contributor to calls received by attorneys. Taylor (1991) commented that the lack of communication is the leading cause of patient dissatisfaction. In fact, it is estimated that faulty communication between patient and physician is at the root of approximately 75-80% of malpractice cases (Cohn, Ehrhardt, & Phillips, 1990; Levinson, 1994; Trombly, 1989). In the study conducted by Hickson, Clayton, Githens, and Sloan (1992) 32% of the families interviewed believed that their physicians would not talk or answer questions, 48% that their physicians had misled them, and 70% that no one ever told them that their infants might have permanent medical problems or die.

The relationship between physician and patient, which is particularly influenced by the physician's communication abilities, has a profound effect upon patient satisfaction (Galassi, Schanberg, & Ware, 1992). Anticipating problems and providing the patient with information to cope successfully with problems is crucial (Yeaton, 1990). "Those physicians who develop contracting skills with their patients will reduce misunderstandings that erode clinical efficacy and increase the risk of breakdowns that lead to litigation" (Gerber,

1991; p. 78). Beckman, Markakis, Suchman, and Frankel (1994) sampled plaintiffs' depositions and found that the decision to litigate was often associated with a perceived lack of caring by the health care provider for the patient and the patient's family. Clauss and Siglock (1994) stress that spending time with patients, displaying compassion and caring, and good communication are the most effective lines of defense against malpractice suits.

Good communication can be many things, but principally, it involves keeping the patient and the patient's family informed of his or her progress, listening to the patient, being courteous, keeping confidentiality, explaining the informed consent for a treatment or procedure, explaining the bill, telling the truth and explaining mistakes, and showing caring and concern (Horsley, 1991; Mangels, 1991; Piesto & Redding, 1988; Taylor, 1991). The communication problems that many dissatisfied patients and their families have with their physicians result from their perception that the physicians misled them, simply would not listen to them, wouldn't answer their questions, delivered information poorly, deserted them, devalued their views, and failed to understand their perspectives (Hickson, Clayton, Githens, & Sloan, 1992; Levinson, 1994). Good bedside manner apparently goes a long way toward preventing lawsuits (Husserl, 1993). Yet, as Levinson and Roter (1993) point out, despite the importance of communication and the effectiveness of training in this area, little time is devoted to teaching medical students communication skills.

Claims Research

Despite overwhelming anecdotal evidence, there is little empirical data effectively demonstrating that a good doctor-patient relationship prevents a medical malpractice claim (Charles, 1993). However, Lester and Smith (1993) were able to conclude that the use of negative communication behaviors by physicians increased their chances of being sued. A recent study by Hickson et al. (1994) concluded that the frequency with which physicians are sued is strongly related to their interpersonal skills. Another investigation (Entman, Glass, Hickson, Githens, & Whetten-Goldstein, 1994) revealed no relationship between malpractice claims and the technical quality of obstetricians, but suggested that patient perception of the physician's communication and interpersonal skills was a factor known to prompt litigation. Adamson, Tschann, Gullion, and Oppenberg (1989) concluded that physicians may lower their risk of being sued by tailoring their communications to a patient's individual intellectual and emotional needs. Napoleon (1993) found "a pernicious synergy between physician personality and patient personality...in more than one-half of the malpractice suits reviewed..." (p. 207).

Looking at medical malpractice claims and certain physician demographics, Taragin et al. (1990a, 1990b) concluded that males are twice as likely to have a high rate of claims as females, while board certified physicians have a slightly increased risk compared to non-certified physicians. Another

analysis (Taragin, Wilczek, Karns, Trout, & Carson, 1992) found that male doctors were three times more likely than female doctors to have malpractice claims. A recent survey (Koska, 1992) revealed that female ob/gyns are sued just as frequently as their male colleagues in that specialty. Localio et al. (1993) demonstrated a positive association between malpractice claims risk and the rate of cesarean delivery. Other studies have not conclusively proven relationships between physician demographics and malpractice claims (Schwartz & Mendelson, 1989; Sloan, Mergenhagen, Burfield, Bovbjerg, & Hassan, 1989).

The number of claims, in light of the information presented in this study so far, is of dubious value when measuring true risk of malpractice. Claims are a tangible measure of the outcome of the physician/patient experience, a by-product of the true risk, which appears to be related to physician behavior. Research Questions (1), (2), and (3) address this issue.

Summary

The literature on risk management and personality type does not directly speak to the issue of physician medical malpractice risk being predictable from personality characteristics. But risk management professionals clearly attribute most of malpractice claims to inadequate or bad communication, and unfavorable court settlements often are the result of poor recordkeeping/

documentation. These are behavioral characteristics which personality type theory may explain.

From the literature review it was clear that more research needs to be done in this area. If the Myers-Briggs Type Indicator can predict how physician personality types should perform on the Tennenhouse instrument, and the results of the Tennenhouse scores support the predictions, then some validity may be ascribed to the Tennenhouse program as an accurate device for measuring medical malpractice risk. The Research Questions in this study dealt with this aspect.

The novelty and practicality of the physician risk management concept explains the dearth of scholarly work on this topic. It is, after all, an economic and financial business reaction to the escalating costs of malpractice insurance and litigation settlements. However, any information that could demonstrate to physicians why medical malpractice claims are typically initiated by inappropriate personal behavior rather than technical error should be welcomed by an RM program. This study provided some of that information.

Definitions of terms

The following definitions are applicable to this study:

Personality type is defined by the Myers-Briggs Type Indicator and the theories of Jung (1921/1971) and Myers (1980). It includes all

sixteen MBTI categories and all eight functions and attitudes in their dichotomous pairings, complete with observed behavioral characteristics and implications.

Risk management refers to the practice of medical malpractice risk management which is a technique, mostly educational and practical, aimed at reducing the physician's probability of being involved in a negligence claim or mitigating the financial impact of a successful claim or lawsuit by the plaintiff.

Claim is a complaint action brought forth by a plaintiff when there is suspicion of an injury caused by medical negligence. It does not always culminate in a lawsuit but can have financial ramifications in out-of-court damage settlements.

Suit or *lawsuit* is a legal action brought forth by a plaintiff when damages are sought for injuries allegedly sustained by medical negligence.

Documentation/Recordkeeping is a process performed by health care professionals that chronicles in writing the care rendered to a patient. All communications with patients and their families should ultimately be put in writing, even oral conversations.

Communication is a process involving the interpersonal relationships and the constant, honest, accurate flow of information

between the health care professional and the patient and his or her family.

CHAPTER THREE: METHODOLOGY

Design

The design of this study was correlational research, which is a form of nonexperimental descriptive research. The purpose was to determine if there are relationships between physician demographics, medical malpractice risk, personality type, and frequency of malpractice claims of physicians. Correlational research is typically used to assess relationships between two or more phenomena (McMillan & Schumacher, 1984). The statistical measure of the degree of relationship is called a *correlation*, which is a statement about the degree of association between the variables. Positive correlations indicate that as one variable increases, the other does likewise. Conversely, negative correlations occur when one variable increases and the other decreases (Moore, 1985). Because the data consisted of both categorical and continuous variables, this study utilized a number of analytical tests, including Pearson's product-moment coefficient (r), Chi-square (*CHI-Q*), Kendall's *Tau-b*, Spearman's rank correlation coefficient *rho*, t-tests, Kruskal-Wallis test, Wilcoxon test, Analysis of Variance (ANOVA), and SAS univariate, logistic, and general linear models procedures. In all cases the level of significance, α, was chosen as .05.

Population

The population for this study was the 535 faculty enrolled in the self-insured, professional liability plan of the Medical College of Virginia Associated Physicians. All faculty were asked to participate in the Myers-Briggs Type Indicator, but because of costs, only a limited number (100) could be chosen to complete the Tennenhouse Risk Prevention Skills system. MBTI responses from non-MD faculty (there are several PhD faculty covered under the liability policy, who are mostly clinical psychologists, therapists, or pathologists) were disregarded. From the list of physician MBTI respondents (sample frame of 236), a stratified random sample of 100 were asked to complete the Tennenhouse instrument.

The Tennenhouse sample was disproportional (Agresti & Finlay, 1986) to ensure adequate representation from female physicians and from physicians who had one or more malpractice claims against them. The female participants for the Tennenhouse sample were selected by first choosing those who had malpractice claims against them, and then by selecting every other name from a computer generated random list of the remaining female MBTI respondents who had no claims. The males were chosen in a similar manner by first selecting those who had claims against them, and then by selecting every seventh name from a computer generated random list of the remaining male MBTI

respondents who had no claims. This process produced a list of 100 physicians who were asked to participate in the Tennenhouse portion of this study.

Instrumentation

The Myers-Briggs Type Indicator was used to assess the physician's personality types, and the Tennenhouse Risk Prevention Skills system was used to assess the physicians' communication and documentation skills for avoiding medical malpractice risk. Data for the other risk variable, medical malpractice claims, was obtained from case records on file in the Department of Risk Management at MCV Associated Physicians. Only those malpractice claims for physicians in the MBTI sample frame (236) were used. Data on claims made and suits filed were available from August, 1977 to July, 1994. Both claims and lawsuits were counted equally as measures of risk. In other words, no more weight was given to a lawsuit over a claim.

Demographic data were collected on the physicians' gender, age, length of service at the Medical College of Virginia, specialty, cause of the malpractice claim(s) against him or her, and class of risk assigned by the professional liability insurance actuaries.

Myers-Briggs Type Indicator

The Myers-Briggs Type Indicator was developed by Katharine Briggs and Isabel Myers to implement Jung's (1921/1971) theory of psychological types

and to make the ideology understandable and useful in people's lives (Myers & McCaulley, 1985). The MBTI is a self-reporting instrument designed to identify the basic preferences people have for perception (how information is gathered) and judgment (how decisions are made) and the attitudes in which these are used. Preferences are reported in four scales, each representing two opposite concepts. Responses to the MBTI result in the individual being described as one of 16 personality types (see Appendix B), based on the preferences for extraversion (E) or introversion (I), sensing (S) or intuition (N), feeling (F) or thinking (T), and judgment (J) or perception (P). For example, an individual will be reported as an INTP or an ESFJ or an ISTJ and so on, depending upon the responses given to the questions.

The MBTI postulates dichotomies and the questions or word pairs on the instrument force the respondent to choose between opposite preferences. The Extravert/Introvert scale describes whether the individual focuses his or her attention on the outer or inner world; the Sensing/Intuitive scale describes opposite ways a person perceives or acquires information; the Thinking/Feeling scale describes opposite ways of making decisions or judgments; the Judgment/Perception scale describes whether an individual takes primarily a judging (preferring the decision making function of thinking or feeling) or perceiving (preferring the information gathering function of sensing or intuition) attitude toward the outer world (Myers, 1987).

The MBTI is scored on the basis of points obtained by summing the weighted values for E, I, S, N, T, F, J, and P answers. The points are transformed into preference scores, which are composed of a letter showing the direction of preference and a number showing the strength of preference (McCaulley, 1981a). For example, a score may be reported as: I 27 S 3 F 15 J 45. For purposes of correlational research, these scores can be converted into continuous scores by setting the midpoint at 100 and subtracting the numerical portion of the preference score if it is E, S, T, or J or by adding the numerical portion if the preference is I, N, F, or P (for example, using the scores above, I 27 becomes 127, S 3 becomes 97, F 15 becomes 115, and J 45 becomes 55).

This study employed the MBTI Form G (Briggs & Myers, 1977) which contains 126 questions, the first 95 of which are used for scoring. At least 70 of the first ninety-five questions must be answered for the results to be meaningful (Myers & McCaulley, 1985). The Form G answer sheet (Myers, 1977) also asks for demographic data such as name, date of birth, sex, highest grade completed, and occupation. Validity studies on the MBTI are numerous, but reliability studies are relatively few in number, according to Carlson (1985). Reliability data includes measures of internal consistency and test-retest reliabilities of the separate scales and type classifications (McCaulley, 1981a). Split-half reliability coefficients commonly exceed .80, using Pearson product-

moment correlation coefficient *r* (Myers & McCaulley, 1985). McCarley and Carskadon (1983) concluded that test-retest reliabilities of both continuous scores and dichotomous preferences on the four MBTI major scales were satisfactory, as well as test-retest reliabilities on the subscales (phrased question items, word-pair items, X-half items, and Y-half items). An earlier study (Carskadon, 1977) revealed test-retest reliabilities of continuous scores satisfactory (*r*s ranging from .73 to .87). A more recent study by Johnson (1992) revealed that test-retest correlation coefficients for the MBTI preference scales were high except for the Thinking-Feeling scale.

The largest number of recent reports on the use of the MBTI have been with respect to its construct validity (Carlson, 1985; Murray, 1990). "The MBTI has served as a practical assessment instrument by virtue of its known construct validity" (Murray, 1990, p. 1199). Construct validity is important to the MBTI, since it is created specifically to implement a theory (McCaulley, 1981a). In a study by Cohen, Cohen, and Cross (1981), the construct validity of the MBTI scales of Extraversion/Introversion, Sensing/Intuition, and Thinking/Feeling is supported, whereas that of Judging/Perceiving is not. Other research has shown more positive evidence regarding all scales (Thompson & Borrello, 1986a; Thompson & Borrello, 1986b; Tzeng, Ware, & Chen, 1989). The item validity of the MBTI and its multiscale structure is supported by Sipps, Alexander, and Friedt (1985).

Another study (Tzeng, Outcalt, Boyer, Ware, & Landis, 1984) concluded that the MBTI could be used with confidence to distinguish separate personality types in terms of the four dichotomous scales. The validity of the unidimensional and multidimensional Jungian personality types measured by the MBTI were supported in a study by Geer, Ridley, and Levy (1991). The bimodal distributions of all MBTI factors from subjects in a recent investigation provided validation for dichotomous preference scores (Rytting, Ware, & Prince, 1994). Tischler (1994) found the factor structure of the MBTI to be nearly perfect. "The results of the assessments of the MBTI tend to substantiate that it is a reliable instrument that has four distinct psychometric dimensions (validated by item-level factor analysis) that are unidimensional and consistent with the theoretical constructs of the MBTI" (Zumbo & Taylor, 1993, p. 591).

The MBTI is not without its detractors, however. Pittenger (1993) questioned its utility as a valid predictor of important behavioral conditions. Harary (1991) dismisses it as too simplistic. Others (MacDonald, Anderson, Tsagarakis, & Holland, 1994; O'Roark, 1990; Zemke, 1992) challenge its validity or suggest better ways to score the responses (Cowan, 1989; Girelli & Stake, 1993; Harvey & Murry, 1994). Still, "a comprehensive examination of the data collected in the last six years [shows] that the MBTI is both reliable and valid for indicating human behaviors as predicted by type theory" (Pearman, 1991, p. 4).

Tennenhouse Risk Prevention Skills Program

The Tennenhouse Risk Prevention Skills system (Tennenhouse & Kasher, 1988) was designed by Dan J. Tennenhouse, M.D., J.D. to educate health care workers about skills necessary to help prevent or reduce incidents of medical malpractice claims. Permission to use the instrument for this study was granted by Dr. Tennenhouse (Personal interview, December 6, 1991). As an attorney and practicing physician, he realized that there was no instrument that could assess the risk prevention skills of physicians in the areas of communication and record keeping. These are the two most important areas where skills need to be developed to prevent avoidable claims or improve the defensibility of a lawsuit (Tennenhouse Professional Publications, 1991).

The instrument (see excerpt in Appendix A) is composed of a learning and evaluation system that is designed for specific groups of health care workers. There are actually five distinct systems which are tailored for different groups of employees such as physicians, nurses, dentists, office and clinic medical assistants, and clerical staff. The physician instrument consists of three specific areas of communicating (surprising the patient, undermining confidence, appearing negligent), three areas of record keeping (record content, appearing negligent, credibility of records), and one area on risk management (risk management in patient care). Each of the seven categories is further divided into subcategories. The subcategories (22 in all) consist of established

rules, preventive checklists, hypothetical questions, and three questions to evaluate the subjects' attained skills.

The multiple choice questions (66 total, three in each of the 22 subcategories) are based on clinical situations and each has five possible choices. No answers are absolutely correct, but some are better than others, and they are scored by giving three points for the best answer(s) or one point for the second best answer(s); other responses receive no points (Tennenhouse & Kasher, 1988). In some questions there may be two best or two second best answers. However, only one answer can be selected per question. There is no penalty for guessing. Scores are reported for each of the 22 subcategories as well as composite scores for the seven categories, the three major groupings (communication, record keeping, risk management), and an overall score (see the report form in Appendix A). Comparisons are made with others in the same population to establish relative standings.

According to Dr. Tennenhouse (Personal interview, December 6, 1991) almost 20,000 health care professionals from 50 or more institutions had completed the system. In personal communications with Dr. Tennenhouse on February 2 and 28, 1995, he commented that the number of health care professionals who had used the system had grown to 65,000, including 28,000 physicians. Unfortunately, no extensive research has been done on the reliability or validity of the instrument. One of these reasons for this, according

to Dr. Tennenhouse (Personal communication, February 2, 1995) is the difficulty of gaining access to the sensitive and confidential claims and lawsuits information held by the insurance carriers. Without the availability of that legal information to make comparisons, he cannot prove that use of the instrument actually reduces claims. He asserted that he did not really intend for it to measure malpractice risk per se, but rather to compel the physician to learn the rules and develop the skills necessary to help avoid claims and successfully defend lawsuits. Still, the fact that a grade is given reflects to some degree the physician's grasp of common malpractice issues involving communication and documentation, and, thus, is a measurement of his or her risk prevention skills.

The Tennenhouse system appears to have adequate face validity. The construct, content, and item validity have been tentatively established by the fact that the situations and possible answers originate from actual medical malpractice cases, and the system was designed and evaluated by attorneys, doctors, and nurses (D.J. Tennenhouse, personal interview, December 6, 1991). Dr. Tennenhouse (Personal communication, February 2, 1995) based the questions on 15 years of experience as a practicing attorney and consultant to law offices, conferring with hundreds of attorneys in thousands of actual malpractice cases, and recording the reasons patients gave for seeking legal counsel. The instrument has been in existence for 6 years, and has been used by institutions across the country (D.J. Tennenhouse, Personal communication,

February 28, 1995) in their RM programs (see Appendix A). It is apparently a unique RM educational program.

Procedure

The Myers-Briggs Type Indicator Form G and answer sheet were sent in campus mail to all 535 faculty enrolled in the MCV Associated Physicians self-insurance professional liability plan at the Medical College of Virginia. Each MBTI answer sheet was numerically coded in the upper left hand corner to identify respondents for mailing purposes and for data collection and analysis. A notice explaining the coding was placed in the MBTI booklet (see Appendix C). Included with the Indicator, notice, and answer sheet, was a cover letter (see Appendix C) that revealed the nature and purpose of the study, the possible benefits, the confidentiality of data handling, and the availability of individual results. Participants were asked to complete the MBTI and return it and the booklet in an enclosed, self-addressed campus envelope by a specified date (two weeks from mailing).

A follow up letter was sent when no response was received within three weeks (see Appendix C). Another follow up letter was sent from the MCV Associated Physicians Director of Risk Management two weeks after that (see Appendix C). MBTI answer sheets were scored by the investigator and results tabulated two weeks after the final follow up letter. Individuals who requested

their results were sent a thank-you letter (see Appendix C), a Report Form for the Myers-Briggs Type Indicator (Myers, 1988), and *Introduction to Type* (Myers, 1987).

After determining personality types of the 236 physicians who completed the MBTI, a stratified random sample of 100 physicians was drawn from the MBTI sample frame to participate in the Tennenhouse program. All MBTI respondents with incidents of malpractice claims (50 males and 5 females had 108 claims against them during the period February, 1984 to July, 1991, the time frame selected for the study) as well as a disproportionate number of female physicians (28, including the 5 with claims, of the 51 MBTI female respondents) were included in the 100.

After selecting the 55 with claims, the remaining 45 without claims needed for the Tennenhouse sample were systematically chosen from computer generated random lists of male and female MBTI respondents. Every seventh male and every other female were chosen. The resulting 100 individuals were sent in campus mail a letter asking them to participate in the Tennenhouse program (see Appendix C). The letter was accompanied by a consent form explaining the purpose, benefits, confidentiality, and availability of results (see Appendix D). Those who elected to participate were asked to sign the consent form and return it in an enclosed envelope within two weeks. After two weeks, the ones who consented to participate were sent the Tennenhouse program and a

copy of the signed consent form. A second letter was sent to those who did not respond to the first letter; they were given another two weeks to return the signed consent form or decline to participate. The respondents who declined to participate and those who never answered the letter(s) were replaced in the sample by returning to the male and female computer lists and selecting the next name(s) on the lists. For the females, the choices were made from every other one not chosen originally; for the males, every eighth name was picked. This process eventually produced 100 physicians who consented to participate in the Tennenhouse study.

Because of the length of time it takes to complete the Tennenhouse instrument (minimum of six hours), the participants were given four weeks to return it. A follow up letter was sent one month after the deadline, and this was followed by a telephone call two weeks after that. The deadline for collecting the Tennenhouse data was extended to include any responses received within six months of mailing the instrument to the participants. Answer sheets and copies of the consent forms were accumulated and mailed to Tennenhouse Publications in Corte Madera, California for grading and tabulation.

Demographic data, including gender, age, and specialty were gathered from the MBTI answer sheets and from information provided by the MCV Associated Physicians Department of Risk Management. By extending the time frame from August, 1977 to July 1994, the number of physicians who had taken

the MBTI and had claims against them increased from the original 55 to 74. Data were also gathered on the causes of the claims, the assigned medical malpractice risk classification (Tillinghast, 1994), and the length of employment at MCV of the 74 with claims.

Data Analysis

All data were initially entered into dBASE IV software on a WIN 386 personal computer. Scores from the MBTI were entered as continuous scores. Each respondent was also recorded as one of the 16 discrete MBTI personality types. All Tennenhouse scores and the demographic variables of gender, date of birth, number of years in practice at MCV, specialty, number of malpractice claims, causes of the claims, and assigned insurance risk class were also entered. For purposes of statistical analysis, the information was downloaded from the dBASE IV files into SAS (proprietary software release 6.07) on the MCV VAX Model 6000-620 computer. Descriptive, correlational and inferential statistical procedures were utilized.

The presentation of the MBTI data was done in several ways to address Research Question (1) What are the different MBTI personality types among physicians? The first was an exhibit (see Table 1) with the number and percentages of respondents in the sample and their preferred MBTI types compared to national data. Another chart (see Table 2) showed a breakdown by

the dichotomous preferences of Extraversion/Introversion, Sensing/Intuitive, Thinking/Feeling, and Judgment/Perception. Other tables listed the MBTI personality types by demographic characteristics. The MBTI scores of the respondents were converted to continuous scores for correlational studies with the scores from the Tennenhouse instrument, the number of malpractice claims, and demographic variables. Tables were again utilized to present demographic data and claims information.

All research questions were analyzed using a variety of statistical procedures, including Pearson's product-moment coefficient *r*, Chi-square (*CHI-Q*), Kendall's *Tau-b*, Spearman's rank correlation coeficient *rho*, t-tests, Kruskal-Wallis test, Wilcoxon test, ANOVA, and SAS univariate, logistic, and general linear models procedures. Mean scores on all subcategories and main categories of the Tennenhouse instrument were compared with the 16 MBTI types and the continuous scores in an effort to discover any differences in risk prevention skills among personality types. The number of malpractice claims, the Tennenhouse scores, the MBTI personality types and continuous scores, and the demographic variables were explored for possible relationships.

Limitations

There were several limitations to this study. One was that the participants, being volunteers, may have only been representative of particular

personality types, and the stratified sample drawn and subsequent analyses on the data may not have taken into consideration all the different MBTI Types in the total population. Because of the sensitive nature of personality tests and the possible legal implications of disclosing malpractice information, some physicians may have been reluctant to participate in the study. Another limitation was that the population was composed of all academic physicians from the same institution. It may not be possible to infer that the findings could apply to the general physician population or even to other academic physicians.

Another problem was the small number of malpractice claims attributed to the physicians at the Medical College of Virginia. The final number of claims available to include in the study depended upon how many physicians participated in the Myers-Briggs survey and then completed the Tennenhouse program. Between the cost of the Tennenhouse program (a fact which, in itself, limited the number of participants) and the modest number of claims, the resulting sample of respondents having both risk variables was too small to reveal any significant differences among all sixteen MBTI personality types. As a result, most of the statistical analyses were performed using the MBTI continuous scores, a method which can sometimes understate the magnitude and complexity of the dynamic relationships among all the preferences (Myers & McCaulley, 1985).

Also of concern was the reliability and validity of the Tennenhouse instrument, which is so new and unique that there have been no studies involving it before this one. Since the Tennenhouse program is a learning system, certain MBTI types (Intuitives) may perform better as a result of their ability to learn the information and thus apply it when answering the questions (Drummond & Stoddard, 1992; Hester, 1990; Lawrence, 1982). Also, the length of time it takes to complete the Tennenhouse program may have influenced the way some participants answered the questions. Then, too, by using a self-reporting instrument like the MBTI, the study is limited to the perception of the responses to the questions, which may not always indicate the true personality type of the participant (Hammer & Yeakley, 1987; Murray, 1990).

The study was limited to the research questions stated in the first chapter, which were basically describing and exploring existing phenomena without manipulation or treatment of the sample population.

CHAPTER FOUR: FINDINGS

Introduction

The principle objective of this chapter is to report the findings from the data gathered while investigating the research questions identified in Chapter One, Introduction:

(1) What are the different MBTI personality types among physicians?

(2) What are the risk prevention skills of physicians in the areas of communication and documentation?

(3) What are the relationships between physician personality type and risk prevention skills?

(4) What are the relationships between physician personality type and the number of malpractice claims and lawsuits?

(5) What are the relationships between physician risk prevention skills and the number of malpractice claims and lawsuits?

(6) What are the relationships between other physician demographic variables (e.g., age, gender, specialty) and the number of malpractice claims, and risk prevention skills?

Descriptions of the population and samples are presented along with statistical analyses and a discussion of findings for each research question.

Results

Population

The population for this study was the 535 faculty enrolled in the MCV Associated Physicians self-insured professional liability program at the Medical College of Virginia. To provide data for Research Question (1), each of these faculty was asked to complete the Myers-Briggs Type Indicator.

Samples

A total of 252 (47% of the population) of the MBTI answer sheets were eventually returned after the initial mailing and the two follow-up letters were sent to the faculty. Eliminated from the sample were the MBTI scores of 16 faculty who were non physicians, resulting in a final sample of 236 for data analysis. Of the 236 MBTI respondents, 74 had at least one medical malpractice claim filed against them during the period from August, 1977 to July, 1994. The total number of claims attributable to this group was 189. These 74 physicians were used as the sample frame for the claims data analysis.

Of the 100 physicians who consented to complete the Tennenhouse instrument, 73 returned the answer sheets. Their scores from the Tennenhouse program were also used in the data analyses.

Characteristics of the Samples

Myers-Briggs Type Indicator

Table 1 reports the 16 MBTI personality types of the 236 respondents compared to national data provided by McCaulley (1977, 1978a), and McCaulley and Myers (1985). The table is arranged in descending order by the types found in the MCV sample. The MCV sample differed from the national data in almost all MBTI types, but particularly in the ISTJ, INTJ, ESTJ, and ENTJ categories, which accounted for almost 70% of the respondents in the MCV study. In contrast, as earlier studies showed, only 26.3% of U. S. medical school physicians and 35.1% of U. S. physicians are these types. The national data from Macdaid, McCaulley, & Kainz (1986) and McCaulley (1977, 1978b) showed physicians more evenly distributed among MBTI types.

The SP temperament was represented the least of all the four temperaments in the MCV sample, accounting for only 3.4% of the physicians. SJs were 44%, NTs were 38.6%, and NFs were 13.9% of the MCV sample. In contrast, the U.S. medical school physician sample was composed of 36.8% NTs, 30.1% NFs, 19.8% SJs, and 13.3% SPs. The sample of U.S. physicians was composed of 37.7% SJs, 29.5% NFs, 23.3% NTs, and 9.5% SPs.

Table 1

MBTI Personality Type of MCV Physicians Compared to National Data

MBTI Personality Type	MCV Physician Sample		% U.S. Medical School Physicians[1,2]	% U.S. Physicians[1,2]	% U.S. General Population[3]
	n	%			
ISTJ	56	23.7	5.9	13.1	6
INTJ	40	16.9	8.4	7.5	1
ESTJ	33	14.0	4.3	8.3	13
ENTJ	29	12.3	7.7	6.2	5
INTP	15	6.4	14.2	5.9	1
INFJ	13	5.5	6.5	6.9	1
INFP	9	3.8	9.6	9.0	1
ESFJ	9	3.8	5.9	6.1	13
ENTP	7	3.0	6.5	3.7	5
ENFJ	6	2.5	5.3	5.7	5
ISFJ	6	2.5	3.7	10.2	6
ENFP	5	2.1	8.7	7.9	5
ISFP	3	1.3	4.0	3.2	6
ISTP	3	1.3	4.3	2.6	6
ESTP	1	0.4	2.2	1.8	13
ESFP	1	0.4	2.8	1.9	13

[1]Macdaid, McCaulley, & Kainz (1986); [2]McCaulley (1977, 1978b); [3]Myers & McCaulley (1985)

Table 2 lists the MBTI respondents by the dichotomous pairings of Extravert/Introvert (E/I), Sensing/Intuitive (S/N), Thinking/Feeling (T/F), and Judgment/Perception (J/P) compared to the same national data. Again, the

MCV physicians differed from the national MBTI physician data on all dichotomies except perhaps the E/I attitudes. The largest differences between the MCV and the U.S. data were found in the T/F and J/P categories. The MCV physicians had 34% more Judging types and 25% more thinking types than in the sample of U. S. medical school physicians.

Table 2

MBTI Dichotomies of MCV Physicians Compared to National Data

MBTI Dichotomies	MCV Physician Sample		% U.S. Medical School Physicians[1,2]	% U.S. Physicians[1,2]	% U.S. General Population[3]
	n	%			
Extravert	91	38.6	43.3	41.6	75
Introvert	145	61.4	56.7	58.4	25
Sensing	112	47.5	33.1	47.2	75
Intuitive	124	52.5	66.9	52.8	25
Thinking	184	78.0	53.6	49.0	50
Feeling	52	22.0	46.4	51.0	50
Judgment	192	81.4	47.7	64.1	55
Perception	44	18.6	52.3	35.9	45

[1]Macdaid, McCaulley, & Kainz (1986); [2]McCaulley (1977, 1978b); [3]Myers & McCaulley (1985)

Some of the demographic characteristics of the MBTI sample of 236 are described in Tables 3 and 4. Respondents who were ages 35 to 49 constituted 61% of the sample. Females from ages 30-44 accounted for 78.4% of the female constituent of the sample, and 17% of the total MBTI sample. Of the males, 58.9% came from ages 35-49, which accounted for 46% of the total MBTI sample.

Table 3

Age and Gender of the MBTI respondents

Age	Female		Male		TOTAL	
	n	%	n	%	n	%
30-34	11	4.7	8	3.4	19	8.1
35-39	18	7.6	40	17.0	58	24.6
40-44	11	4.7	35	14.8	46	19.5
45-49	6	2.6	34	14.4	40	17.0
50-54	1	0.4	18	7.6	19	8.0
55-59	1	0.4	16	6.8	17	7.2
60-64	1	0.4	18	7.6	19	8.0
65-69	0	0.0	10	4.2	10	4.2
70-74	2	0.9	4	1.7	6	2.6
75-79	0	0.0	1	0.4	1	0.4
80+	0	0.0	1	0.4	1	0.4
TOTAL	51	21.7	185	78.3	236	100

Table 4 describes the MBTI personality types grouped by gender, surgical (Anesthesiology, Ob/Gyn, Ophthalmology, Orthopaedics, Otolaryngology, and Surgery) and medical (Dermatology, Family Practice, Internal Medicine, Neurology, Pathology, Pediatrics, Preventive Medicine, Psychiatry, Radiation Oncology, Radiology, and Rehabilitative Medicine) specialties. Although the data were collected for all 17 specialties, they were grouped into the two categories of surgical and medical for most of the statistical analyses.

The subjects from the surgical specialties were predominated by the ISTJ type personality (31.6%). In contrast, this type was typical of only 20% of subjects from the medical specialties. Among the males, the principal type was ISTJ, accounting for 24.9% of the 185 respondents; while the principal female MBTI types were equally divided into ISTJ (19.6%) and ESTJ (19.6%).

Table 4

MBTI Grouped by Specialty and Gender

MBTI	Surgical Specialties		Medical Specialties		Female		Male	
	n	%	n	%	n	%	n	%
ISTJ	24	31.6	32	20.0	10	19.6	46	24.9
INTJ	14	18.4	26	16.3	5	9.8	35	18.9
ESTJ	9	11.8	24	15.0	10	19.6	23	12.4
ENTJ	8	10.5	21	13.1	8	15.7	21	11.4
INTP	4	5.3	11	6.9	1	2.0	14	7.6
INFJ	3	3.9	10	6.3	5	9.8	8	4.3
INFP	3	3.9	6	3.8	1	2.0	8	4.3
ESFJ	4	5.3	5	3.1	4	7.8	5	2.7
ENTP	1	1.3	6	3.8	1	2.0	6	3.2
ENFJ	1	1.3	5	3.1	1	2.0	5	2.7
ISFJ	2	2.6	4	2.5	1	2.0	5	2.7
ENFP	0	0.0	5	3.1	1	2.0	4	2.2
ISFP	1	1.3	2	1.3	1	2.0	2	1.1
ISTP	1	1.3	2	1.3	1	2.0	2	1.1
ESTP	1	1.3	0	0.0	0	0.0	1	0.5
ESFP	0	0.0	1	0.6	1	2.0	0	0.0
TOTAL	76		160		51		185	

Other demographic data revealed that only 11 female physicians in the MBTI sample were surgical specialists (14% of all surgical specialists and 22%

of the female MBTI sample). There were 65 male surgical specialists (86% of total surgical specialists and 35% of the male MBTI sample).

Medical Malpractice Claims

Medical malpractice claims data were gathered in several ways. The total number of claims per MBTI respondent was recorded as well as the specific causes for the claims. The National Practitioner Data Bank Malpractice Description Codes (see Appendix E) were used to code the causes for the claims. Because most of the large number of codes could not provide enough frequencies for a meaningful analysis, the data was grouped by the ten major categories of causes. Also recorded were the ten risk rating classes (see Appendix E) defined by The St. Paul Insurance Company and used by MCV Associated Physicians to assign insurance premium rates to the physician specialties (Tillinghast, 1994).

Generally, the more prevalent the MBTI type, the more malpractice claims there were against that type. Of the physicians with claims, 69% were ISTJ, INTJ, ENTJ, and ESTJ. This group accounted for 74% of the claims from the sample. Table 5 presents the claims data by all MBTI personality types. Other data showed there were 37 (50%) physicians with one claim each, 21 (28%) with 2-3 claims, and 12 (16%) with 4-6 claims. Four surgeons were credited with the remaining 44 claims (ENTJ, 15 claims; ISTJ, 11 claims; ESTJ, 10 claims; ISTJ, 8 claims).

Table 5

MCV Physicians with Medical Malpractice Claims by MBTI

MBTI	Physicians with Claims		Number of Claims	
	n	%	n	%
ISTJ	16	21.6	51	27.0
INTJ	13	17.6	28	14.8
ENTJ	12	16.3	30	15.9
ESTJ	10	13.5	32	16.9
ESFJ	6	8.1	12	6.3
INTP	6	8.1	9	4.8
ISFP	3	4.1	7	3.7
INFJ	2	2.7	5	2.6
INFP	2	2.7	6	3.2
ENTP	1	1.4	1	0.5
ESTP	1	1.4	4	2.1
ISTP	1	1.4	1	0.5
ISFJ	1	1.4	3	1.6
ENFJ	0	0	0	0
ENFP	0	0	0	0
ESFP	0	0	0	0
TOTAL	74		189	

Table 6 displays the claims data by specialty and gender of those physicians in the MBTI sample. As might be expected, most of the claims were attributable to surgeons, since there is more chance of an injury occurring from the invasive procedures they perform. In addition to the data shown in Table 6,

106 (56%) of all claims came from 28 faculty members in the Departments of Surgery and Orthopaedics, the greatest number of whom (13) had 2-3 claims each. Ob/gyn had 32 (17%) claims among 11 of its faculty. The medical departments with the most claims were Pediatrics (20 claims against 12 physicians) and Internal Medicine (13 claims attributable to 10 physicians).

Table 6

Specialty and Gender of Physicians with Malpractice Claims

Specialty	Female		Male	
	# Physicians	# Claims	# Physicians	# Claims
Surgical	4	12	37	129
Medical	7	13	26	35

Forty one of the National Practitioner Data Bank list of 93 malpractice claims description codes (see Appendix E) were represented among the 189 malpractice claims ascribed to the 74 physicians in the MBTI sample. Table 7 presents these data in a condensed form by listing the frequency of the 189 claims in the major groups of causes and by the number of individual physicians accounting for those claims. The number of physicians exceeds the number in the sample (74) because some of the physicians had multiple claims associated with a single malpractice case. For example, an anesthesiologist may have a malpractice case against her for Failure to Test Equipment (Anesthesia related

cause # 130) and Failure to Inspect/Monitor (Biomedical equipment/product related cause #810). Thus, there were two causes of claims for that individual, one of which was in a category peripherally associated with the physician's specialty. Usually, claims against surgeons appear in the Surgery related category only, and claims against internists appear in the Diagnosis or Treatment related categories.

Surgery related causes accounted for 45% of the total number of claims, followed by 19% for Treatment related, and 15% for Diagnosis related. The number of physicians (59) in these groups accounted for 80% of the 74 physicians with claims.

Table 7

Causes of Medical Malpractice Claims

Cause	Claims	Physicians
Diagnosis	29	23
Anesthesia	4	2
Surgery	85	21
Medication	7	4
I.V. and Blood	2	1
Obstetrics	19	7
Treatment	36	15
Monitoring	1	1
Biomed. Equip.	2	2
Miscellaneous	4	3

Tennenhouse Risk Prevention Skills Program

Scores on the Tennenhouse program were recorded for the 73 physicians who completed it. There were 66 questions on the instrument separated into 22 distinct subject areas of 3 questions each. The responses to the 66 questions were scored as a percent of correct answers. The 66 questions and responses were grouped several ways by Tennenhouse to give 32 different scores (see Appendix A). All 32 scores were used in this analysis. Table 8 describes demographic information for the 23 female and 50 male respondents.

Table 8

Tennenhouse Sample Characteristics

	Surgical Specialty		Medical Specialty	
	Claims	No Claims	Claims	No Claims
Female	2	0	4	17
Male	13	3	15	19
TOTAL	15	3	19	36

The Myers-Briggs personality types present in the Tennenhouse sample (N=73) are generally representative of the types found in the MBTI sample of 236. Table 9 displays the frequency of MBTI types in the Tennenhouse sample and the number who had claims (N=34).

Table 9

Tennenhouse Respondents by MBTI Type

MBTI	n	%	n with claims	%
ISTJ	14	19.2	6	17.6
INTJ	11	15.1	8	23.5
ESTJ	11	15.1	4	11.8
ENTJ	9	12.3	3	8.8
INTP	6	8.2	4	11.8
INFJ	5	6.8	1	2.9
INFP	2	2.7	1	2.9
ESFJ	4	5.5	3	8.8
ENTP	1	1.4	0	0.0
ENFJ	3	4.1	0	0.0
ISFJ	1	1.4	0	0.0
ENFP	2	2.7	0	0.0
ISFP	3	4.1	3	8.8
ISTP	1	1.4	1	2.9
ESTP	0	0.0	0	0.0
ESFP	0	0.0	0	0.0
TOTAL	73		34	

Discussion

For purposes of reviewing the results of the statistical analysis of the data, the research questions stated in Chapter One will be used as points for

discussion. The SAS statistical system was used for this analysis (SAS Institute Inc., 1990).

Data Analysis of the Research Questions

The variables for this study were nominal and ordinal (gender, causes of claims, insurance premium risk class, specialty, and MBTI personality type), and interval (MBTI continuous scores, number of claims, age, years of service, and the Tennenhouse scores). Descriptive statistics, frequency tables, and other methods were used where appropriate (Schlotzhauer & Littell, 1987).

Research Question (1): What Are the Different MBTI Personality Types among Physicians?

The data presented in Tables 1-4 describes the MBTI sample from the MCV faculty. Much of this information on the MCV sample was generated from SAS frequency tables. Compared to the national statistics (Macdaid, McCaulley, & Kainz, 1986; McCaulley, 1977, 1978a), the MCV sample had a greater proportion of Thinking and Judging Types (66.9% were TJ). This combination represented only 26.3% of the U.S. medical school physicians and 35.1% of all U.S. physicians. Also, the MCV sample had fewer Intuitives (52.5%) than would be expected for a medical school (66.9% Intuitives were in the national sample of medical school physicians). This could be the result of a disproportionate number of surgeons (19% of the sample but only 10% of the total MCV faculty population were from the Department of Surgery) who

completed the MBTI because they personally knew the investigator and were more willing to respond. The Department of Surgery is dominated by STJ Types (48% of the surgeons who responded to the MBTI). In fact, TJ Types account for 81% of the MCV surgeons' personality types.

Attempts were made to perform chi-square tests using the 16 MBTI types, the complete list of specialties, and gender, but because most of the cells in all three tables had expected counts less than 5, the test results were considered not valid and were not included. This study did not attempt to analyze all the possible combinations of the 8 MBTI preferences (e.g., ST, IP, ENF, etc.) to answer this research question, because the amount of information would be unwieldy, require too much time and effort to collect, and not provide any additional value to the analysis. Analysis was limited to the 16 MBTI types and the continuous scores from the 4 dichotomies.

It was anticipated that the MBTI personalities of the faculty would contain more Thinking types because the university environment attracts more of these, but the proportion of the Ts to the Feeling types was much greater than expected. The decision-oriented Judging types appeared to be over represented as well. Data from the Myers Medical study (McCaulley, 1977) depicted hardly any difference between the TJ surgical and medical specialties along this dimension (26% each). The MCV sample actually had 72.3% of its surgical specialists and 64.4% of its medical specialists as preferring TJ.

It could be possible that the number of Perceiving types were underrepresented by the very nature of their personalities. The Judging types, particularly the SJ temperament, are very task oriented, and would probably have been the first to complete the MBTI and return it. The unstructured Ps may never have gotten around to completing it by the deadline.

Information about the continuous scores for the MBTI are presented in Table 10. The SAS univariate procedure was performed on the continuous variables to test for normality. Only the T/F scores showed signs of a normal distribution (see Appendix F) using the Shapiro-Wilk test (W:Normal = .9805, $p < W = .306$). The predominant personality type from the mean scores was ISTJ.

Table 10

MBTI Continuous Scores

MBTI	*N*	*M*	*SD*	Median	Min	Max
E/I	236	108.22	26.20	111	49	157
S/N	236	99.74	29.77	101	37	151
T/F	236	84.32	22.06	83	21	139
J/P	236	80.41	25.75	75	45	159

Research Question (2): What Are the Risk Prevention Skills of Physicians in the Areas of Communication and Documentation?

The Tennenhouse Risk Prevention Skills program was used to measure the ability of the physicians to apply their knowledge of risk prevention techniques through communication and documentation. There were 73 physicians in this sample. Descriptive statistics of the scores for the three major categories are reported in Table 11. Statistics for the other 29 categories are shown in Appendix F. The categories of the scores were coded for ease of reporting and data analysis. The codes, preceded by the letter *Q,* followed the numerical sequence of the 32 categories on the Tennenhouse Report form (see Appendix A) with the exception of the three major categories, which were designated as T1, T2, and T3.

Table 11

Tennenhouse Risk Prevention Skills

	All Recordkeeping Skills (T1)	All Communication Skills (T2)	Total for All Subjects (T3)
N	73	73	73
M	72.12	77.85	76.47
SD	10.04	8.07	7.87
Median	74	79	78
Minimum	43	36	45
Maximum	91	90	89

The SAS univariate procedure was performed to determine if the distributions were normal. The Shapiro-Wilk test (see Appendix F) indicated that the scores of the sample were distributed normally only in the All Recordkeeping Skills (T1) category (W:Normal=.9703, $p<W=.244$). The other 31 scores were not normally distributed, with $p<W=.0001$ in most cases.

According to Dr. Tennenhouse (Personal communication, February 5, 1995) the mean of the scores of all physicians who have taken the Risk Prevention Skills program was 75 for the Total for All Subjects (T3) category. The MCV doctors' mean score was approximately 76 for this category. By point of comparison, it would seem that their scores on Risk Prevention Skills were similar to those of their colleagues across the country.

Research Question (3): What Are the Relationships between Physician Personality Type and Risk Prevention Skills?

A Pearson product-moment correlation *r* was performed to determine if any relationship existed between the Tennenhouse scores of T1, T2, and T3 and the continuous MBTI scores of E/I, S/N, T/F, and J/P. The T1 score showed a small positive correlation with S/N ($r=.250$, $p=.033$) and T/F ($r=.252$, $p=.032$), but none of the other correlations were significant ($p>.05$). Kendall *Tau-b* (*Tau-b*=.173, $p=.036$) and Spearman *rho* ($r=.248$, $p=.034$) revealed that only the T/F scores were correlated with T1 at $p<.05$. An expanded analysis was done to investigate correlations (Pearson *r*, Spearman *rho*, and

Kendall *Tau-b*) between the rest of the 29 Tennenhouse scores (Q1-Q73) and the continuous MBTI scores. Table 12 displays the 7 Tennenhouse categories (other than T1) which had significant ($p < .05$) positive correlations with the MBTI dichotomies on all three statistical tests. For brevity, only the Pearson r coefficients are shown.

Table 12

Pearson Coefficient Correlations (r) of MBTI and Tennenhouse Scores

Tennenhouse Category	MBTI Dichotomy			
	E/I	S/N	T/F	J/P
Recordkeeping Skills (Q1)			$r=.328$ $p=.005$	
Documenting Examinations and Observations (Q11)			$r=.295$ $p=.011$	
Documenting unusual occurrences (Q12)		$r=.300$ $p=.013$	$r=.343$ $p=.003$	$r=.266$ $p=.023$
Violating a Duty (Q21)	$r=-.238$ $p= .043$			
Documenting an Error (Q22)		$r=.235$ $p=.045$		
Communicating: Appearing Negligent (Q6)				$r=.234$ $p=.046$
Blaming Others (Q63)		$r=.253$ $p=.031$		$r=.303$ $p=.009$

Although the S/N scores did not have a significant correlation with Q6 using the Pearson *r* ($r=.213$, $p=.07$), they did have a significant positive correlation with Q6 when using the Spearman ($r=.242$, $p=.039$) and Kendall (*Tau-b*$=.167$, $p=.049$) tests. The positive correlations suggest that Intuitive types scored higher than the Sensing types on three categories of recordkeeping (Q6, Q12, and Q22) and one area of communication (Q63).

The positive correlations also imply that the Feeling types scored higher than Thinking types on four (T1, Q1, Q11, and Q12) of the recordkeeping sections of the Tennenhouse Risk Prevention Skills program. Perceiving types did better than Judging types on one recordkeeping (Q12) and two communication (Q6 and Q63) sections. The only area where the E/I dimension showed a significant correlation was on Q21, Violating a Duty; the negative correlation indicates that Extraverts scored higher than the Introverts.

When the Tennenhouse sample was examined by gender, there were significant differences between MBTI personality types and scores on some of the Q sections. Descriptive statistics for the Q scores sorted by gender are given in Appendix F. For females, the T/F dimension was significant, $p<.05$, for Q11, Q12, Q6, Q61, Q62, and Q64 using Pearson *r*, Spearman *rho*, and Kendall *Tau-b*. There was a moderate positive correlation with Q11 and Q12, and a moderate negative correlation with Q6, Q61, Q62, and Q64. This indicated that female Feeling types performed better on the recordkeeping

sections and female Thinking types scored higher on the communication sections.

For males, the S/N dimension was significant, $p < .05$, for Q1, Q12, Q2, Q22, Q6, Q61, and Q63, using Pearson *r*, Spearman *rho*, and Kendall *Tau-b*. There was a small positive correlation with all seven Q scores. This would imply that the male Intuitive types performed better on those subjects than male Sensing types did.

Research Question (4): What Are the Relationships between Physician Personality Type and the Number of Malpractice Claims and Lawsuits?

There were 74 physicians who accounted for a total 189 claims. The mean number of claims per physician was 2.6 with a standard deviation of 2.5 and a median of 1.0. The minimum number of claims per doctor was 1 and the maximum was 15. None of the correlational tests (Pearson *r*, Spearman *rho*, and Kendall *Tau-b*) reached significance, $p > .05$, between the MBTI personality types (using E/I, S/N, T/F, and J/P continuous scores) and the number of claims.

However, when the MBTI sample of 236 ($M = 0.80$, $SD = 1.85$, median = 0, minimum = 0, maximum = 15) was used, and those with claims were compared to those without claims, Pearson *r* showed a slight negative correlation with S/N ($r = -.130$, $p = .046$). This implies that Sensing types in this sample were likely to have more claims against them than the Intuitive types.

Neither the Kendall *Tau-b* or Spearman *rho* test showed significance ($p > .05$) in this analysis. The SAS logistic procedure revealed no significance ($p >$ Chi-Q = .0001), also. The distribution was not normal for this sample according to the Shapiro-Wilk test (W:Normal = .509, $p <$ W = .0001).

The results from most of the statistical analyses did not furnish compelling evidence that claims were related to the MBTI personality types of the physicians.

Research Question (5): What Are the Relationships between Physician Risk Prevention Skills and the Number of Malpractice Claims and Lawsuits?

The correlations from the Pearson *r*, Spearman *rho*, and Kendall *Tau-b* tests were not significant, $p > .05$, in relating the T1, T2, and T3 scores of the 34 physicians who completed the Tennenhouse program to the number of claims attributable to them. However, when the sample included all 73 of the Tennenhouse respondents, there appeared to be significant ($p < .05$) relationships between claims and the Risk Prevention scores using the Spearman *rho* and Kendall *Tau-b* tests. The Pearson *r* test still demonstrated no significance ($p > .05$). Table 13 displays the statistical results.

Table 13

Correlations Between Malpractice Claims and Risk Prevention Skills

	All Recordkeeping Skills (T1)	All Communication Skills (T2)	Total for All Subjects (T3)
Spearman *rho*	r=-.294 p= .024	r=-.239 p= .041	r=-.320 p= .006
Kendall *Tau-b*	b=-.204 p= .025	b=-.183 p= .046	b=-.247 p= .007

The analysis disclosed significant, $p < .05$, evidence of a correlation between the scores on the Tennenhouse instrument and the number of claims attributable to the physicians. Those with fewer claims appeared to score higher on all aspects of Risk Prevention Skills.

To investigate this further, *t*-tests were performed using the number of physicians with claims and those without claims and their T1, T2, and T3 scores. The correlation with T1 was significant, $t(71)=2.3$, $p=.024$. Table 14 exhibits the descriptive statistics.

Table 14

Tennenhouse T1 Scores of Physicians With and Without Claims

Claims	*N*	*M*	*SD*	Minimum	Maximum
Without	39	74.59	9.68	51	91
With	34	69.29	9.83	43	86

The statistical tests suggest that those physicians with no medical malpractice claims had significantly higher scores than those with claims on at least one of the Tennenhouse categories, All Recordkeeping Skills (T1), and probably on T2 and T3 as well. Because the correlation between claims and Tennenhouse was significant on all three of the T scores, there did not seem to be any reason to examine the 29 Q scores for relationship with claims at this time.

Research Question (6): What Are the Relationships between Other Physician Demographic Variables (e.g., Age, Gender, Specialty) and the Number of Malpractice Claims and Risk Prevention Skills?

The age variable.

Although anticipated, there were significant positive relationships between the age of the physicians ($N=236$, $M=47.1$, $SD=10.7$), the years of service at MCV ($N=74$, $M=11.9$, $SD=5.2$), and the number of malpractice claims. The older the male physician, the more probable it was that he would have malpractice claims (Pearson $r=.280$, $p=.0001$). Moreover, the more years of service a male physician had at MCV, the more claims he had (Pearson $r=.392$, $p=.0006$). Spearman *rho* and Kendall *Tau-b* tests also produced significant positive correlations, $p<.05$, for these demographic variables. The Shapiro-Wilk test revealed the variable of age (see Appendix F) was not distributed normally ($p<W=.0001$).

The age of the physician was significantly, negatively related to the Tennenhouse T1, T2, and T3 scores. Pearson *r* for T1 was -.463, $p=.0001$. For T2, $r=-.368$, $p=.0014$, and for T3, $r=-.459$, $p=.0001$. Both Spearman *rho* and Kendall *Tau-b* produced similar results to the Pearson *r* test for T1, T2, and T3. The SAS general linear models procedure was also used to examine possible associations between the Tennenhouse scores and age. This test produced significant ($p<.05$) relationships between age and the scores on sections T1, T2, T3, Q1, Q12, Q2, Q21, Q4, Q42, Q5, Q52, and Q53. The younger physicians scored higher than the older ones on these subjects.

The gender variable.

The relationship between gender and medical malpractice claims was examined. The Chi-square test disclosed no significant, $p>.05$, relationship. However, the results of t-tests revealed that the difference between the ages of the males with claims ($N=63$, $M=52.2$, $SD=10.5$) and the males without claims ($N=122$, $M=46.1$, $SD=10.1$) was significant, $t(183)=-3.84$, $p=.0002$. There was no significant difference ($p>.05$) between the ages of females with or without claims. Comparing the ages of females with claims ($N=11$, $M=41.1$, $SD=8.2$) to males with claims produced a significant difference, $t(72)=-3.3$, $p=.0015$. The ages of the females without claims ($N=40$, $M=40.8$, $SD=9.0$) compared to the males without claims was also significant, $t(160)=12.90$, $p=.0043$.

The differences between the Tennenhouse scores T1, T2, T3 of the females with and without claims were not significant ($p > .05$). However, the T1 scores of the males with claims ($N=28$, $M=67.8$, $SD=9.6$) were significantly different, $t(48.0)= 2.0$, $p=.049$, from the T1 scores of the males without claims ($N=22$, $M=73.6$, $SD=10.78$). This supported and amplified the findings from Research Question (5).

Several tests were used to examine the relationships between gender and the scores obtained on the Tennenhouse Risk Prevention Skills program. A SAS NPAR1WAY procedure was performed first. Females ($N=23$, $M=75.6$, $SD=8.0$) had significantly higher T1 scores than males ($N=50$, $M=70.4$, $SD=10.5$) using a one-way ANOVA ($F=5.18$, $p=.026$). Wilcoxon ($Z=2.32$, $p=.020$), Kruskal-Wallis [$CHI\text{-}Q(1)=5.41$, $p=.020$], and the SAS general linear models procedure [$F(1)=6.09$, $p=.016$] confirmed this fact. Using the same four tests revealed no significant difference, $p > .05$, between the male and female T2 scores. For the T3 scores, the ANOVA did not detect a significant difference between the females ($N=23$, $M=79.0$, $SD=5.9$) and the males ($N=50$, $M=75.3$, $SD= 8.4$), but Wilcoxon ($Z=1.97$, $p=.048$), Kruskal-Wallis [$CHI\text{-}Q(1)=3.9$, $p=.047$], and the SAS general linear models procedure [$F(1)=4.14$, $p=.046$] were significant. There were significant differences ($p < .05$) between the male and female scores (females had higher scores than males) on Q1, Q2, Q11, and Q64, but not on the other Tennenhouse scores.

The specialty variable and others.

A one-way ANOVA ($F=41.8$, $p=.0001$), a Wilcoxon ($Z=5.94$, $p=.0001$), and a Kruskal-Wallis [*CHI-Q*(35.32), $p=.0001$] disclosed significant differences between physicians in surgical ($N=76$, $M=1.84$) and medical ($N=160$, $M=.306$) specialties and the number of medical malpractice claims. Also, a CHI-Q test revealed a significant difference, [*CHI-Q*(1)$=23.34$, $p=.000$], between males in surgical specialties ($N=65$) and medical specialties ($N=120$) and claims. Chi-square tests divulged nothing significant ($p>.05$) between females, claims, and specialty. Chi-square tests found nothing significant about the differences in gender and claims between physicians in the same specialty. However, a t-test revealed a significant relationship [$t(74)=2.31$, $p=.024$] between the surgical specialty, the MBTI E/I continuous score and claims. The surgical specialists with claims ($N=41$, $M=105.83$, $SD=29.34$) had a significantly lower E/I score than those without claims ($N=35$, $M=105.83$, $SD=20.85$).

Statistical tests (ANOVA, Wilcoxon, t-test, and Kruskal-Wallis) revealed no significant difference ($p>.05$) between surgical ($N=20$) and medical ($N=53$) specialties and their scores on the Tennenhouse T1, T2, and T3 categories.

ANOVA, Wilcoxon, and Kruskal-Wallis tests found no significance ($p>.05$) between the cause of the malpractice claim and the physician's age.

Also, results from Chi-square tests were not statistically significant at $p > .05$ to prove a relationship between cause and gender or cause and MBTI type. Chi-square tests did disclose a significant relationship between specialty and cause of the malpractice claim [$CHI\text{-}Q(7) = 19.9$, $p = .006$].

The ordinal variable of insurance risk classification and its relation to other variables were examined by Chi-Q tests, but nothing proved significant ($p > .05$). The use of the variable was not aggressively pursued because it was only a minor part of the study and did not seem to warrant further attention.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

Introduction

The purpose of this study was to investigate the relationship between physician personality type and medical malpractice risk. The Myers-Briggs Type Indicator was chosen to measure personality type. Medical malpractice risk was measured by two variables. One variable was the actual number of medical malpractice claims attributable to the sample of physicians. The other was the scores obtained on the Tennenhouse Risk Prevention Skills program, which was designed to teach physicians how to avoid common problems with communication and recordkeeping. Additionally, the investigator collected data on certain demographic variables such as gender, age, specialty, length of service at the Medical College of Virginia, causes of the malpractice claims, and liability insurance classification of risk.

It was anticipated that the results from the study would help physicians recognize and modify certain behavioral characteristics that may cause them to be more vulnerable to medical malpractice claims. A thorough review of the literature revealed that physicians are frequently sued by patients for reasons other than the perception of an injury. Often a lawsuit is initiated for the

purpose of finding out what happened during the physician-patient encounter. Sometimes the patient or his or her family feels they were not dealt with compassionately by the physician, were not kept informed or were misinformed, were ignored, or were just treated poorly.

These are not technical but rather human issues. Many physicians, because of their rigorous scientific training and assertive personalities, often deal with the mechanical side of medicine first and do not always pay as much attention to the patient's psychological needs as they do to the physical ones. This omission is thought to be mostly unintentional on the physician's part. Differences in personality type are often suggested as one reason that some physicians are simply not comfortable handling issues they do not understand or see as irrelevant. Furthermore, their professional education typically does not include sociological, psychological, or human relations courses in the curriculum.

Many physicians are, either by nature or training, self-assured and confident individuals. They often deal with the world and those in it in a detached, impersonal manner, relying on their logic and analytical abilities to solve problems and make decisions. This type of behavior is thought to create problems in communication that may precipitate a rapid deterioration of the doctor/patient relationship, which could lead to a lawsuit following a perceived injury.

Medical malpractice constitutes a significant portion of physician costs, which comprise almost 20% of the nation's total health care expenditures. If physicians could learn something about their personalities which may make them more susceptible to lawsuits, they might be able to modify certain behaviors to lessen the possibility of litigation. Fewer lawsuits would lessen the cost of medical care in general. One of the reasons given as the rationale for this study was the possibility of providing new information to physician medical groups to use in their risk management programs. It was hoped the information could contribute to the reduction of the cost of physician services by lessening the chance of a malpractice claim or suit.

The conclusions drawn from this study are presented in light of the data and knowledge accumulated from a thorough literature review and from pursuing the answers to the research questions presented in Chapter One. Recommendations are suggested for future avenues of study and research into this complex and challenging aspect of medical group management.

Conclusions

Description of Population

The population (and sample) for this study was the 535 faculty members enrolled in the self-insured professional liability program of MCV Associated Physicians at the Medical College of Virginia. All were asked to complete the

MBTI, and 236 physicians did so. This sample frame of 236 was stratified by two variables: (1) females, and (2) those with malpractice claims. All those with claims (5 females and 50 males) were asked to participate in the Tennenhouse Risk Prevention Skills Program, and 34 of them agreed. The rest of the Tennenhouse participants came from systematic samples drawn from the female stratum and from the remaining males in the sample frame of 236 who did not have claims. Eventually, 73 physicians completed the Tennenhouse program. By the time the statistical analysis was initiated, another 19 physicians from the MBTI sample frame of 236 had acquired malpractice claims, increasing the number with claims to 74.

Research Question (1): What are the Different MBTI Personality Types among Physicians?

The frequencies of MBTI types from the MCV sample (N=236) were different from the frequencies of MBTI types found among physicians in the U. S. (McCaulley, 1977). In the MCV sample, the ISTJ, INTJ, ESTJ, and ENTJ were the predominant types, accounting for 70% of the physicians. In contrast, the national sample (N=4953) was more evenly distributed among type, and the four TJ types combined were identified in only about 30% of the physicians. The differences between the MCV and the U.S. data may reflect different sample sizes or the fact that the data from the McCaulley (1977) study is almost twenty years old, and physicians' personality types may be different now from

what they were then. Another reason could be that surgeons are over represented in the MCV sample because of their professional affiliation with the investigator. Surgeons are typically STJ types, although many are also NTJ, depending on the specialty. A comparison of the professional characteristics of the MCV sample (see Appendix G) with the U.S. medical school sample may reveal some reasons for the differences in frequencies of MBTI types; board certification might be expected to appeal to Ts and Js more than some of the other MBTI types.

The Ps may have been underrepresented in the population because their preference for flexibility and procrastination would have prevented them from responding promptly to the MBTI. However, their numbers were probably not seriously underrepresented, since it is difficult for most Ps to develop the discipline needed to get through the rigors of medical school. Also, the Intuitives were fewer in number in this sample than are characteristically present in many medical university environments where INT is the principal type combination.

The statistical analysis found that only the T/F continuous scores were normally distributed among the MCV sample. Because the E/I, N/S and J/P scores were not normal distributions and because of the irregular frequency of occurrence of some MBTI types in the MCV sample, caution must be used before applying the findings in this study to groups outside this population. The

study may help the MCV faculty understand themselves better, but the data may not be applicable externally.

Research Question (2): What are the risk prevention skills of physicians in the areas of communication and documentation?

The Tennenhouse Risk Prevention Skills program was used to answer Research Question (2). The validity of the Tennenhouse as an instrument to measure medical malpractice risk was of concern, because it was not specifically designed for that purpose. Instead, the program attempts to teach physicians and other health care workers how to avoid a malpractice claim by improving communication and recordkeeping abilities. The effectiveness of the program in decreasing malpractice claims is unknown, but it is widely used by risk management departments across the country.

The mean scores for the 73 MCV faculty who completed the program conformed to the national mean of all physicians who had completed it, according to Dr. Tennenhouse (personal communication, February 5, 1995). The scores of the MCV participants in the three major categories of All Recordkeeping Skills, All Communication Skills, and Total for All Subjects were normally distributed only in the recordkeeping section. Without further validation of what it is measuring, the Tennenhouse program is probably better utilized for what it was intended - education. The literature on risk management referenced in this study emphasized the need for good communication and

documentation skills. The information presented in the Tennenhouse program stresses the importance of the use of those skills.

Research Question (3): What are the Relationships between Physician Personality Type and Risk Prevention Skills?

One of the major objectives of this study was to investigate whether there were any relationships between the personalities of physicians and the risk of being involved in a medical malpractice claim or lawsuit. There was sufficient anecdotal evidence to conclude that the perception of an injury was not the sole determining factor in a patient's decision to sue his or her physician for malpractice. The literature seemed to indicate that a physician's interpersonal skills, particularly effective communication, were just as important, if not more so, as his or her technical skills in the treatment of the patient. This study attempted to quantitatively investigate the premise that most malpractice lawsuits are initiated by patients because of a poor doctor/patient relationship.

The MBTI was chosen to identify the personality types of the physicians in the study. The physicians' communication and documentation skills were measured by their scores on the Tennenhouse Risk Prevention Skills program. The research literature indicated that the 16 MBTI types communicate differently and display preferences for structure and detail like that found in recordkeeping. It should have been possible to predict how each type would

perform on certain sections of the Tennenhouse instrument, assuming there was some relationship between the constructs measured by the MBTI and by the Tennenhouse program.

The study did not indicate a strong correlation between the MBTI and the Tennenhouse scores. The data did produce some small to moderate correlations between personality types and specific areas of the Tennenhouse program. For example, the Tennenhouse category entitled All Recordkeeping Skills (T1) seemed to be positively related to the S/N scores. That is, the Intuitives scored higher than the Sensing types on recordkeeping. The MBTI research literature indicated that Intuitive/Thinking types perform better on tests than other types. This was actually predicted by the investigator before the study began. Recordkeeping, which is a highly sensing activity, should have been in the domain of the Sensing types. Another correlation was discovered between the T/F scores and certain Tennenhouse scores from the recordkeeping sections. Feeling types scored higher than thinking types, something that was not predicted.

The S/N and T/F dimensions were split along gender lines. That is, the significant correlations between sections of the Tennenhouse instrument and MBTI type resulted from Intuitive type males and Feeling type females. The N males did better than S males on several recordkeeping and communication areas. The F females did better than T females on recordkeeping, but the T

females scored higher on communication. That was not predictable from MBTI theory. The Feeling types should have performed better than T types on communication.

In fact, the only hypothesis in this area to be supported was the prediction that Intuitive types would generally out perform all other types on the Tennenhouse instrument. The E/I and J/P dimensions were of no significance in predicting performance on the Tennenhouse topics. While some of the other observations were interesting, it was clear that only the Recordkeeping part of the Tennenhouse program consistently showed signs of a relationship with the MBTI scores, albeit not the ones anticipated.

The use of the MBTI with the Tennenhouse program produced no meaningful information regarding which personality types were more susceptible to medical malpractice risk. MBTI theory did not validate the Tennenhouse instrument as a method for measuring malpractice risk.

Research Question (4): What Are the Relationships between Physician Personality Type and the Number of Malpractice Claims and Lawsuits?

A comparison of MBTI scores and malpractice claims did not reveal anything significant, except that Sensing types were more likely than Intuitive types to have malpractice claims. This was predictable, since many surgeons are Sensing types, and there is a greater possibility of an injury resulting in a claim due to the invasive procedures they perform. It was interesting to note

that the communication skills usually attributed to Extraverts made no difference when comparing the numbers of their claims to those of Introverts. A similar phenomenon was true of the T/F dimension, where the Feeling types, who are regarded as caring and concerned for others, had the same probability of having a claim as the impersonal and logical Thinking types.

Research Question (5): What Are the Relationships between Physician Risk Prevention Skills and the Number of Malpractice Claims and Lawsuits

There were significant ($p < .05$) differences between the Tennenhouse scores of the male physicians with claims and without claims. The male physicians with claims scored lower than those without claims on all major sections of the program. It was not clear at first whether this was due to the accuracy of the Tennenhouse instrument in measuring malpractice risk or because those physicians with claims were typically older males who performed worse on the Tennenhouse program than the younger physicians. Subsequent statistical analyses controlling for age were not performed because the correlation between age and the Tennenhouse scores were later discovered to be significant. It seemed logical to assume that age rather than the number of claims was the prevailing influence over the Tennenhouse scores for the male physicians. There was no difference between the Tennenhouse scores of the female physicians who had claims and those who did not.

Research Question (6): What Are the Relationships between Other Physician Demographic Variables (e.g., Age, Gender, Specialty) and the Number of Malpractice Claims and Risk Prevention Skills ?

As was expected the data showed a significant relationship between age, years of service, and the number of claims. The older, male physicians with more years of service were more likely to have more medical malpractice claims than younger physicians, male or female. They also had significantly lower scores on all sections of the Tennenhouse program.

There was no significant difference between the Tennenhouse scores and ages of females with claims and those without claims. This was not true of the males. The younger males had fewer claims and higher scores on the Tennenhouse program than the older males. The ages of females with and without claims differed significantly from the males in those categories.

The females' Tennenhouse scores were not significantly different from each other, regardless of whether they had claims or not. However, the males who had claims had significantly lower scores on the Tennenhouse than did the males without claims. The females scored higher than the males on several categories of the Tennenhouse instrument. There apparently was no statistically important difference in Tennenhouse scores between the medical and surgical specialists. Male surgical specialists had significantly higher numbers of

medical malpractice claims than male medical specialists, but there was no appreciable difference between the female surgical and medical specialists.

It was evident that gender and age were prominent as factors to consider in the study. For females, gender and age seemed only to be important as factors when compared with males. Males had differences among themselves principally as a result of age. Specialty was only important as a significant variable for the male gender in predicting malpractice claims. Other variables such as insurance risk class and cause of claim were not notable indicators of anything of importance.

Recommendations

It is not clear where the country is headed with national health care for its citizens, but it appears certain that the Clinton plan has been rejected. If health care remains in the realm of the free market and away from overly intrusive government, there probably will always be malpractice claims brought against physicians. It is important for physicians to realize they can control some of their exposure to claims of malpractice, but first they must understand that the reason many claims are filed has little to do with the physician's technical competence. Then, they must be willing to modify their behavior if necessary and attend to the patient's emotional and psychological needs as part

of the total treatment. Above all, this means initiating and maintaining adequate communication with the patient.

The literature review clearly suggests that ineffective communication from the physician seems to be the most recurring complaint from patients. It is a major reason why some patients file a malpractice claim. Good communication with the patient seems like an easy concept to grasp, but clearly it is not something that comes easily to many physicians. That is where a good risk management program may make a difference in a physician medical practice group.

Risk management is a fairly new concept to many physician groups. Organized research in the area is just beginning to emerge. Empirical studies of the reasons why patients file lawsuits are slowly replacing anecdotal evidence. This study attempted to add to that emerging body of research. Specific recommendations for further research and programs in risk management result from a review of the literature and the data produced by this study.

Recommendations from the Literature Review

1. Future studies should concentrate on the communication and interpersonal skills aspects of the physician/patient relationship. This is where the true malpractice issues lie, according to the available literature and from the twelve years experience of the researcher as an administrator of a physician practice group. The effectiveness of the doctor's communication with the

patient, and how he or she interacts with the patient are critical in preventing malpractice claims. Recordkeeping skills are important, as the literature indicates, to mitigate the consequences of a claim or lawsuit, but communication and interpersonal skills are the keys to the prevention of claims.

2. Investigators should explore the emotional and psychological reasons that prompt patients to file malpractice claims. The literature suggests that the reasons for suing physicians are varied, but the primary reason is patient dissatisfaction with the doctor/patient experience. Instead of only examining doctors' interpersonal skills, researchers should also query patients' attitudes towards the physicians.

3. Consideration should be given to incorporating human relations courses into the medical school curriculum in an attempt to expose physicians to the human needs of the patient. The literature revealed the need for physicians to acquire better interpersonal skills, but there was no evidence that this specific type of training was being offered in conjunction with their medical school training.

4. The literature also suggests that the direction of risk management may need to change to incorporate a more human approach to delivering medical care. For example, courses in bioethics that use physician/patient problems and dilemmas as a basis for discussing conflict resolution strategies,

may help develop some awareness that the human/psychological needs of the patients are important, too.

Recommendations from the Research

1. Personality type, as defined by the MBTI, did not show a strong relationship to medical malpractice risk. Personality type is probably too complex and multidimensional to use as a variable in measuring malpractice risk. Future research should focus more on measuring communication skills or interpersonal skills rather than the entire personality of the physician.

2. Although gathering data on malpractice claims and physician demographic information is interesting, there was not enough evidence, from either the literature or the data, to suggest that these variables are adequate predictors of risk. The exception to this seems to be the gender variable. More data is needed to help understand the differences between the susceptibilities of males and females to malpractice risk. Future research should explore the gender issue further, and incorporate other variables to help in understanding what factors may be predictors of malpractice risk. Other risk variables could include the physical environment of the physician/patient encounter, billing and reimbursement problems, and research incentives for medical school faculty.

3. Age seemed to be significantly related to the scores of the male participants in the Tennenhouse program. Further research should investigate how physician learning is related to age, particularly among males. A design

and methodology that controls for age could be developed to measure learning differences and exposure to malpractice risk.

4. The diversity of the nation's medical schools may prohibit direct comparisons of research data involving medical malpractice risk, but a sample and design that facilitates comparison across schools would be extremely helpful.

Summary

Although this study did not find a strong relationship between physician personality type and medical malpractice risk, it was important for its unique approach. By utilizing the Tennenhouse program, the study was useful as a risk management tool to educate physicians about interpersonal relationships and the dramatic effects good communication can have upon the physician/patient encounter; many of the physicians who completed *Risk Prevention Skills* commented to the researcher that they thought they had learned some valuable information from participating in the program. The study also added to the information available on the MBTI types of physicians in the population of physicians. Finally, the study demonstrated that measuring medical malpractice risk is complex, and no one variable can be used alone as a predictor of a physician's vulnerability to a medical malpractice claim or lawsuit. Future studies that incorporate key predictors such as the physicians' gender, age, and

communication skills, as well as characteristics of different organizational settings, will further advance our understanding of medical malpractice risk.

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Appendix A

Tennenhouse Professional Publications
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RISK PREVENTION SKILLS

INDIVIDUAL PHYSICIAN EVALUATION SCORE REPORT

November 1992 GROUP: 10-0128
ID Number:

MCV Station
Richmond, VA 23298

You have successfully completed the *Risk Prevention Skills* training system

YOUR OVERALL PERFORMANCE

Total evaluation score: 157 (out of 198 possible points) = 79 percent correct. Your total evaluation score was greater than or equal to the total scores of 62% of the other physicians in your group (i.e., you were in the 62 percentile for your group). Your total evaluation score was greater than or equal to the total scores of 62% of all physicians who have ever been evaluated in *Risk Prevention Skills* (i.e., you were in the 62 percentile for all physicians evaluated). Your total evaluation score was greater than or equal to the total scores of 61% of all physicians in your specialty field who have ever been evaluated in *Risk Prevention Skills* (i.e., you were evaluated in the 61 percentile for all physicians in your specialty evaluated).

YOUR PERFORMANCE BY SUBJECT

SUBJECT	Percent Correct	Percentile For Your Group	Percentile For All Physicians	Percentile For Your Group In Your Specialty	Percentile For All Physicians In Your Specialty
1. Recordkeeping Skills	58	27	23	11	21
§1-1. Documenting examinations and observations	11	2	1	11	1
§1-2. Documenting unusual occurrances/legal information	67	54	51	56	51
§1-3. Documenting conversations with patients and families	78	48	62	44	57
§1-4. Accurate word usage	78	77	72	67	72
2. Recordkeeping: appearing negligent	81	79	75	89	74
§2-1. Violating a duty	100	99	99	99	99
§2-2. Documenting an error	78	94	88	99	89
§2-3. Documenting blame	67	29	22	44	21
3. Recordkeeping: Credibility of the Records	67	35	47	33	46
§3-1. Unprofessional comments	100	99	99	99	99
§3-2. Altering/destroying records	33	27	33	33	33
ALL RECORDKEEPING SKILLS	68	42	35	33	33
4. Communicating: Avoiding Surprise	78	92	82	78	78
§4-1. Unreasonable expectations	78	98	98	99	97
§4-2. Unanticipated inconveniences	78	94	82	78	78
5. Communicating: Undermining confidence	86	75	71	56	71
§5-1. Giving the impression of not caring	78	37	47	33	45
§5-2. Giving conflicting messages	67	46	33	56	33
§5-3. Appearing inadequate	100	99	99	99	99
§5-4. Criticizing conduct or qualifications	100	99	99	99	99
6. Communicating: Appearing negligent	92	96	94	99	95
§6-1. Maintaining contact	100	99	99	99	99
§6-2. Explaining a complication	100	99	99	99	99
§6-3. Blaming others	100	99	99	99	99
§6-4. Obvious negligence	67	83	80	67	80
ALL COMMUNICATING SKILLS	87	94	91	78	90
7. Risk Management in Patient Care	89	69	66	78	65
§7-1. Preventative actions	67	37	42	44	38
§7-2. Coordinating the health care team	100	99	99	99	99
§7-3. Risk documentation and litigation	100	99	99	99	99
TOTAL FOR ALL SUBJECTS	79	62	62	67	61

Your score(s) were deficient in the following area(s): §1-1. Please review that material again. Congratulations on your excellent understanding of: Chapter 6, Chapter 7.

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Chapter 2

RECORD KEEPING: APPEARING NEGLIGENT

Chapter 2 contains three sections on record keeping practices that can create an appearance of negligence even if there is none. Lawsuits are often based on the appearance of negligence from the way the record was worded. Because the outcome of a lawsuit is determined by conclusions about the facts which are reconstructed from the evidence, the wording of the medical record alone can result in a finding of liability.

§2-1 VIOLATING A DUTY discusses situations in which a statement in the record, by its own terms, establishes the violation of a legal duty of care toward the patient.

§2-2 DOCUMENTING AN ERROR contains rules to help you keep your description of events following a patient injury as accurate, concise, and objective as possible.

§2-3 DOCUMENTING BLAME discusses documentation which has the effect of blaming others for an injury to the patient.

§2-1 VIOLATING A DUTY

This section covers situations in which a statement in the record, by its own terms, establishes the violation of a legal duty of care toward the patient.

Following a medical event, no jury can ever know what actually happened. A jury must rely on the evidence, however misleading, to reconstruct the event. The medical records are the best evidence, and often the only evidence that a jury will accept in its entirety. If your record appears to require some action to protect the patient, and yet that action is not taken, the record establishes your negligence. Your later description of the unrecorded factors that actually determined your actions may be viewed by the jury as a defensive fabrication.

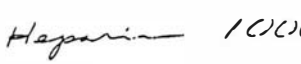
You may encounter a patient care situation which does not seem to require immediate action, and you take no action, yet a patient injury results. Record keeping which accurately reflects the situation can protect you by showing that there was not yet sufficient indication for the action that could have prevented the injury. Inaccurate record keeping can suggest the opposite and cause you an unnecessary lawsuit.

An important goal for a plaintiff's attorney in a malpractice action is to find a witness willing to provide favorable expert testimony and establish a standard of care. Without such testimony, most malpractice actions would fail. However, any statement in the record by a member of the health care team may also be used as expert testimony. Thus, a recommendation or an implied need for action written in the record may be treated as a statement of the standard of care, and used to prove negligence if there was no adequate response. Furthermore, the person who wrote the recommendation will have difficulty later claiming that it was anything other than the standard of care.

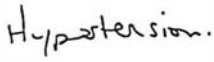
Therefore, a lawsuit based on failure to adequately respond to a written recommendation, or respond to a clinical description requiring immediate action, will be easier to prosecute. Both the writer of the recommendation and the person expected to later respond to it should be aware of the legal implications.

Is this urine *pregnant* or *frequent*?

Is this VDRL *routine* or *positive*?



Is this order for 1,000 units or 10,000 units?



Is this patient *hypertensive* or *hypotensive*?

Is this liver *negative* or is there *hepatitis*?

HYPOTHETICAL QUESTION

A physical therapist wrote a note in a patients record which included the statement "Patient says his surgical incision is infected." You check the incision and there is no infection. From the following choices of how you would respond, check (✓) the best comment. What problems do you find with the other choices?

❒ (a) You do not respond.

❒ (b) You write "Incision checked, no infection."

❒ (c) You tell the physical therapist to delete the comment.

❒ (d) You write "Patient confused about symptoms told to physical therapist."

❒ (e) You contact the hospital risk manager and point out that physical therapists should not be writing such comments.

❒ (f) You write "Physical therapists are not trained to evaluate wound infections Comment about infection should be ignored."

RULES

1. If you are not going to take a certain action, do not write an entry in the patient's record which requires that action.

For example, you are about to describe a surgical wound site in the records. If you don't believe an infection is present, and you don't intend to take action consistent with an infection, don't describe findings that would lead a reasonable person to conclude that an infection is present. If your description is consistent with wound infection, the record must show that steps were taken immediately to treat the infection.

2. You must respond appropriately to record entries by others that require your action.

If someone else writes a recommendation in the record for you to follow, you must either follow it or write a reasonable explanation as to why you will not follow it. Failure to do one or the other implies you negligently failed to read the record or negligently ignored the recommendation. If you write a reasonable explanation, do not simply contradict the recommendation or imply that the person who wrote the recommendation was negligent

or incompetent. A good explanation should also mention the specific circumstances under which the recommendation will or will not be followed. It should not be defensive or argumentative.

If the other person's note merely implies that some action must be taken, this is equivalent to a recommendation. The action must either be taken or your record must contain a reasonable explanation for not taking it. For example, the written comment that the patient is in distress implies that the patient needs some type of immediate evaluation. Failure to evaluate or otherwise explain the apparent distress in the record suggests abandonment of the patient.

Hypothetical Question choices (a), (c), and (e) demonstrate a failure to respond to the duty created by the physical therapist's note. Choices (d) and (f) are inadequate and defensive responses.

3. Beware of your own record entries which force others into specific responses.

When you write a recommendation in the record for another person to follow, options should be offered, if possible, and allowances should be made for changes in the patient's condition. For example, stating that the patient "must be ambulated every shift" is less flexible and more legally hazardous than stating that the patient "should be ambulated three times per day if safe to do so."

4. Do not directly disagree in the record with something that was written by another person unless there is some explanation offered.

Do not state in the records that another person's documentation is incorrect. If you believe that another person has made an error in their record, first ask them to correct the error (following the principles set forth in Chapter 3). Then, if they fail to correct the error and it creates a danger to the patient, it may be necessary for you to add a new entry containing a factual statement describing the danger. For example, if a prior note states the patient has no allergies but you are told of a probable allergy to penicillin, record this as a new entry. There is no benefit from adding a comment that the earlier note was incorrect. If there is no danger to the patient from the prior record, no documentation is indicated. For example, if you disagree with a prior note containing an opinion about the patient's personality, but it creates no direct danger to the patient, document nothing.

Hypothetical Question choices (d) and (f) directly disagree with the physical therapist's record. Choice (b) does not disagree because it documents

NOTES

a physical finding without commenting on the physical therapist's record. The best response to the Hypothetical Question is (b) You write "Incision checked, no infection."

Do not write findings which appear to conflict with prior findings unless you also include an explanation. For example, a progress note which described the patient as "afebrile" was written despite a graphic record that showed current temperature elevations. The implication is that the person who wrote "afebrile" did not look at the graphic record. Failure to read other parts of a patient's record is negligence.

5. All records must be legible to other persons who may need them for patient care purposes.

Illegible record keeping is a clear violation of legal duty toward the patient, and suggests a willingness to carelessly endanger the patient. The impression of a negligent character trait is easily transferred from the records to the conduct of the individual, making it easier for a jury to conclude that the individual gave negligent patient care.

Use of unauthorized abbreviations or unusual expressions is also a breach of duty because it obscures medical information. If others who need the records for patient care cannot understand them, the risk of injury is increased.

6. When you rely on an obviously unreliable information source, document your reasons.

For example, you are about to rely on something in the history of a patient whom you have already described as a poor historian. Document the reasons for believing part of the patient's history, or for having no alternative but to rely on it.

If the result of a diagnostic study is probably in error, the study should be repeated. If the study will not be repeated because it is no longer indicated, this should be clearly explained in the record. If the study is uncomfortable, dangerous, or expensive, and the patient refuses to have it repeated, document this and also mention that the patient completely understood the risks of not repeating the study.

7. When you do not rely on available information relevant to the patient's condition, document your reasons.

NOTES

PHYSICIAN EVALUATION QUESTIONS

13. A report on an x-ray states that there are no abnormal findings but the study is "technically poor." You elect to accept this result because the patient is without symptoms and cannot afford to pay for studies that are not absolutely necessary. How do you record this in the patient's record?

    (a) "X-ray negative."

    (b) "X-ray read as negative but technically poor."

    (c) "X-ray read as negative but technically poor. Repeat film not indicated."

    (d) "X-ray read as negative but technically poor. Since patient asymptomatic, repeat film not indicated."

    (e) "X-ray read as negative but technically poor. Since patient says he cannot afford more expense, will not repeat."

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14. The patient is receiving IV fluids, which include potassium for hypokalemia. A laboratory report shows a potassium level of 11, where the upper limit of normal is 5.3. The patient looks fine. You conclude this is a laboratory error, and do not stop the potassium. You call the lab and they agree to run the test again immediately. From the following choices, how would you document your decision?

    (a) "Probable lab error. Lab will repeat test."

    (b) "Patient doing fine. Probable lab error. Will continue IV potassium."

    (c) "Patient doing fine. Will not stop potassium until lab confirms the result."

    (d) "Patient doing fine. Value too high to be correct. Will continue IV potassium and repeat the test."

    (e) "Patient doing fine. I feel certain this is a lab error and will take the risk of not stopping the IV potassium. Repeating the test."

---

15. You are an attending physician treating a hospitalized patient for a bleeding peptic ulcer. You obtain a consultation from a urologist regarding recent gross hematuria. The urologist's consultation report recommends immediate cystoscopy. You want to avoid cystoscopy until the bleeding from the ulcer subsides. How do you document this in the patient record?

    (a) "Cystoscopy suggested. Later."

    (b) "No cystoscopy on this patient now."

    (c) "No instrumentation on this patient for a few days at least."

    (d) "Recommendation for cystoscopy noted. Will wait for ulcer to settle down."

    (e) "Cystoscopy recommended despite obvious contraindication of bleeding ulcer. Will wait on it."

You have a duty to utilize relevant information unless you show why it is unreliable. For example, you record the patient's temperature as 39 degrees. You will not treat this patient as febrile, however, because the patient had a hot drink shortly before the temperature was taken. You believe the temperature is inaccurate. Document the reason why you are disregarding the temperature elevation. Otherwise, the record will suggest that you have ignored an important finding.

In another example, you determine that an alarmingly high laboratory value is a lab error and should not be relied upon. When you document the value, also record the facts that make you believe it is an error. If you are not planning to repeat the test, explain the reason why.

Do not choose words that imply uncertainty. For example, do not describe the lab error as possible or probable. Describe it simply as a lab error or incorrect lab result.

NOTES

PREVENTION CHECKLIST

1. Did you avoid documenting the need for an action that you are not going to take?
2. Does another person's entry require you to take action?
3. Does your entry require another person to take action?
4. Did you avoid direct disagreement with other people's notes in the record?
5. Are your records legible?
6. Did you document your reasons for relying on unreliable information, or not relying on available information?

Some of the Organizations Utilizing Risk Prevention Skills

EAST

CIGNA Healthplan, Inc., Hartford, CT
Franklin Square Hospital, Baltimore, MD
Harvard Community Health Plan, Boston, MA
Langley AFB, Langley, VA
Massachusetts Medical Society, Boston, MA
Medical Mutual Insurance Co. of Maine, Portland, ME
Medical Mutull Insurance Co. of NorthCarolina, Raleigh, NC
Medical Professional Liability Agency, Mount Kisco, NY
Mercy Hospital, Pittsburgh, PA
North Carolina Baptist Hospital, Winston-Salem, NC
PHICO, Mechanicsburg, PA
Virginia Insurance Reciprocal, Richmond, VA

SOUTH

Baylor College of Medicine, Houston, TX
Fort Hood, TX
Insurance Corporation of America, Houston, TX
Kentucky Medical Insurance Company, Louisville, KY
Louisiana Medical Mutual Insurance Company, Metairie, LA
MAG Mutual Insurance Co., Atlanta, GA
Medical Center Hospital, Tyler, TX
Oklahoma Medical Association, Oklahoma City, OK
State Volunteer Mutual Insurance Company, Brentwood, TN
Texas Medical Association, Austin, TX
Vanderbilt University, Nashville, TN
Washington University School of Medicine and Barnes Hospital, St. Louis, MO

MIDWEST

Beaumont Hospital, Royal Oak, MI
Boynton Health Service, Minneapolis, MN
Bronson Health Care Group, Kalamazoo, MI
Iowa Physicians Mutual Insurance, West Des Moines, IA
Trust Group Health, Inc., Minneapolis, MN
Illinois State Medical Society, Chicago, IL
Medical Protective Insurance Co, Fort Wayne, IN
Minot Air Force Base, Minot, ND
Physicians Insurance Company of Michigan, Lansing, MI
Physicians Insurance Company of Ohio, Columbus, OH
Preferred Physicians Insurance Co., Omaha, NE
Rockford Memorial Hospital, Rockford, IL

WEST

Children's Hospital of Orange County, Orange, CA
CompHealth, Salt Lake City, UT
El Camino Insurance Exchange, Mountain View, CA
Farmers Insurance Co., Los Angeles, CA
Kaiser Permanente Hospital, La Mesa, CA
Loma Linda University, San Bernardino, CA
Mutual Insurance Co. of Arizona, Phoenix, AZ
New Mexico Physicians Mutual Liability Co., Albuquerque, NM
Norcal Mutual Insurance Co., San Francisco, CA
Northwest Physicians Mutual Insurance Co., Salem, OR
Safecare Health Services, Seattle, WA
Samuel Merritt Hospital, Oakland, CA
St. Joseph's Hospital, Orange, CA
Tucson Medical Center, Tucson, AZ
US MEDAC Alaska
University of California, Davis, CA
University of California School of Dentistry, San Francisco, CA
University of California School of Medicine, San Francisco, CA
University of New Mexico Medical Center, Albuquerque, NM
Utah Medical Insurance Association, Salt Lake City, UT

Appendix B

ISTJ "DOING WHAT SHOULD BE DONE" Organizer - Compulsive Private - Trustworthy Rules 'n Regs - Practical MOST RESPONSIBLE	**ISFJ** "A HIGH SENSE OF DUTY" Amiable - Works Behind the Scenes Ready to Sacrifice - Accountable Prefers 'Doing' MOST LOYAL	**INFJ** "AN INSPIRATION TO OTHERS" Reflective/Introspective Quietly Caring - Creative Linguistically gifted - Psychic MOST CONTEMPLATIVE	**INTJ** "EVERYTHING HAS ROOM FOR IMPROVEMENT" Theory Based - Skeptical - "My Way" High Need for Competency Sees World as a Chessboard MOST INDEPENDENT
ISTP "READY TO TRY ANYTHING ONCE" Very Observant - Cool and Aloof Hands-on Practicality - Unpretentious Ready for what Happens MOST PRAGMATIC	**ISFP** "SEES MUCH BUT SHARES LITTLE" Warm and Sensitive - Unassuming Short Range Planner - Good Team Member In Touch with Self and Nature MOST ARTISTIC	**INFP** "PERFORMING NOBLE SERVICE TO AID SOCIETY" Strict Personal values Seeks Inner Order/Peace Creative - Non-directive - Reserved MOST IDEALISTIC	**INTP** "A LOVE OF PROBLEM SOLVING" Challenges Others to Think Absent-minded Professor Competency Needs - Socially Cautious MOST CONCEPTUAL
ESTP "THE ULTIMATE REALIST" Unconventional Approach - Fun Gregarious - Lives for Here and Now Good at Problem Solving MOST SPONTANEOUS	**ESFP** "YOU ONLY GO AROUND ONCE IN LIFE" Sociable - Spontaneous Loves Surprises - Cuts Red Tape Juggles Multiple Projects/Events Quip master MOST GENEROUS	**ENFP** "GIVING LIFE AN EXTRA SQUEEZE" People Oriented - Creative Seeks Harmony - Life of Party More Starts than Finishes MOST OPTIMISTIC	**ENTP** "ONE EXCITING CHALLENGE AFTER ANOTHER" Argues Both Sides of a Point to Learn Brinksmanship - Tests the Limits Enthusiastic - New Ideas MOST INVENTIVE
ESTJ "LIFE'S ADMINISTRATORS" Order and Structure - Sociable Opinionated - Results Driven Producer - Traditional MOST HARD CHARGING	**ESFJ** "HOST AND HOSTESSES OF THE WORLD" Gracious - Good Interpersonal Skills Thoughtful - Appropriate Eager to Please MOST HARMONIZING	**ENFJ** "SMOOTH TALKING PERSUADER" Charismatic - Compassionate Possibilities for People Ignores the Unpleasant - Idealistic MOST PERSUASIVE	**ENTJ** "LIFE'S NATURAL LEADERS" Visionary - Gregarious - Argumentative Systems Planners - Takes Charge Low Tolerance for Incompetency MOST COMMANDING

3605-C Chain Bridge Road
Fairfax, Virginia 22030
(703) 591-MBTI
Fax (703) 591-8338

Appendix C

NOTICE

MBTI ANSWER SHEETS HAVE BEEN CODED TO ALLOW ME TO CONTACT PARTICIPANTS FOR MISSING INFORMATION OR FOR ASSISTANCE IN INTERPRETING RESPONSES.

DEPARTMENT OF RISK MANAGEMENT

MCV Associated Physicians
1001 East Broad Street, Suite 135
Campus Box 270, MCV Station
Richmond, Virginia 23219

November 19, 1991

1~ 2~
3~

Dear Dr. 2~:

I am working on my doctoral dissertation and would appreciate it greatly if you would spend about 20 minutes to help me gather some research data. I am currently doing an externship with the MCV Associated Physicians Department of Risk Management and my primary objective is to determine if there is a relationship between personality type, as measured by the Myers-Briggs Type Indicator (MBTI), and medical malpractice risk.

All research information will be kept extremely confidential. Individuals will not be mentioned by name, but rather by discrete personality types. Furthermore, the information will be used only for constructive purposes. For example, results could help those physicians who seem to have personality types vulnerable to malpractice claims learn how to recognize what they may be doing to create risk for themselves. Also, if the correlation is strong and indicates that the majority of the faculty at MCV are types that should be low malpractice risks, the information could be used to persuade the insurance actuaries to recommend lowering the group's malpractice premium. But under no circumstances will the information be used to the detriment of any individual or group. The purpose of this research is solely educational and participation is voluntary.

If the results of this survey are meaningful, I will expand the project into my doctoral dissertation. As a fellow academician, I would sincerely appreciate your cooperation by completing the attached answer sheet and returning it and the booklet to me at P.O. Box 629 by December 6, 1991.

Office: (804) 648-3720 Answering Service: (804) 257-5175 FAX: (804) 649-3538

Individuals may obtain their own MBTI results by requesting them from me in writing. I need your assistance with this research but if you choose not to participate, please return the answer sheet and booklet to me anyway.

Thanks for your consideration.

Sincerely,

Thomas H. Casey
Administrator
Department of Surgery

THC/sss

cc: Karen M. Swisher
Director, Risk Management

Attachment

DEPARTMENT OF RISK MANAGEMENT

MCV Associated Physicians
1001 East Broad Street, Suite 135
Campus Box 270, MCV Station
Richmond, Virginia 23219

December 18, 1991

1~ 2~
3~

Dear Dr. 2~:

Several weeks ago I asked if you would be willing to participate in the research I was doing for my doctoral dissertation involving medical malpractice risk and physician personality types, but I have not received a reply from you yet.

If you would like to participate in the study there is still time to do it, but I need your response to the Myers Briggs Type Indicator returned to me by January 15, 1992. If you decide that you do not want to complete the MBTI, please return the booklet and answer sheet to me anyway at P.O. Box 629.

Thank you for your consideration.

Sincerely,

Thomas H. Casey
Administrator
Department of Surgery

THC/djr

Office: (804) 648-3720 *Answering Service: (804) 257-5175* *FAX: (804) 649-3538*

DEPARTMENT OF RISK MANAGEMENT

MCV Associated Physicians
1001 East Broad Street, Suite 135
Campus Box 270, MCV Station
Richmond, Virginia 23219

February 5, 1992

1~ 2~
3~

Dear Dr. 2~:

Recently Tom Casey asked if you would like to participate in a research project involving personality types and medical malpractice risks. Since Mr. Casey is qualified by Consulting Psychologists Press and the Center for Applications of Psychological Type to purchase, administer, score and interpret the Myers Briggs Type Indicator, he will be using that instrument in connection with the Tennenhouse Risk Prevention Skills program to investigate possible correlations between risk and personality types.

The sole purpose of this research is ultimately to lower your medical malpractice premiums. The more information we have on risk prevention skills of our faculty, the easier it will be to argue for lower rates. I assure you that none of this research will be used against any individual. Names of participants will not be published or used in any harmful manner.

The Myers Briggs Type Indicator is a constructive psychometric tool used widely to discover differences in the ways people perceive information and make decisions. I encourage each of you, if you have not already done so, to complete the MBTI and submit it to Mr. Casey at P.O. Box 629. If you did not receive the MBTI or have changed your mind and would like to participate, please call him at 786-9665 and he will send you the materials.

Please call me or Mr. Casey if you have any concerns about this research. We would greatly appreciate your participation.

Sincerely,

Karen N. Swisher
Director of Risk Management

Office: (804) 648-3720 *Answering Service: (804) 257-5175* *FAX: (804) 649-3538*

DEPARTMENT OF RISK MANAGEMENT

MCV Associated Physicians
1001 East Broad Street, Suite 135
Campus Box 270, MCV Station
Richmond, Virginia 23219

December 18, 1991

1~ 2~
3~

Dear Dr. 2~:

Thank you for participating in the research I am conducting for my doctoral dissertation. I sincerely appreciate the time you took from your busy schedule to help me. As you requested, I have enclosed an MBTI report which shows the results of your responses. On the back of the form are brief descriptions of the 16 personality types. For a more thorough description of the Myers Briggs Type Indicator and Jung's theoretical framework, I refer you to *Gifts Differing* by I. Briggs Myers, *Please Understand Me* by D. Keirsey, and *Psychological Types* by C. Jung. Call me if you would like to discuss your MBTI results.

Again, thanks for your participation. The response has been quite good and I hope to get something meaningful out of this study.

Sincerely,

Thomas H. Casey
Administrator
Department of Surgery

THC/djr
Attachment

Office: (804) 648-3720 *Answering Service: (804) 257-5175* *FAX: (804) 649-3538*

DEPARTMENT OF RISK MANAGEMENT

MCV Associated Physicians
1001 East Broad Street, Suite 135
Campus Box 270, MCV Station
Richmond, Virginia 23219

April 6, 1992

Dear Dr.:

You are one of the first to be selected to participate in the Tennenhouse Risk Prevention Skills program. This is an instrument designed to measure and improve your skills at record keeping and communication in a clinical practice setting. Ultimately all clinical faculty at MCV will have the opportunity to participate in this program but because of the expense, it is being limited to a few faculty each year.

As you know, we had to increase the malpractice premium this year. We believe that using the Tennenhouse Risk Prevention Skills system will help us successfully argue for lower rates in future years. We already know of one malpractice insurance carrier in Virginia which has lowered its rates on the basis of their physicians participating in the Tennenhouse program. Since the Tennenhouse system addresses those issues which most frequently cause lawsuits, we feel that any information we can provide you to guard against litigation is beneficial and may help us avoid legal troubles.

There are only 66 questions in the Tennenhouse survey, but it is designed as a learning system and the actual reading of the book may take longer than answering the questions. You may take a month to complete the booklet and answer the questions. Attached to this letter is a release form which will allow us to use the information from the Tennenhouse program to compare with the personality study we completed earlier. Please return the release form to P.O. Box 270 as soon as possible and we will send you the Tennenhouse Risk Prevention Skills system.

Please call me if you have any questions.

Sincerely,

Karen M. Swisher, Director
Risk Management

Office: (804) 648-3720 *Answering Service: (804) 257-5175* *FAX: (804) 649-3538*

Appendix D

Medical College of Virginia/McGuire Veterans Medical Center
COMMITTEE ON THE CONDUCT OF HUMAN RESEARCH
Sanger Hall 1-0368 Box 568 786-0868

Virginia Commonwealth University

Date: March 9, 1992 cc: Andrew Wechsler, M.D.

To: Thomas H. Casey Karen Swisher, J.D.
Surgery
Box 629

From: Robert L. Campbell, DDS, Chairman
Committee on the Conduct of Huma

Re: CCHR Protocol:9201-3E
The relationship between physician personality type and medical malpractice risk.

The Committee on the Conduct of Human Research of VCU reviewed and approved the subject investigation and the revised consent form.

PLEASE NOTE:

1. Informed, written consent is required of each human subject or his legally qualified guardian or next-of-kin, unless specifically excluded (i.e., initials or finger print are acceptable for HIV+ volunteers). It is strongly advised that the investigator explain the consent form verbally with the family members and/or witness. The IRB requires that research on mentally impaired subjects have a consent form signed by either a knowledgeable proxy, power of attorney, or the patient prior to serious degeneration.

2. Any deviation from the above named protocol, or the identification of unanticipated problems which may involve risk to subjects, must be reported to this Committee for review and approval.

3. A copy of the approval will be sent to all investigators listed and the department chair of the Principal Investigator. It is assumed by this Committee that the principal investigator and the department chairman will be co-responsible for the proper execution of the study as written and that they will keep the Committee informed of any changes that will affect the safety of the patients or volunteers and the accuracy of the consent form.

4. Your study is subject to continued surveillance by this Committee, and it will be reviewed periodically. The next review is scheduled for January 1, 1993. At that time you must make available to the Committee a roster of all subjects, a copy of the most recent consent form and a summary of the results obtained, especially any adverse or unexpected effects.

5. All requests for information related to this investigation must include the exact title and the investigator's name(s).

6. This Institutional Review Board is in compliance with the requirements in Part 56, Subchapter D, Part 312 of the 21 Code of Federal Regulations published January 27, 1981. If this protocol is used in a Sponsored Programs proposal, the approval date and protocol number should be written on the Sponsored Programs internal approval form.

7. If this protocol is a drug study, all drugs are to be dispensed by the Investigational Drug Pharmacy. A copy of the CCHR approved protocol must be submitted to the Pharmacy. Contact the Investigational Drug Pharmacy at extension 6-0854.

CONSENT FORM

1. Title of Research

The relationship between physician personality type and medical malpractice risk.

2. Introduction

This study will investigate correlations between physicians' personality types as determined by the Myers Briggs Type Indicator and medical malpractice risk as measured by the Tennenhouse Risk Prevention Skills Program. The study is being conducted in conjunction with the doctoral dissertation of Thomas H. Casey, an employee of the Medical College of Virginia and graduate student of Virginia Commonwealth University (telephone 786-9665). Although medical malpractice lawsuits are a fact of life, it may be possible to decrease their frequency if physicians become aware of certain predisposing personality characteristics in the areas of communications skills and record keeping. The research could be useful in developing a personality profile for physicians which may help lower their risk for claims of medical malpractice. The research does not involve the clinical, technical or medical competence of the physician.

3. Benefits

Possible benefits could include a decrease in the frequency of medical malpractice claims, fewer costly settlements from injured parties, a decrease in the amount of professional liability premium, and an increase in awareness of certain personality characteristics which may leave physicians vulnerable to malpractice litigation. Increasing awareness of risk management also serves to decrease the professional liability malpractice cost component of physicians services and thereby lower overall health care cost.

4. Risks

There are no major risks with this study. Information revealed by the Myers Briggs Type Indicator (MBTI) is universally accepted as constructive in nature. The Tennenhouse survey is intended for educational and instructional purposes only.

5. Cost of Participation

The cost to participants in this survey is approximately 30 minutes to 1 hour to take the Myers Briggs Type Indicator and six hours for the Tennenhouse Risk Prevention Skills Program.

6. Confidentiality of Records

All completed MBTI answer sheets will be returned in a sealed, confidential envelope

to Mr. Casey, who will personally open it and score the responses. Individual scores on the Myers Briggs Type Indicator and the Tennenhouse Risk Preventions Skills Program must be known to Mr. Casey in the initial stages of data collection, but no individual's identity will be revealed or published in the study. Only Mr. Casey will have access to the Myers Briggs data and he will destroy any information linking an individual's name to his or her scores at the conclusion of the study. Scores of the Tennenhouse Risk Prevention Skills Program will be kept in the individual's confidential file at the MCV AP Dept. of Risk Management. The results of the testing will be released to me upon request.

7. Subject Rights Information

Questions about research and subjects rights may be directed to the Institutional Review Board, telephone number 786-0868.

I am voluntarily participating in this study. I understand that my individual scores on the Myers Briggs Type Indicator and the Risk Prevention Skills Program will be used for research and educational purposes only, and will not be used for any detrimental purposes such as an increase in professional liability premium or for any punitive actions against me. I understand, however, that composite scores and generic personalty types which may include mine will be released and may be published, but no individual identifiers will be used. I understand that my participation requires me to complete both the Myers Briggs Type Indicator as well as the Tennenhouse Risk Prevention Skills Program. I will be provided with a copy of this signed consent form.

Signature: _____ Date: _____

Appendix E

NATIONAL PRACTITIONER DATA BANK
MALPRACTICE CLAIMS DESCRIPTION CODES
(Adapted from the Harvard Risk Management Foundation Allegations of Negligence)

Diagnosis Related	010 Failure to diagnose (i.e., concluding that patient has no disease or condition worthy of further follow-up or observation) 020 Wrong diagnosis or misdiagnosis (i.e., original diagnosis is incorrect	030 Improper performance of test 040 Unnecessary diagnostic test 050 Delay in diagnosis 060 Failure to obtain consent/lack of informed consent 090 Diagnosis - related (NOC)
Anesthesia Related	110 Failure to complete patient assessment 120 Failure to monitor 130 Failure to test equipment 140 Improper choice of anesthesia agent or equipment 150 Improper technique/induction	160 Improper equipment used 170 Improper intubation 180 Improper positioning 185 Failure to obtain consent/lack of informed consent 190 Anesthesia related (NOC)
Surgery Related	210 Failure to perform surgery 220 Improper positioning 230 Retaining foreign body 240 Wrong body part 250 Improper performance of surgery	260 Unnecessary surgery 270 Delay in surgery 280 Improper management of surgical patient 285 Failure to obtain consent/lack of informed consent 290 Surgery related
Medication Related	305 Failure to order appropriate medication 310 Wrong medication ordered 315 Wrong dosage ordered of correct medication 320 Failure to instruct on medication 325 Improper management of medication regimen 330 Failure to obtain consent/lack of informed consent 340 Medication error (NOC)	350 Failure to medicate 355 Wrong medication administered 360 Wrong dosage administered 365 Wrong patient 370 Wrong route 380 Improper technique 390 Medication administration related (NOC)
Intravenous and Blood Products Related	410 Failure to monitor 420 Wrong solution 430 Improper performance 440 IV related (NOC) 450 Failure to insure contamination	460 Wrong type 470 Improper administration 480 Failure to obtain consent/lack of informed consent 490 Blood product related (NOC)
Obstetrics Related	505 Failure to manage pregnancy 510 Improper choice of delivery method 520 Improperly performed vaginal delivery 525 Improperly performed C-section 530 Delay in delivery (induction or surgery) 540 Failure to obtain consent/lack of informed consent 550 Improperly managed labor (NOC)	555 Failure to identify/treat fetal distress 560 Delay in treatment of fetal distress (i.e., identified but treated in untimely matter) 570 Retained foreign body/vaginal/uterine 575 Abandonment 580 Wrongful life/birth 590 Obstetrics related (NOC)
Treatment Related	610 Failure to treat 620 Wrong treatment/procedure performed (also improper choice) 630 Failure to instruct patient on self care 640 Improper performance of a treatment/ procedure 650 Improper management of course of treatment 660 Unnecessary treatment	665 Delay in treatment 670 Premature end of treatment (also abandonment) 675 Failure to supervise treatment/procedure 680 Failure to obtain consent for treatment/lack of informed consent 685 Failure to refer/seek consultation 690 Treatment related (NOC)
Monitoring	710 Failure to monitor 720 Failure to respond to patient	730 Failure to report on patient condition 790 Monitoring related (NOC)
Biomedical Equipment/ Product Related	810 Failure to inspect/monitor 820 Improper maintenance 830 Improper use 840 Failure to respond to warning	850 Failure to instruct patient on use of equipment/product 860 Malfunction/failure 890 Biomedical equipment/product related (NOC)
Miscellaneous	910 Inappropriate behavior of clinician (i.e., sexual misconduct allegation,assault) 920 Failure to protect third parties (i.e., failure to warn/protect from violent patient behavior)	940 Failure to maintain appropriate infection control 950 Failure to follow institutional policy or procedure 960 Other (provide detailed written description) 990 Failure to review provider performance 900 Unknown

MCV ASSOCIATED PHYSICIANS
Professional Liability Funding Indications as of June 30, 1994
Physicians & Surgeons

Summary of Class 1 Equivalent Exposures

Specialty	Rating Class	Class Rel.	02/01/79 01/31/80	02/01/80 01/31/81	02/01/81 01/31/82	02/01/82 01/31/83	02/01/83 01/31/84	02/01/84 01/31/85	02/01/85 01/31/86	02/01/86 02/28/87	03/01/87 02/29/88	03/01/88 02/28/89	03/01/89 02/28/90	03/01/90 02/28/91	03/01/91 02/29/92	03/01/92 06/30/93	07/01/93 06/30/94	07/01/94 06/30/95
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
Anesthesiology	5A	2.17	13.0	14.0	14.0	17.0	17.0	23.0	24.0	22.0	26.0	26.0	30.0	36.0	37.0	37.0	35.0	35.0
Dermatology	2	1.50	3.0	3.0	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	2.0	3.0	3.0	3.0	3.0	4.0
Family Practice	1	1.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	3.0	3.0	3.0	5.0	5.0
Internal Medicine	1	1.00	68.0	76.0	76.0	76.0	81.0	81.0	80.0	115.0	104.0	115.0	125.0	132.0	127.0	127.0	147.0	134.0
Internal Medicine	2	1.50	17.0	19.0	19.0	19.0	20.0	20.0	20.0	10.0	21.0	26.0	24.0	21.0	28.0	28.0	17.0	34.0
Internal Medicine	3	1.96	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0	10.0	13.0	11.0	11.0	9.0	11.0
Internal Medicine	4	2.45	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
Neurology	1	1.00	7.0	6.0	6.0	7.0	8.0	9.0	6.0	5.0	9.0	10.0	9.0	23.0	20.0	20.0	17.0	21.0
Neurology	2	1.50	5.0	5.0	5.0	5.0	6.0	7.0	5.0	7.0	7.0	10.0	12.0	0.0	5.0	5.0	4.0	2.0
OB/GYN	1	1.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OB/GYN	5	3.87	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	10.0	8.0	8.0	10.0	10.0
OB/GYN	7	6.00	9.0	11.0	12.0	12.0	15.0	14.0	13.0	11.0	12.0	17.0	12.0	12.0	10.0	10.0	10.0	10.0
Opthalmology	2	1.50	4.0	4.0	3.0	3.0	5.0	5.0	5.0	4.0	5.0	7.0	7.0	4.0	5.0	5.0	5.0	4.0
Otolaryongology	1	1.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Otolaryongology	4	2.45	4.0	4.0	4.0	5.0	5.0	4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0	7.0	8.0
Pathology	1A	0.80	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	9.0	9.5	10.0	10.0	11.0
Pathology	1	1.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pathology	2	1.50	10.0	11.0	11.0	12.0	13.0	12.0	12.0	13.0	12.0	15.0	14.0	13.0	14.5	15.0	12.0	15.0
Pediatrics	1	1.00	17.0	20.0	19.0	20.0	21.0	22.0	22.0	23.0	23.0	23.0	25.0	29.0	29.0	29.0	32.0	35.0
Pediatrics	2	1.50	9.0	11.0	10.0	12.0	14.0	14.0	14.0	15.0	15.0	15.0	18.0	14.0	16.0	18.0	19.0	16.0
Pediatrics	4	2.45	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0
Prev. Medicine	1A	0.80	2.0	2.0	1.0	1.0	1.0	1.0	0.0	0.0	1.0	2.0	2.0	1.0	0.0	0.0	0.0	0.0
Prev. Medicine	1	1.00	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0
Psychiatry	1A	0.80	12.0	11.0	10.0	12.0	13.0	13.0	16.0	15.0	16.0	18.0	20.0	21.0	24.0	24.0	23.0	29.0
Psychiatry	1	1.50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0
Radiology	1	1.00	8.0	8.0	8.0	9.0	10.0	11.0	10.0	9.0	9.0	9.0	9.0	22.0	21.0	21.0	24.0	19.0
Radiology	2	1.50	22.0	22.0	20.0	21.0	23.0	15.0	23.0	20.0	22.0	20.0	24.0	17.0	19.0	19.0	21.0	18.0
Radiation Oncology	1	1.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Radiation Oncology	2	1.50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0	5.0	7.0	6.0	6.0	8.0	8.0
Rehab. Medicine	1	1.00	3.0	2.0	2.0	2.0	2.0	3.0	5.0	0.0	5.0	5.0	7.0	8.0	10.0	10.0	7.0	8.0
Surgery	1	1.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Surgery	3	1.96	5.0	6.0	5.0	5.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	4.0	4.0	5.0	5.0
Surgery	5	3.87	7.0	7.0	6.0	8.0	8.0	10.0	10.0	11.0	9.0	8.0	13.0	10.0	10.0	10.0	10.0	10.0
Surgery	6	5.03	21.0	22.0	21.0	23.0	24.0	25.0	25.0	26.0	24.0	24.0	26.0	29.0	31.0	31.0	31.0	31.0
Surgery	8	8.20	6.0	6.0	5.0	6.0	7.0	8.0	7.0	8.0	7.0	7.0	5.0	3.0	5.0	5.0	6.0	5.0
Total			265.0	283.0	273.0	294.0	315.0	320.0	324.0	341.0	355.0	411.0	445.0	459.0	472.0	473.0	488.0	496.0
Average Relativity			1.94	1.94	1.94	1.97	2.00	2.03	1.99	1.93	1.89	1.88	1.86	1.80	1.81	1.80	1.80	1.78
Total Class 1 Equivalents			513.5	550.4	528.7	577.8	629.8	650.3	645.8	659.8	670.0	772.5	826.4	824.5	852.3	853.4	874.2	883.5
Allied Professionals – Class 1 Equivalents			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.0
Ph.D's – Class 1 Equivalents			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.7
Total Class 1 Equivalents			513.5	550.4	528.7	577.8	629.8	650.3	645.8	659.8	670.0	772.5	826.4	824.5	852.3	853.4	874.2	905.2

Notes

(2) St. Paul rating class definitions as used by MCV Associated Physicians.
(3) Per St. Paul rating relativities for physicians & surgeons and other professional medical specialties.
(4) – (19) Exposure data supplied by MCV Associated Physicians.
Allied professional and Ph.D class 1 equivalents from Exhibit 5.3a and 5.3b, respectively.

MCV-EXHBS_11
8/6/94
8:32 PM

Appendix F

Simple Statistics

Variable	N	Mean	Std Dev	Median	Minimum	Maximum
Q1	73	70.876712	14.170534	72.000000	36.000000	94.000000
Q11	73	60.589041	19.107761	56.000000	11.000000	100.000000
Q12	73	73.602740	27.043042	67.000000	0	100.000000
Q13	73	80.109589	23.414479	78.000000	11.000000	100.000000
Q14	73	69.534247	25.614711	78.000000	0	100.000000
Q2	73	73.890411	14.445839	78.000000	26.000000	100.000000
Q21	73	82.767123	19.002573	100.000000	33.000000	100.000000
Q22	73	54.808219	25.452929	67.000000	0	100.000000
Q23	73	83.931507	20.635278	100.000000	11.000000	100.000000
Q3	73	72.424658	17.494378	72.000000	39.000000	100.000000
Q31	73	82.520548	10.344228	78.000000	56.000000	100.000000
Q32	73	62.479452	34.785897	67.000000	0	100.000000
Q4	73	68.095890	11.771156	72.000000	39.000000	89.000000
Q41	73	76.287671	8.345790	78.000000	44.000000	100.000000
Q42	73	59.945205	23.079507	67.000000	0	100.000000
Q5	73	80.219178	9.864705	81.000000	50.000000	94.000000
Q51	73	89.890411	13.735155	100.000000	44.000000	100.000000
Q52	73	72.506849	16.426709	78.000000	44.000000	100.000000
Q53	73	72.794521	17.570460	78.000000	22.000000	100.000000
Q54	73	86.219178	18.212668	100.000000	22.000000	100.000000
Q6	73	80.356164	12.951158	83.000000	8.000000	100.000000
Q61	73	92.876712	17.871412	100.000000	0	100.000000
Q62	73	95.465753	14.623119	100.000000	0	100.000000
Q63	73	72.698630	20.876412	67.000000	33.000000	100.000000
Q64	73	60.602740	25.357850	67.000000	0	100.000000
Q7	73	84.986301	15.195479	89.000000	11.000000	100.000000
Q71	73	83.616438	23.002796	100.000000	33.000000	100.000000
Q72	73	83.191781	21.353934	100.000000	0	100.000000
Q73	73	88.356164	21.598849	100.000000	0	100.000000
EI	236	108.220339	26.208375	111.000000	49.000000	157.000000
SN	236	99.737288	29.769305	101.000000	37.000000	151.000000
TF	236	84.322034	22.056362	83.000000	21.000000	139.000000
JP	236	80.406780	25.750104	75.000000	45.000000	159.000000

GENDER=F

Correlation Analysis

'WITH' Variables: Q1 Q11 Q12 Q13 Q14 Q2 Q21 Q22 Q23 Q3 Q31 Q32
Q4 Q41 Q42 Q5 Q51 Q52 Q53 Q54 Q6 Q61 Q62 Q63
Q64 Q7 Q71 Q72 Q73

'VAR' Variables: EI SN TF JP

Simple Statistics

Variable	N	Mean	Std Dev	Median	Minimum	Maximum
Q1	23	75.608696	14.531280	78.000000	47.000000	94.000000
Q11	23	67.304348	17.075860	78.000000	22.000000	78.000000
Q12	23	76.913043	21.975013	67.000000	33.000000	100.000000
Q13	23	86.478261	22.293231	100.000000	33.000000	100.000000
Q14	23	72.000000	26.050650	78.000000	11.000000	100.000000
Q2	23	79.391304	10.351720	81.000000	56.000000	93.000000
Q21	23	89.000000	15.556349	100.000000	67.000000	100.000000
Q22	23	59.956522	21.318959	67.000000	0	100.000000
Q23	23	89.434783	16.533234	100.000000	44.000000	100.000000
Q3	23	71.826087	17.940944	72.000000	39.000000	100.000000
Q31	23	80.869565	12.057832	78.000000	56.000000	100.000000
Q32	23	62.869565	37.596306	67.000000	0	100.000000
Q4	23	66.391304	8.510630	67.000000	50.000000	83.000000
Q41	23	77.478261	8.617475	78.000000	44.000000	100.000000
Q42	23	55.565217	14.534680	56.000000	33.000000	78.000000
Q5	23	82.826087	7.872000	83.000000	64.000000	94.000000
Q51	23	93.304348	12.293512	100.000000	56.000000	100.000000
Q52	23	76.086957	14.323893	78.000000	56.000000	100.000000
Q53	23	77.478261	16.500329	78.000000	44.000000	100.000000
Q54	23	85.086957	18.549474	100.000000	44.000000	100.000000
Q6	23	82.478261	8.758734	83.000000	69.000000	100.000000
Q61	23	95.173913	13.773004	100.000000	44.000000	100.000000
Q62	23	97.130435	7.575705	100.000000	78.000000	100.000000
Q63	23	68.782609	17.053276	67.000000	33.000000	100.000000
Q64	23	69.173913	23.060498	67.000000	33.000000	100.000000
Q7	23	86.782609	12.681255	89.000000	48.000000	100.000000
Q71	23	88.434783	21.592983	100.000000	33.000000	100.000000
Q72	23	79.304348	21.814163	78.000000	33.000000	100.000000
Q73	23	92.782609	17.265195	100.000000	33.000000	100.000000
EI	51	100.764706	27.228359	99.000000	49.000000	153.000000
SN	51	96.411765	21.862458	97.000000	45.000000	137.000000
TF	51	90.490196	23.264886	83.000000	45.000000	139.000000
JP	51	76.960784	20.686189	73.000000	45.000000	127.000000

GENDER=M

Correlation Analysis

'WITH' Variables: Q1 Q11 Q12 Q13 Q14 Q2 Q21 Q22 Q23 Q3 Q31 Q32
Q4 Q41 Q42 Q5 Q51 Q52 Q53 Q54 Q6 Q61 Q62 Q63
Q64 Q7 Q71 Q72 Q73

'VAR' Variables: EI SN TF JP

Simple Statistics

Variable	N	Mean	Std Dev	Median	Minimum	Maximum
Q1	50	68.700000	13.598094	70.500000	36.000000	94.000000
Q11	50	57.500000	19.356220	56.000000	11.000000	100.000000
Q12	50	72.080000	29.159547	67.000000	0	100.000000
Q13	50	77.180000	23.550805	78.000000	11.000000	100.000000
Q14	50	68.400000	25.597353	78.000000	0	100.000000
Q2	50	71.360000	15.420315	70.000000	26.000000	100.000000
Q21	50	79.900000	19.802563	72.500000	33.000000	100.000000
Q22	50	52.440000	27.013345	67.000000	0	100.000000
Q23	50	81.400000	21.959146	78.000000	11.000000	100.000000
Q3	50	72.700000	17.462780	72.000000	39.000000	100.000000
Q31	50	83.280000	9.491220	78.000000	78.000000	100.000000
Q32	50	62.300000	33.812961	67.000000	0	100.000000
Q4	50	68.880000	13.003359	72.000000	39.000000	89.000000
Q41	50	75.740000	8.248216	78.000000	44.000000	78.000000
Q42	50	61.960000	25.974039	67.000000	0	100.000000
Q5	50	79.020000	10.512364	81.000000	50.000000	94.000000
Q51	50	88.320000	14.190310	100.000000	44.000000	100.000000
Q52	50	70.860000	17.192796	78.000000	44.000000	100.000000
Q53	50	70.640000	17.786443	72.500000	22.000000	100.000000
Q54	50	86.740000	10.221774	100.000000	22.000000	100.000000
Q6	50	79.380000	14.454559	83.000000	8.000000	100.000000
Q61	50	91.820000	19.506870	100.000000	0	100.000000
Q62	50	94.700000	16.927517	100.000000	0	100.000000
Q63	50	74.500000	22.345387	72.500000	33.000000	100.000000
Q64	50	56.660000	25.607405	67.000000	0	100.000000
Q7	50	84.160000	16.274804	89.000000	11.000000	100.000000
Q71	50	81.400000	23.499891	100.000000	33.000000	100.000000
Q72	50	84.980000	21.119186	100.000000	0	100.000000
Q73	50	86.320000	23.199613	100.000000	0	100.000000
EI	185	110.275676	25.615355	113.000000	53.000000	157.000000
SN	185	100.654054	31.591986	103.000000	37.000000	151.000000
TF	185	82.621622	21.466039	83.000000	21.000000	135.000000
JP	185	81.356757	26.951290	75.000000	45.000000	159.000000

The SAS System

Univariate Procedure

Variable=T1

Moments

N	73	Sum Wgts	73
Mean	72.12329	Sum	5265
Std Dev	10.0415	Variance	100.8318
Skewness	-0.4529	Kurtosis	-0.05192
USS	386989	CSS	7259.89
CV	13.92269	Std Mean	1.175269
T:Mean=0	61.36746	Pr>|T|	0.0001
Num ^= 0	73	Num > 0	73
M(Sign)	36.5	Pr>=|M|	0.0001
Sgn Rank	1350.5	Pr>=|S|	0.0001
W:Normal	0.970361	Pr<W	0.2438

Quantiles(Def=5)

100% Max	91	99%	91
75% Q3	79	95%	86
50% Med	74	90%	85
25% Q1	65	10%	59
0% Min	43	5%	54
		1%	43
Range	48		
Q3-Q1	14		
Mode	68		

Extremes

Lowest	Obs	Highest	Obs
43(	112)	86(	53)
51(	193)	86(	147)
51(	44)	86(	170)
54(	190)	91(	166)
57(	186)	91(	232)

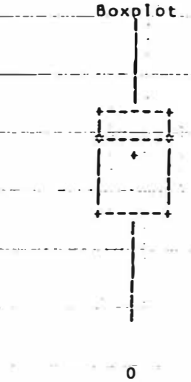
Missing Value .

Count 163

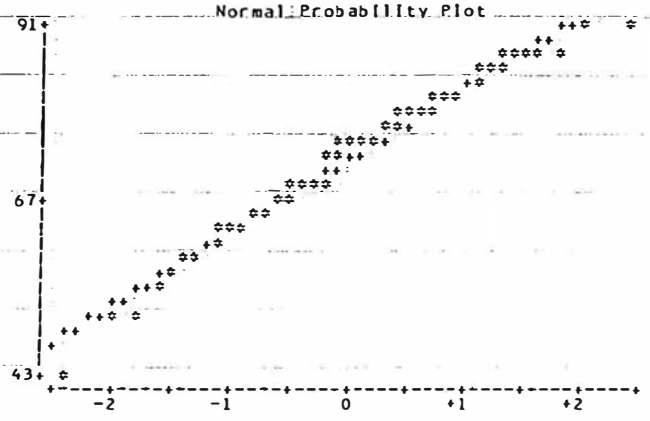
% Count/Nobs 69.07

Stem	Leaf	#
90	00	2
88		
86	00000	5
84	000	3
82	0	1
80	0000000	7
78	0000000	7
76	000	3
74	00000000000	11
72	000	3
70		
68	000000000	9
66	000	3
64	0000	4
62	00000	5
60	0	1
58	0000	4
56	0	1
54	0	1
52		
50	00	2
48		
46		
44		
42	0	1

Boxplot



Normal Probability Plot



Univariate Procedure

Variable=AGE

Moments

N	236	Sum Wgts	236
Mean	46.5728	Sum	10991.18
Std Dev	10.66674	Variance	113.7794
Skewness	0.882723	Kurtosis	0.015815
USS	538628.3	CSS	26738.16
CV	22.90337	Std Mean	0.694346
T:Mean=0	67.07436	Pr>|T|	0.0001
Num ^= 0	236	Num > 0	236
M(Sign)	118	Pr>=|M|	0.0001
Sgn Rank	13983	Pr>=|S|	0.0001
W:Normal	0.904266	Pr<W	0.0001

Quantiles(Def=5)

100% Max	79.88227	99%	73.25394
75% Q3	53.09514	95%	68.47365
50% Med	43.9822	90%	62.52704
25% Q1	38.2423	10%	35.04449
0% Min	31.46064	5%	33.59617
Range	48.42163	1%	32.45996
Q3-Q1	14.85284		
Mode	36.06297		

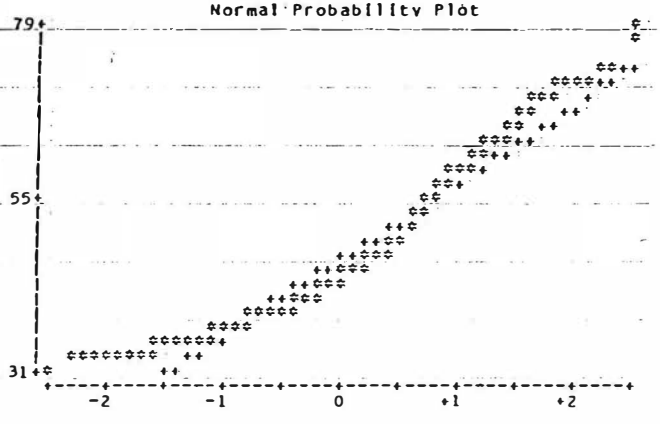
Extremes

Lowest	Obs	Highest	Obs
31.46064(	185)	71.86311(	193)
31.70431(	18)	72.85421(	114)
32.45996(	16)	73.25394(	118)
32.46543(	20)	77.81246(	167)
32.62423(	97)	79.88227(	112)

Stem	Leaf	#
78	9	1
76	8	1
74		
72	93	2
70	8669	4
68	05689	5
66	272	3
64	4589	4
62	14555674	8
60	002567	6
58	12880567	8
56	8012336	7
54	23557367	8
52	04668	5
50	0446806	7
48	3672223346777	13
46	00144555689012344678	20
44	0122555680114468	16
42	00035679133478889 9	18
40	000333557990013345779	21
38	00112222233333444558880 1223389	29
36	11133445590025678 99	19
34	233445668901145588	18
32	55668334566	11
30	57	2

Boxplot

Normal Probability Plot



Univariate Procedure

Variable=TF

Moments

N	236	Sum Wgts	236
Mean	84.32203	Sum	19900
Std Dev	22.05636	Variance	486.4831
Skewness	0.076149	Kurtosis	-0.313
USS	1792332	CSS	114323.5
CV	26.15729	Std Mean	1.435747
T:Mean=0	58.73043	Pr>|T|	0.0001
Num ^= 0	236	Num > 0	236
M(Sign)	118	Pr>=|M|	0.0001
Sgn Rank	13983	Pr>=|S|	0.0001
W:Normal	0.980526	Pr<W	0.3064

Quantiles(Def=5)

100% Max	139	99%	133
75% Q3	99	95%	121
50% Med	83	90%	115
25% Q1	69	10%	57
0% Min	21	5%	47
Range	118	1%	43
Q3-Q1	30		
Mode	81		

Extremes

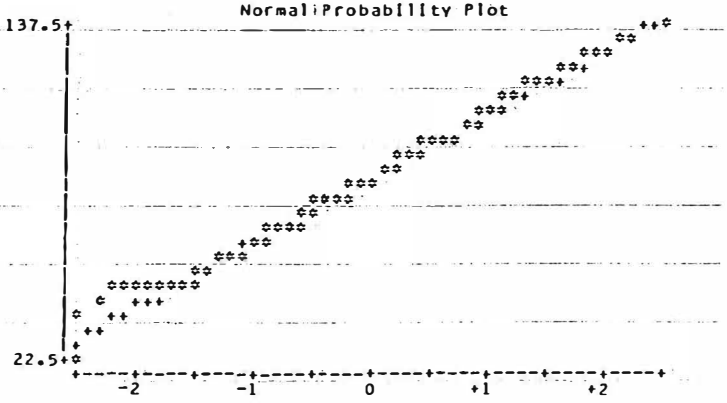
Lowest	Obs	Highest	Obs
21(	111)	131(	212)
35(	31)	133(	32)
43(	48)	133(	236)
45(	198)	135(	108)
45(	190)	139(	45)

Stem Leaf # Boxplot

```
  13 59                2
  13 133               3
  12 9999              4
  12 11133             5
  11 5555779999       10
  11 11111333          8
  10 555577999999     11
  10 111133333         9
   9 55555557777777799999999999  26
   9 11111113333333333 18
   8 555577777777779999 17
   8 11111111111133333333 21
   7 55555555777777777999999999999 28
   7 11111113333       11
   6 5577777779999999999 18
   6 111333333          9
   5 577777777779999   15
   5 11133              5
   4 5555555779999     13
   4 3                  1
   3 5                  1
   3
   2
   2 1                  1
```

Multiply Stem.Leaf by 10**+1

Normal Probability Plot



Appendix G

MCV Associated Physicians
Faculty Board Certification Status
April, 1995

DEPARTMENT	NUMBER OF FACULTY BOARD CERTIFIED (or ELIGIBLE)		
	YES	NO	TOTAL
Anesthesiology	29	7	36
Dermatology	5	0	5
Family Practice	6	1	7
Human Genetics	6	1	7
Internal Medicine	168	20	188
Neurology	20	1	21
Obstetrics and Gynecology	19	7	26
Ophthalmology	7	0	7
Oral Pathology	5	1	6
Oral Surgery	5	1	6
Orthopaedics	8	1	9
Otolaryngology	14	0	14
Pathology	22	4	26
Pediatrics	50	0	50
Preventive Medicine	1	0	1
Psychiatry	28	44	72
Radiation Oncology	8	0	8
Radiology	42	3	45
Rehabilitative Medicine	10	3	13
Surgery	37	13	50
TOTALS	489	108	597

Vita