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## DO HOSPITAL RISK MANAGEMENT PROGRAMS MAKE A DIFFERENCE?: RELATIONSHIPS BETWEEN RISK MANAGEMENT PROGRAM ACTIVITIES AND HOSPITAL MALPRACTICE CLAIMS EXPERIENCE

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### I

#### INTRODUCTION

The past decade has been characterized by rapid to explosive growth in the frequency and size of payments for medical malpractice claims, as well as in the premiums paid for professional liability insurance.<sup>1</sup> The resulting impact on many physicians and health care institutions has been profound.

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1. See generally Patricia M. Danzon, *The Frequency & Severity of Medical Malpractice Claims: New Evidence*, 49 L. & Contemp Probs 57 (Spring 1986). See also Stephen Zuckerman, Christopher F. Koller & Randall R. Bovbjerg, *Information on Malpractice: A Review of Empirical Research on Major Policy Issues*, 49 L. & Contemp Probs 85, 91-92 (Spring 1986).

Approximately 80 percent of medical malpractice claims—and virtually all of the most serious claims—result from adverse incidents in hospitals.<sup>2</sup> Moreover, accumulating evidence suggests that filed claims represent only a portion of adverse events in hospitals that are attributable to negligence as legally defined.<sup>3</sup> These patterns have generated increasing interest among policymakers and the health care community in the potential of hospital-based clinical risk management programs for improving quality and for the prevention and control of malpractice claims.

As an example, reports by the American Hospital Association's Medical Malpractice Task Force,<sup>4</sup> the United States General Accounting Office,<sup>5</sup> and the United States Department of Health and Human Services' Task Force on Medical Liability and Malpractice<sup>6</sup> have called for the expansion and strengthening of hospital risk management programs. The Joint Commission on Accreditation of Healthcare Organizations ("JCAHO") now requires hospitals seeking accreditation to have programs linking quality assurance and patient care to clinical risk management activities.<sup>7</sup> In addition, ten states (including Maryland, the focus of this article) now mandate some form of hospital risk management as a condition of licensure.<sup>8</sup>

## II

### STUDY OBJECTIVES

Although hospital risk management programs are regarded by many as one of the most promising responses to the medical malpractice crisis, such programs for the most part have not been subjected to formal evaluation regarding their effectiveness in loss control and/or loss prevention.<sup>9</sup> To a great extent, this is attributable to the recency of many programs, the amount of time required for malpractice claims to emerge and be resolved (sometimes

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2. See Nat'l Ass'n Ins Commissioners, *Malpractice Claims: Medical Malpractice Closed Claims, 1975-1978*, 303 (NAIC, 1980) ("NAIC, *Closed Claims*"); US Gen Acct'g Office, *Medical Malpractice: Characteristics of Claims Closed in 1984*, 24 (April 1987) ("*Characteristics of Claims Closed*").

3. See, for example, Harvard Medical Practice Study, *Patients, Doctors, and Lawyers: Medical Injury, Malpractice Litigation, and Patient Compensation in New York* 7-1 (Harvard U Press 1990) (suggesting that only one of eight incidents of malpractice result in the filing of a claim based on New York statistics) ("*Harvard Study*"); Patricia M. Danzon, *Medical Malpractice: Theory, Evidence and Public Policy* 19 (Harvard U Press, 1985) (suggesting that only one of ten incidents of malpractice result in the filing of a claim based on California statistics); See also NAIC, *Closed Claims* at 119-21 (cited in note 2). See generally Don Harper Mills, ed, *California Medical Association and California Hospital Association Report on the Medical Insurance Feasibility Study* (Sutter, 1977) ("*California Feasibility Study*").

4. See generally Am Hosp Ass'n, *Medical Malpractice Task Force Report on Tort Reform and Compendium of Professional Liability Early Warning Systems for Health Care Providers* (Am Hosp Ass'n, 1986). See also *Harvard Study* at 9-8 to 9-9 (cited in note 3).

5. US Gen Acct'g Office, *Health Care Initiatives in Hospital Risk Management* 1 (July 1989) ("*Health Care Initiatives*"); US Gen Acct'g Office, *Medical Malpractice: A Framework for Action* 35 (May 1987) ("*A Framework for Action*").

6. US Department of Health and Human Services, *Report of the Task Force on Medical Liability and Malpractice* 26 (August 1987) ("*HHS, Medical Liability and Malpractice*").

7. Joint Commission on Accreditation of Health Care Organizations, *Accreditation Manual for Hospitals* 84-85 (1989).

8. US Gen Acct'g Office, *Health Care Initiatives* at 20 (cited in note 5).

9. *Id* at 43; HHS, *Medical Liability and Malpractice* at 180-86 (cited in note 6).

years after the clinical incident generating the claim), and the consequent length of time necessary to demonstrate a program's impact on the frequency of liability claims and the amount of awards and settlements.

To some degree, these issues can be addressed through the examination of data available for acute-care general hospitals in Maryland. In this analysis, information on risk management programs collected through surveys during the early 1980s has been combined with data from a study on the malpractice claims experience of Maryland health care providers during the past decade in order to investigate (1) the types of claims arising out of hospital-based incidents; (2) the frequency with which the hospital is named as a defendant in these incidents; (3) the frequency with which the hospital is found liable; and (4) the relationship between clinical risk management activities and hospital malpractice claims experience.

### III

#### BACKGROUND

Although legislatures and regulators increasingly are mandating risk management program activities, much of the impetus for involvement in these efforts has come from insurers and from hospitals themselves as their increased exposure to malpractice claims, with the consequent increase in the cost of liability insurance coverage, has become more apparent. Throughout most of our legal history, the majority of hospitals have been considered charitable enterprises, and, as such, they were immune from legal suits stemming from patient injuries.<sup>10</sup> Furthermore, hospitals were regarded by the courts as having little control over, and consequently little responsibility for, the quality of medical services provided to their patients.<sup>11</sup>

Since the late 1950s, however, courts have extended the legal responsibilities of the hospital beyond ensuring the quality of the physical facilities and equipment.<sup>12</sup> Under the legal doctrine of respondeat superior, hospitals were held accountable for the negligent acts of employees and agents.<sup>13</sup> More recent court decisions have expanded the hospital's direct obligation to ensure not only a proper level of hospital management and operations, and the appropriate conduct of employees and agents, but also

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10. One of the leading early decisions establishing immunity for hospitals was *McDonald v Mass Gen'l Hosp.*, 120 Mass 432 (1876). Note also that such reasoning survived well in the first half of this century. See, for example, *Howard v South Baltimore Gen'l Hosp.*, 191 Md 617, 618-19, 62 A2d 574, 575 (1948).

11. See generally William J. Curran, *A Further Solution to the Malpractice Problem: Corporate Liability and Risk Management in Hospitals*, 310 New Eng J Med 704 (1984).

12. The landmark case in this area was *Bing v Thunig*, 2 NY2d 656, 163 NYS2d 3, 143 NE2d 3 (1957), in which the court ruled that a hospital could be held responsible for the actions of its employees (in this case, its nurses).

13. See, for example, *Mehlman v Powell*, 281 Md 269, 272-74, 378 A2d 1121, 1123-24 (1977).

the clinical competence and performance of all practitioners granted clinical privileges.<sup>14</sup>

Another factor cited for the increasing vulnerability of hospitals has been the legal concept of joint and several liability, still utilized in the majority of states.<sup>15</sup> Under this concept, any one of the defendants in a multi-defendant suit, even if only marginally involved, may be required to pay the full amount of the award if codefendants are unable to pay. When this rule applies, hospitals may be perceived as "deep pocket" defendants, since they typically carry higher limits of liability coverage than individual members of their medical staffs. In addition, there is the perception, as well as some empirical evidence, that corporate defendants are likely to be required to pay more than individual defendants in similar cases, particularly in cases involving severely injured plaintiffs.<sup>16</sup> Some argue that this pattern is the result of a desire by many courts to use tort law to facilitate the transfer of assets from "deep pocket" defendants to injured or ill persons.<sup>17</sup>

Whatever the exact constellation of precipitating factors, during the 1980s, the liability environment had a profound impact on many hospitals. During the three-year period from 1983-85, for example, total hospital malpractice insurance costs increased 57 percent, from \$849 million to \$1.336 billion, while the average cost per inpatient day increased by 85 percent, from \$3.02 to \$5.60.<sup>18</sup>

Some hospitals have reacted to increasing malpractice problems by eliminating or curtailing higher risk services such as obstetrics.<sup>19</sup> Such a strategy, however, reduces hospital admissions and revenues, and may limit community access to needed services. A second and more common approach has been to increase malpractice insurance coverage limits and/or alter the form of coverage—most often to a combination of purchased and self-insurance.<sup>20</sup> These changes—particularly during the mid-1980s—usually

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14. See Arthur F. Southwick, *The Law of Hospital and Health Care Administration* 578-80 (Health Admin Press, 2d ed 1988). See also Curran, 310 New Eng J Med at 704 (cited in note 11); William F. Jessee, *Quality of Care Issues for the Hospital Trustee*, 4-5 (Hosp Res & Educational Trust, 1984).

Some important examples in this area include *Darling v Charleston Comm. Mem. Hosp.*, 33 Ill2d 326, 211 NE2d 283 (1965) (holding the hospital liable for the acts of all physicians permitted to practice in the hospital, regardless of financial relationship, including unpaid voluntary medical staff); *Purcell v Zimbelman*, 18 Ariz App 75, 500 P2d 335 (1972) (holding that failure of the hospital to take action against a physician for previous instances of malpractice was admissible to show negligence); *Johnson v Misericordia Comm. Hosp.*, 99 Wis 2d 708, 301 NW2d 156 (1981) (holding the hospital liable for failure to properly evaluate the qualifications and background of a physician-applicant); *Elam v College Park Hosp.*, 132 Cal App 3d 332, 183 Cal Rptr 156 (1982) (holding hospital liable for the acts of staff physicians who were neither employees nor agents).

15. US Gen Acct'g Office, *A Framework for Action* at 22 (cited in note 5).

16. See Audrey Chin & Mark A. Peterson, *Deep Pockets, Empty Pockets: Who Wins in Cook County Jury Trials* vii, 44-46 (RAND, 1985).

17. Tort Policy Working Group, *An Update on the Liability Crisis* 54-55 (Gov't Printing Office, 1987) (1987-181-487: 60075).

18. US Gen Acct'g Office, *Medical Malpractice: Insurance Costs Increased but Varied Among Physicians and Hospitals* 39-40 (September 1986) ("Insurance Costs").

19. Institute of Medicine, *Medical Professional Liability and the Delivery of Obstetrical Care* 47 (Nat'l Acad Press, 1989).

20. US Gen Acct'g Office, *Insurance Costs* at 52-55 (cited in note 18).

resulted in more expenses paid for liability coverage during a period when both patient admissions and revenues were falling. A third strategy has been to institute management programs that have the potential for controlling hospital risk and perhaps preventing malpractice claims.<sup>21</sup>

Hospital risk management is a systematic program designed to reduce preventable injuries and accidents and minimize financial loss to the institution. Traditionally, these programs in many hospitals have concentrated on maintaining and improving facilities and equipment as well as protecting employee, visitor and patient safety. It has become increasingly clear, however, that the greatest risk of claims against hospitals comes from patient care in clinical areas such as general surgery and obstetrics. This recognition has broadened the traditional focus to include activities designed to identify, evaluate, and reduce the risk of patient injury associated with clinical care.<sup>22</sup>

Some of the primary objectives of clinical risk management programs are: (1) to reduce the frequency of preventable adverse occurrences that lead to liability claims through maintaining or improving the quality of care; (2) to reduce the probability of a claim being filed after an adverse event has occurred through the prompt identification and follow-up of maloccurrences; and (3) to help control the costs of those claims that do emerge through early identification and intervention with the patient and/or family.<sup>23</sup> Orlikoff and Vanagunas emphasize the preventive aspects of risk management, which they conceptualize as a sequence of the following steps: preventing the patient or other party from being suit-prone; preventing the patient from being injured iatrogenically; preventing the patient from filing a malpractice claim; preventing a filed claim from proceeding to litigation; and preventing the hospital's loss of a lawsuit.<sup>24</sup>

Key to clinical risk management programs are methods for identifying adverse patient events, resulting in early warning systems. These methods constitute a variety of approaches for flagging incidents that under optimal conditions are not a normal consequence of a patient's disease or treatment<sup>25</sup> and that may (but do not necessarily) represent or result from a provider's breach of the standard of care or duty owed to the patient.

Such early warning systems are critical for at least two reasons. First, they make possible early investigation and intervention, enabling hospital personnel to avoid or at least diminish the likelihood of adverse consequences and potential liability exposure. Second, the information provided by such

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21. US Gen Acct'g Office, *Health Care Initiatives* at 10 (cited in note 5).

22. James E. Orlikoff & Audrey M. Vanagunas, *Malpractice Prevention and Liability Control for Hospitals* 34 (Am Hosp Pub, 2d ed 1988); Ruth Kilduff, *Clinical Risk Management—A Practical Approach* ix-xi (Interqual, 1985).

23. US Gen Acct'g Office, *Health Care Initiatives* at 1 (cited in note 5).

24. Orlikoff & Vanagunas, *Malpractice Prevention and Liability Control for Hospitals* at 36-37 (cited in note 22).

25. *Id.*

reporting systems allows for the creation of databases that may help in the identification of strategies to prevent repeated maloccurrences.<sup>26</sup>

The most common early warning systems for the most part rely on occurrence (that is, clinical incident) reporting and/or occurrence screening for adverse event detection. In occurrence *reporting*, criteria serve as guidelines for defining specific adverse events that must be reported by physicians and/or hospital staff either at the time they are observed or shortly thereafter. Examples of such criteria might include the unplanned return of a patient to the operating room, a medication error requiring intervention, or patient seizures during or within twelve hours of an invasive procedure. By contrast, occurrence *screening* techniques flag adverse events through review of either all or a percentage of medical charts, utilizing generic criteria (such as the presence of hospital-acquired infection or medication error) and/or specialty or service-specific criteria (such as incorrect sponge count during surgery) for more focused review.<sup>27</sup> Substantial efforts during the past decade have been invested in the development of both generic and focused criteria for reporting and screening systems,<sup>28</sup> and there is a growing amount of literature documenting and comparing the effectiveness of various approaches.<sup>29</sup>

Also emphasized in the risk management literature is the importance of organizational structure and the commitment of key groups.<sup>30</sup> Craddick, for example, emphasizes that occurrence screening identifies much useful information, but the effort will not be effective if there is no strong organizational structure for dealing with the information.<sup>31</sup> The participation of physicians, support from clinical chiefs of service—particularly those in the high risk areas of surgery, emergency services, and obstetrics—cooperation between risk management and quality assurance program staff, and strong oversight and commitment of resources by the governing board are all regarded as critical elements for program success.<sup>32</sup>

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26. Id at 55.

27. Id at 60-67.

28. Id; Mills, ed, *California Feasibility Study* at 21-34 (cited in note 3); Joyce W. Craddick, *The Medical Management Analysis System: A Professional Liability Warning Mechanism*, in Greg Chapman-Cliburn, ed, *Risk Management and Quality Assurance: Issues and Interactions* 64-70 (Jt Comm'n on Accreditation of Hospitals, 1986) ("Issues and Interactions").

29. See Joyce W. Craddick, *Medical Management Analysis in 1986*, in Chapman-Cliburn, ed, *Issues and Interactions* at 72 (cited in note 28); Audrey M. Vanagunas & Natalie Halleen, *Chicago Hospital Risk Pooling Program Completes Study of Concurrent Monitoring*, 1 Occurrence 1-4 (January-March 1986).

30. It should also be noted that aggressive risk management activities with high levels of medical staff involvement are dependent on state statutes that ensure immunity from liability for "good faith peer review activities" and that provide protection from discovery for peer review materials and proceedings. See Orlikoff & Vanagunas, *Malpractice Prevention and Liability Control for Hospitals* at 60 (cited in note 22).

31. See Craddick, *Medical Management Analysis in 1986* at 73 (cited in note 29).

32. See Kilduff, *Clinical Risk Management* at 33-46 (cited in note 22); Craddick, *Medical Management Analysis in 1986* at 73 (cited in note 29). See generally Glenn T. Troyer & Steven L. Salman, *Handbook of Health Care Risk Management* (Aspens Systems Corp, 1986); Md Hosp Educ Inst, *Reference File No. 11: Application of Occurrence Screening to Performance-Based Credentialing* (1986) ("Application of Occurrence Screening").

## IV

## STUDY METHODS

## A. Rationale for the Study Design

The major objective of the study was to explore possible relationships between clinical risk management activities and the malpractice claims experience of Maryland hospitals. As noted previously, these relationships are difficult to assess because the length of time often is considerable between the incident and the emergence of a formal claim. In addition, a substantial amount of time may be required before the final outcome of the claims resolution process is apparent.

In Maryland, the statute of limitations for filing a malpractice claim is five years from the time of injury or three years from the date of its discovery.<sup>33</sup> During the past decade, an average of 24.5 months has elapsed between the incident and the filing of a formal claim, and claims have required an average of 21.4 months to resolve.<sup>34</sup> These patterns are similar to the national experience.<sup>35</sup> In order to accommodate these time considerations in the study design, it was decided to utilize the earliest systematic information available on hospital risk management activities—a 1980 survey of all hospitals in the state conducted by the Maryland Hospital Education Institute (“MHEI”), a not-for-profit affiliate of the state hospital association. The professional liability experience of each hospital was assessed from data available on claims arising out of hospital-based incidents that occurred beginning in 1980 and completely resolved by the end of 1987. The majority of these claims were the result of incidents occurring in 1980 and 1981. The analysis also attempted to consider hospital differences in exposure to the risk of malpractice claims attributable to variability in the number of higher risk procedures and admissions.

## B. Sources of Data

1. *Independent Variables: Risk Management Activities.* Questionnaires eliciting information on quality assurance and risk management (“QA/RM”) activities were sent to all MHEI member hospitals in June of 1980, with instructions that the form be completed by the chief executive officer or a designee.

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33. Md Cts & Jud Proc Code Ann § 5-109 (Michie, 1989). The discovery rule holds that a cause of action accrues at the time the claimant first knew or reasonably should have known of the alleged wrong. For cases applying the discovery rule, see *Hill v Fitzgerald*, 304 Md 689, 699-700, 501 A2d 27, 32-33 (1985); *Russo v Ascher*, 76 Md App 465, 470-471, 545 A2d 714, 716-717 (1988). Note also that the filing limits of § 5-109 are tolled if fraud was involved in preventing the claimant from discovering the existence of a claim. See Md Cts & Jud Proc Code Ann §§ 5-109(f), 5-203. During the time period of the study, time limitations began to apply at age sixteen for incidents involving minors as injured parties.

34. Laura L. Morlock & Faye E. Malitz, *Nonbinding Arbitration of Medical Malpractice Claims: A Decade of Experience with Pretrial Screening Panels in Maryland* 26, Table 7 (1988) (“Nonbinding Arbitration”) (working paper).

35. NAIC, *Closed Claims* at 22-24 (cited in note 2); US Gen Acct’g Office, *Characteristics of Claims Closed* at 32-33 (cited in note 2).

Included in the survey were questions regarding the role of the governing board in QA/RM, whether a formal risk management program existed, who had responsibility for monitoring incident reports, hospital policies and procedures regarding the handling of untoward medical incidents, and the types of QA/RM educational programs conducted in the hospital. For each QA/RM program activity, respondents were asked to indicate whether the program component "exists now," is "in planning," or "neither exists nor is planned."

Forty-seven hospitals returned usable questionnaires. In order to limit the analysis to a relatively homogeneous sample, responses were utilized only from the group of forty general acute care medical/surgical hospitals.<sup>36</sup> These represented 82 percent of all such institutions in the state.

2. *Dependent Variables: Malpractice Claims Experience.* Information on formally filed malpractice claims arising from incidents in these forty hospitals was available from the files of the Maryland Health Claims Arbitration Office ("HCAO") and district courts in the twenty-four Maryland jurisdictions. Information on claims settled privately, either prior to filing or during the formal claims resolution process, was available for thirteen insurance carriers providing approximately 85 percent of the professional liability insurance coverage in the state during the study period. These sources of data are discussed in more detail below.

a. *Health claims arbitration and court files.* Since the 1970s, Maryland has had a mandated<sup>37</sup> procedure requiring that prior to court filing, all health care malpractice claims in excess of \$5000<sup>38</sup> must be submitted to the HCAO, where they may be heard by a three-person panel consisting of a health care provider, a layperson, and an attorney who serves as panel chairperson.<sup>39</sup> Panels have the authority both to determine defendant liability and to award damages if appropriate. The office functions as a pretrial screening mechanism since arbitration is nonbinding; once a panel decision has been reached, an appeal to the appropriate jurisdictional court may be made by either party for a *trial de novo*.<sup>40</sup> Within the courts, however, panel determinations carry a rebuttable presumption of correctness regarding both liability and damages.<sup>41</sup>

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36. One orthopedic hospital was included because, unlike other types of specialty institutions, orthopedic hospitals appear to experience claims at about the same rate as general hospitals.

37. The arbitration procedure is technically "waivable" by consent of both parties for claims filed after 1986. Note, however, that between 1986 and 1990, only 3-4% of claims were actually waived. This small percentage may be due to the fact that waived claims (unlike those going through arbitration) receive no priority assignment for trial such that parties may not actually save any time by waiving arbitration.

38. The amount is set in order to conform to the limit required for filing claims in a district court. This amount was changed in 1987 to \$10,000.

39. Md Cts & Jud Proc Code Ann §§ 3-2A-02(a), 04 & 05.

40. Id at § 3-2A-06.

41. Id at § 3-2A-06(d). For general discussions of the Maryland medical malpractice statute, see Kevin A. Quinn, *The Health Care Malpractice Claims Statute: Maryland's Response to the Medical Malpractice*

Analysis of all Maryland malpractice claims closed during 1977-85 by the thirteen liability insurers indicated that 56 percent of all claims filed against health care providers were resolved without filing at the HCAO.<sup>42</sup> Of those claims filed, one-third were dismissed, usually at the request of the claimant, about 40 percent were settled privately prior to a formal disposition, and 25 percent received a formal panel hearing. About one-quarter (23 percent) of those cases completing a formal hearing have been appealed and tried to verdict in the court system.

Included in this analysis is information on the outcomes of cases filed at the HCAO arising from 487 incidents that occurred during or after 1980 in the forty study hospitals, and that had been disposed of by the end of 1985 at the HCAO and by the end of 1987 in the court system. The majority (70 percent) of these claims resulted from incidents during 1980 and 1981; an additional 18 percent resulted from occurrences during 1982. Also included was the number of claims arising from incidents in each of the study hospitals during this period that were still unresolved.

Information on the HCAO cases and the court appeals was aggregated to the hospital level in order to construct indices for each of the forty hospitals regarding the total number of open and closed claims, the number of claims filed at HCAO but settled privately with payment, the number of claims that received a formal hearing with a panel decision for the claimant, and the total amount awarded for all claims found in favor of the claimant (including appealed cases). For each hospital, indices were created on these dimensions utilizing all claims arising out of incidents in the hospital, and then additional parallel indices were constructed utilizing only the subset of claims in which the hospital was formally named as a defendant.

b. *Closed claims data from liability insurers.* Payment information for claims settled privately without recourse to the legal system was made available by the Medical Mutual Liability Insurance Society of Maryland ("Med Mutual"), which insured about half of all practicing physicians in the state during the study period. Similar information from the closed claim reports of twelve other liability insurers was made available by the Office of the Insurance Commissioner.

These combined sources provided payment information on claims settled prior to filing at the HCAO that resulted from 504 incidents in the forty hospitals during or after 1980. Fifty-six percent of the incidents occurred during 1980-81, and an additional 24 percent occurred in 1982. Payment information also was available from these sources on claims filed at the HCAO that were settled privately between parties prior to a formal hearing. This data also was aggregated by hospital to derive indices of total payment amounts for privately settled claims.

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*Crisis*, 10 U Balt L Rev 74 (Winter 1980); Kenneth S. Abraham, *Medical Malpractice Reform: A Preliminary Analysis*, 36 Md L Rev 489 (1977).

42. Morlock & Malitz, *Nonbinding Arbitration* at 25 (cited in note 34).

3. *Control Variables: Adjustments for Hospital Exposure to Risk.* Both Maryland and national data indicates that hospital related claims are most likely to result from incidents during surgical and obstetrical procedures and from occurrences in the emergency department and patient rooms.<sup>43</sup> Volume information was obtained for the study hospitals from quarterly reports during 1980-82 to the Maryland Health Services Cost Review Commission regarding the number of surgical minutes (that is, total amount of time operating suites were in use), the number of obstetrical procedures, and the number of emergency department visits. Hospitals were ranked on each of these dimensions, and the three ranks were averaged to form a combined indicator of the likelihood that a claim would be filed (hereinafter, "exposure to claim risk"). Hospital size (average number of beds set up and staffed during 1980-82) was taken into consideration by dividing each of the malpractice claims experience indicators by the number of staffed beds.

In summary, the analysis examined relationships between hospital risk management programs in place by 1980 and multiple indicators of subsequent hospital malpractice claims experience, while statistically adjusting for differences in hospital exposure to claim risk as measured by bed size, amount of surgery performed, number of obstetrical procedures, and total numbers of emergency department visits.

### C. Strengths and Limitations of the Study Design

It should be noted that there are corresponding strengths and limitations associated with each of the major features of the study design. One major strength is the long follow-up period, which allows for the emergence and resolution of the majority of claims resulting from incidents relatively close in time to when the independent variables—the risk management program activities—were measured. The corresponding disadvantage, however, is that, by definition, the study design entails an historical analysis of risk management programs. These have to be considered the initial efforts of innovators or early adopters; they do not necessarily represent what currently would be regarded as state of the art in clinical risk management strategies.

A second design feature that offers significant advantages is the inclusion of hospitals in only one relatively small state. This approach facilitates comparisons of the malpractice claims experiences of hospitals both with and without particular risk management program components by, in effect, holding constant a myriad of legal, regulatory and other factors affecting hospitals, physicians and claimants in malpractice actions. In addition, during the time period examined, 80 percent of the study hospitals had the same broker and insurer. Confining the analysis to only one state, however, obviously may limit the extent to which the study results may be generalized.

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43. See NAIC, *Closed Claims* at 336-38 (cited in note 2); US Gen Acct'g Office, *Characteristics of Claims Closed* at 54 (cited in note 2); Morlock & Malitz, *Nonbinding Arbitration* at 16, Table 3 (cited in note 34).

A third strength is the availability of patient volume information that may be included in the analysis as a statistical control for indicating a hospital's exposure to claim risk. It must be emphasized, however, that this is a new area of inquiry, and there is little in the literature to provide guidance on what would be the most appropriate patient mix, case mix, or staff mix risk adjustments for indicators of hospital malpractice claims experience.

## V

### RESULTS

#### A. Hospital Risk Management Programs

Survey responses from the forty hospitals regarding their risk management activities in 1980 are displayed in Table 1. Fourteen hospitals indicated the existence of a governing board committee with oversight responsibility for both quality assurance and risk management. One additional hospital had a separate committee with oversight responsibility for risk management only. (The remaining hospitals had board committees only for quality assurance oversight.) In 17 hospitals (43 percent), governing boards received regular reports for review and comment either on RM activities or combined reports on QA/RM efforts.

Twelve hospitals reported that they had a written risk management program description that included risk detection, evaluation, and prevention. In fourteen hospitals, program responsibility had been assigned to a full or part-time risk manager, and a separate risk management committee with regularly scheduled meetings had been established. In ten of these hospitals, the risk manager also was a member of the quality assurance committee, an approach utilized frequently to help coordinate QA/RM activities. Virtually all (95 percent) of the hospitals indicated that incident reports were sent to a central office, committee, or person who decided whether the incident was "serious" and required further attention. There was considerable variation, however, with regard to which person or office had this responsibility; most frequently mentioned were an associate or assistant administrator or a hospital vice-president.

Hospital policies and procedures regarding adverse clinical incidents were ascertained by asking respondents to indicate which, if any, of a series of statements described their hospital's policy or procedure for handling an untoward medical incident, such as a surgeon accidentally lacerating an organ while performing surgery and then immediately repairing the laceration. The majority of hospitals (73 percent) responded that a nurse or other employee would be required to file an incident report, while fifteen hospitals (38 percent) indicated that the physician involved would be required by hospital policy/procedure to file such a report. In about half (55 percent) of the hospitals, the chief of the department would be routinely notified of the incident. In fifteen hospitals (38 percent), policy dictated that a committee including physicians would evaluate the incident, determine if further action

was necessary, and recommend or take such action. Only five hospitals reported that formal policy or procedure indicated whether or not the patient or family should be informed of the error. Twice as many hospitals, however, had a policy or procedure indicating who had responsibility for informing the patient or family of the incident if they were so informed.

TABLE I  
RISK MANAGEMENT PROGRAM ACTIVITIES OF 40 MARYLAND HOSPITALS

Risk Management (RM) Program Activity	Hospitals with Program Activity	
	Number	Per Cent
<u>Role of Governing Board</u>		
Board oversight committee for RM or QA/RM	15	38%
Receives regular RM or QA/RM reports	17	43%
<u>Risk Management Program Structure</u>		
Written program description, including risk detection, evaluation and prevention	12	30%
RM responsibility assigned to full time or part time risk manager	14	35%
Separate RM committee which meets regularly	14	35%
Risk manager a member of the QA committee	10	25%
Incident reports are monitored by a central office, committee or person	38	95%
Incident reports sent to VP or asst. administrator	15	38%
<u>Policies for Handling Medical Incidents</u>		
MD required to file incident report	15	38%
Nurse or other employee required to file incident report	29	73%
Clinical chief is notified of the incident	22	55%
Committee including MDs will evaluate the incident and determine if action necessary	15	38%
Hospital policy indicates whether or not patient/family should be informed of error	5	13%
Hospital policy indicates who has responsibility to inform patient/family	10	25%
<u>In-hospital QA/RM Educational Programs</u>		
Physician responsibilities in QA/RM	22	55%
Nurse's responsibilities in QA/RM	16	40%
Informed consent	15	38%
How to analyze incident reports to identify serious incidents and patterns	14	35%
Right and wrong ways to write incident reports for nurses and other non-MDs	11	28%
Safe use of medical devices	8	20%

The survey also requested information on whether in-hospital educational seminars were conducted on various types of quality assurance and risk management topics. Hospitals were most likely to report offering programs on physician responsibilities in QA/RM (55 percent). At least one-third of the hospitals also indicated that programs were conducted on nurses'

responsibilities in QA/RM, informed consent issues, and methods for analyzing incident reports in order to identify serious incidents and patterns indicative of potential problems.

### B. Types of Hospital Incidents Resulting in Malpractice Claims

The location within the hospital where incidents were most likely to occur are displayed in Table 2. Analysis of formally filed claims arising from incidents in the forty hospitals during this period indicates that episodes were most likely to have occurred in operating suites (39 percent), emergency departments (23 percent), patient rooms (17 percent), labor-delivery suites (12 percent) and radiology departments (4 percent). A hospital was named as one of multiple defendants for 62 percent of these claims, was the only defendant in 10 percent, and was not named as a defendant in 28 percent (Table 2). Hospitals were least likely to be named as a defendant in claims resulting from operating room incidents and most likely to be the only defendant in patient room episodes.

TABLE 2

WHETHER HOSPITALS ARE NAMED AS DEFENDANTS VARIES GREATLY BY LOCATION WITHIN THE HOSPITAL WHERE THE INCIDENT OCCURRED (PERCENTAGES ARE BY ROW)

Location Within Hospital	Hospital Defendant Status			N
	Not a Defendant	The Only Defendant	One of Multiple Defendants	
Operating Room	42%	1%	57%	182
Emergency Department	13%	13%	74%	104
Patient Rooms	15%	30%	55%	80
Labor-Delivery Suite	28%	4%	69%	54
Radiology	18%	6%	77%	17
Other	36%	10%	54%	50
Total	28%	10%	62%	487

Chi-Square Significant at  $p < .001$

Thirty percent of these claims were dismissed at the HCAO (usually at the request of the claimant), 37 percent were settled privately prior to a formal HCAO hearing, 4 percent received a summary judgment or dismissal, and 29 percent required a formal hearing. Almost half (46 percent) of those cases going to formal hearing were found in favor of the claimant. There were no statistically significant differences by location of the incident either in how the claim was resolved, or in the proportion of cases going to hearing in which defendants were found liable.

Analysis of claims arising from incidents in these forty hospitals that were closed during this time period without recourse to the legal system indicates that 44 percent resulted from operating suite incidents, 13 percent from

emergency department episodes, 16 percent from patient room incidents, 11 percent from obstetrical suite occurrences, and 6 percent from radiology department events. A comparison with the HCAO claims described above suggests that claims arising from incidents in these hospitals were somewhat less likely to result in formally filed claims if the claims were generated from operating suite incidents and more likely to result in formal claims if they involved emergency department events.

On average, 21 percent of the insurer claims resolved without filing at the HCAO were closed with some payment to the claimant, with emergency department claims about half as likely (11 percent) as other types of claims to result in some payment. This pattern suggests that a greater proportion of emergency department claims may be filed in the legal system due to the lower rate of private settlement for these claims.

### C. Hospital Variation in Malpractice Claims Experience

Table 3 displays considerable variation during this period in virtually every measure of malpractice claims experience adjusted for the number of hospital

TABLE 3  
SUMMARY MEASURES OF MALPRACTICE CLAIMS EXPERIENCE  
FOR 40 MARYLAND HOSPITALS

Malpractice Claims Experience	Mean	Median	Range
<u>All Hospital Incidents</u>			
Total Filed Claims/100 beds	8.1	7.8	0-15.0
Closed Filed Claims/100 beds	4.2	4.1	0- 8.9
Settled Claims/100 beds	2.3	2.5	0- 5.9
Panel Judgments for Claimant/100 beds	0.6	0.6	0- 2.2
Total \$ Awarded/bed†	\$1,948	\$934	\$0-13,978
Total \$ in Private Settlements/bed (filed and not filed)††	\$ 796	\$225	\$0-4672
<u>Hospital Named as Defendant</u>			
Total Filed Claims/100 beds	6.1	6.3	0-11.1
Closed Filed Claims/100 beds	3.1	2.9	0- 6.8
Settled Claims/100 beds	1.6	1.4	0- 4.6
Panel Judgments for Claimant/100 beds	0.4	0.4	0- 2.2
Total \$ Awarded/bed†	\$1,458	\$147	\$0-13,978
Total \$ in Private Settlements/bed (filed and not filed)	\$ 295	\$ 31	\$0-4,523

† Includes changes made in court appeals.

†† Includes only settlements for claims resulting from hospital-based incidents in which hospitals were not named as defendants.

beds. As indicated in Table 4, this variation is strongly associated with hospital differences in exposure to claim risk for malpractice experience measured in terms of total filed claims, filed claims closed during this period,

and filed claims resolved through private settlement prior to a formal hearing. These indicators of malpractice experience are significantly associated with exposure, whether or not the hospital was actually included as a defendant in the claim. In addition, exposure to claim risk—measured in terms of volume of services provided in high-risk locations during this period—is strongly predictive of higher total payout per bed in private settlements by non-hospital defendants for both filed and unfiled claims, but only for those claims stemming from hospital-based incidents in which the hospital was not named separately as a defendant.

TABLE 4  
STRENGTH OF RELATIONSHIPS† BETWEEN CLAIM RISK AND MALPRACTICE  
CLAIMS EXPERIENCE

Malpractice Claims Experience	All Hospital Incidents	Hospital Named As Defendant
Total Filed Claims/100 beds	0.62**	0.61**
Closed Filed Claims/100 beds	0.50**	0.43*
Settled Claims/100 beds	0.57**	0.41*
Panel Judgments for Claimant/100 beds	0.15	-0.09
Total \$ Awarded/bed††	0.07	-0.04
Total \$ in Private Settlements/bed (filed and not filed)	0.46**†††	0.09

† Pearsonian zero-order correlation coefficients.

†† Includes changes made in court appeals.

††† Includes only settlements for claims resulting from hospital-based incidents in which hospitals were not named as defendants.

\*  $p < .01$

\*\*  $p < .001$

By contrast, hospital exposure to claim risk appears unrelated to measures based on panel judgments for the claimant or total dollars awarded by panels during this period for all hospital-based claims, whether or not the hospitals themselves were named as defendants. Exposure to claim risk also appears unrelated to total payout in private settlements, but only where the hospital was named as a defendant.

#### D. Relationships between Risk Management Program Activities and Malpractice Claims Experience

1. *Role of the Governing Board.* Relationships between the governing board risk management activities and indicators of hospital malpractice claims experience, controlling on exposure to claim risk, are displayed in Table 5. Presence during this period of a governing board committee with oversight responsibility for risk management or QA/RM activities is associated ( $p < .05$ ) with fewer panel judgments for claimants per 100 beds and fewer dollars awarded per bed for all claims resulting from hospital-based incidents.

Hospitals with governing boards that received regular reports on risk management also appear to have experienced fewer dollars awarded per bed for claims involving all hospital incidents.

TABLE 5  
STRENGTHS OF RELATIONSHIPS<sup>†</sup> BETWEEN GOVERNING BOARD RISK  
MANAGEMENT ACTIVITIES AND MALPRACTICE CLAIMS EXPERIENCE,  
CONTROLLING FOR CLAIM RISK

Malpractice Experience	Governing Board RM Activities	
	Oversight Committee	Regular Reports
<u>All Hospital Incidents</u>		
Total Filed Claims/100 beds	-.10	-.02
Closed Filed Claims/100 beds	-.06	.06
Settled Claims/100 beds	-.01	.01
Panel Judgments for Claimant/100 beds	-.29*	-.12
Total \$ Awarded/bed <sup>††</sup>	-.26*	-.27*
Total \$ in Private Settlements/bed (filed and not filed) <sup>†††</sup>	.17	.25
<u>Hospital Named as Defendant</u>		
Total Filed Claims/100 beds	-.17	-.14
Closed Filed Claims/100 beds	-.15	-.05
Settled Claims/100 beds	-.04	.03
Panel Judgments for Claimant/100 beds	-.25	-.08
Total \$ Awarded/bed <sup>††</sup>	-.18	-.21
Total \$ in Private Settlements/bed (filed and not filed)	-.21	-.18

<sup>†</sup> Based on partial correlation coefficients.

<sup>††</sup> Includes changes made in court appeals.

<sup>†††</sup> Includes only settlements for claims resulting from hospital-based incidents in which hospitals were not named as defendants.

\* $p < .05$

2. *Risk Management Program Structure.* Examination of relationships between various risk management program structural elements and indicators of claims experience (data not displayed) reveals no indication that any of these program components was associated with a better claims history, with two exceptions. Hospitals had fewer panel judgments in favor of the claimant per 100 beds for claims in which the hospital was named as a defendant when there was a specific individual designated as a full or part-time risk manager (partial  $r = -.27, p < .05$ ), as well as in institutions where incident reports were sent for review to an assistant administrator or vice-president (partial  $r = -.28, p < .05$ ).

3. *Policies for Handling Adverse Medical Incidents.* Table 6 displays relationships between policies/procedures for handling medical incidents and malpractice claims experience. Hospitals with policies for notifying clinical chiefs of adverse medical incidents had significantly fewer panel judgments in

favor of claimants and lower awards per bed, both for all incidents and for those in which the hospital was specifically named as a defendant.

TABLE 6  
STRENGTHS OF RELATIONSHIPS† BETWEEN POLICIES/PROCEDURES FOR  
HANDLING MEDICAL INCIDENTS AND MALPRACTICE CLAIMS EXPERIENCE,  
CONTROLLING FOR CLAIM RISK

Malpractice Claims Experience	Policies/Procedures for Handling Medical Incidents			
	MD Report	Inform Policy	Who Informs	Chief Notified
<b>All Hospital Incidents</b>				
Total Filed Claims/100 beds	.16	-.04	-.01	.08
Closed Filed Claims/100 beds	.08	-.15	-.11	-.03
Settled Claims/100 beds	-.00	-.24	-.11	-.10
Panel Judgments for Claimant/100 beds	-.17	-.29*	-.26*	-.43**
Total \$ Awarded/bed††	-.25	-.15	-.22	-.33**
Total \$ in Private Settlements/bed (filed and not filed)†††	.08	.01	-.01	-.03
<b>Hospital Named as Defendant</b>				
Total Filed Claims/100 beds	.23	-.05	.11	.23
Closed Filed Claims/100 beds	.04	-.13	.01	.11
Settled Claims/100 beds	-.02	-.23	-.05	.03
Panel Judgments for Claimant/100 beds	-.11	-.28*	-.14	-.36**
Total \$ Awarded/bed††	-.22	-.14	-.17	-.31*
Total \$ in Private Settlements/bed (filed and not filed)	-.15	.04	.00	-.12

† Based on partial correlation coefficients.

†† Includes changes made in court appeals.

††† Includes only settlements for claims resulting from hospital-based incidents in which hospitals were not named as defendants.

\*  $p < .05$

\*\* $p < .01$

A formal policy indicating whether or not patients or families should be informed of errors also is significantly associated with fewer panel judgments in favor of claimants for all types of claims, as well as for those in which the hospital was specifically named as a defendant. In addition, a policy specifying who had responsibility for informing the patient or family is correlated with fewer adverse panel judgments for claims resulting from all hospital-based incidents during the time period. There appears to have been no statistically significant impact, however, for policies requiring physicians themselves to file incident reports (as indicated in Table 6), or mandating that such reports be filed by nurses or other employees (data not shown).

4. *In-Hospital QA/RM Educational Programs.* Hospital educational efforts concerning the responsibilities of physicians and nurses in QA/RM are significantly associated—even after controlling for exposure to claim risk—with fewer filed claims and fewer closed claims, particularly for those related to incidents in which the hospital was named as a defendant (see Table 7). Both of these educational indicators also are correlated with fewer settlements for claims involving hospitals as defendants. In addition, hospitals with QA/RM programs targeted toward physicians had fewer adverse panel judgments. Relationships between hospital malpractice claims experience and other types of educational efforts were not strong enough to attain statistical significance (data not shown).

TABLE 7  
STRENGTH OF RELATIONSHIPS<sup>†</sup> BETWEEN HOSPITAL QA/RM EDUCATIONAL PROGRAMS AND MALPRACTICE CLAIMS EXPERIENCE, CONTROLLING FOR CLAIM RISK

Malpractice Claims Experience	Hospital QA/RM Educational Programs	
	Physician's Role in QA/RM	Nurse's Role in QA/RM
<u>All Hospital Incidents</u>		
Total Filed Claims/100 beds	-.32*	-.30*
Closed Filed Claims/100 beds	-.31*	-.36**
Settled Claims/100 beds	-.25	-.22
Panel Judgments for Claimant/100 beds	-.32*	-.24
Total \$ Awarded/bed <sup>††</sup>	-.01	.10
Total \$ in Private Settlements/bed (filed and not filed) <sup>†††</sup>	.17	.15
<u>Hospital Named as Defendant</u>		
Total Filed Claims/100 beds	-.34**	-.43**
Closed Filed Claims/100 beds	-.37**	-.44**
Settled Claims/100 beds	-.36**	-.31*
Panel Judgments for Claimant/100 beds	-.25	-.18
Total \$ Awarded/bed <sup>††</sup>	.05	.11
Total \$ in Private Settlements/bed (filed and not filed)	.16	.19

<sup>†</sup> Based on partial correlation coefficients.

<sup>††</sup> Includes changes made in court appeals.

<sup>†††</sup> Includes only settlements for claims resulting from hospital-based incidents in which hospitals were not named as defendants.

\*  $p < .05$

\*\* $p < .01$

#### E. Risk Management Program Activities, Malpractice Claims Experience and Exposure to Claim Risk

Additional analyses were performed in order to develop a better understanding of how exposure to claim risk influenced relationships between

risk management program activities and malpractice claims experience during this time period. The strongest correlations from the preceding analysis were examined separately for hospitals divided into two groups based on degree of risk exposure, as indicated by the combined measure of volume of services provided in high-risk locations. These comparisons revealed that the significant relationships between risk management activities and various indicators of malpractice claims experience were, for the most part, the result of the impact of risk management strategies (or the absence thereof) on malpractice experience in hospitals with a lower exposure to claim risk.

Illustrations of this pattern are provided in Tables 8 and 9. Comparisons of malpractice claims history with respect to adverse panel judgments and total dollars awarded for hospitals with and without policies of notifying the clinical chief of adverse medical incidents are displayed in Table 8. In hospitals with a lower exposure to claim risk, there is more than a three-fold difference in number of adverse panel judgments per 100 beds and a six-fold difference in dollars awarded per bed for all hospital-based claims in favor of those institutions where notification of the clinical chief is a formal policy. The pattern is similar for claims in which hospitals were named as defendants.

TABLE 8

DIFFERENCES IN THE MALPRACTICE CLAIMS EXPERIENCES OF HOSPITALS WITH AND WITHOUT POLICIES FOR NOTIFYING THE CLINICAL CHIEF OF ADVERSE MEDICAL INCIDENTS, CONTROLLING FOR DEGREE OF EXPOSURE TO CLAIM RISK

Malpractice Claims Experience	Lower Exposure to Claim Risk			Higher Exposure to Claim Risk		
	Chief Notified	Chief Not Notified	P Value*	Chief Notified	Chief Not Notified	P Value*
<u>All Hospital Incidents</u>						
Mean number of panel judgments for claimants/100 beds	.25	.92	.003	.65	.73	.728
Mean total \$ awarded/bed†	\$614	\$3773	.038	\$1660	\$1449	.781
<u>Hospital Named as a Defendant</u>						
Mean number of panel judgments for claimants/100 beds	.25	.77	.029	.31	.39	.621
Mean total \$ awarded/bed†	\$614	\$3428	.069	\$628	\$589	.931
(Number of Hospitals)	(12)	(12)		(10)	(6)	

† Includes changes made during court appeals.

\* Significance level based on difference of means (T), utilizing a 2-tailed test with pooled or separate variance estimates as appropriate. A *p* value of less than .05 is a frequently utilized standard for regarding a relationship as statistically significant.

Differences on these dimensions for hospitals with higher exposure to claim risk are not significant. It may be important to note that for each of these indicators of claims experience, "low risk" hospitals without clinical chief notification had a poorer claims experience than "higher risk" institutions.

As Table 9 indicates, the pattern is somewhat similar (although not as strong) for relationships between the presence of in-hospital educational programs related to the responsibilities of physicians in QA/RM and volume of malpractice claims. For hospitals with a lower risk exposure, those institutions with such programs experienced significantly fewer claims. For higher risk hospitals, differences between those with and without such programs were in the same direction, but were not statistically significant.

TABLE 9

DIFFERENCES IN THE MALPRACTICE CLAIMS EXPERIENCES OF HOSPITALS WITH AND WITHOUT EDUCATIONAL PROGRAMS CONCERNING PHYSICIAN QA/RM RESPONSIBILITIES, CONTROLLING FOR DEGREE OF EXPOSURE TO CLAIM RISK

Malpractice Claims Experience	Lower Exposure to Claim Risk			Higher Exposure to Claim Risk		
	MD Programs in QA/RM	No MD Programs	P Value*	MD Programs in QA/RM	No MD Programs	P Value*
<u>All Hospital Incidents</u>						
Mean number filed claims/100 beds	5.0	7.9	.042	9.7	11.9	.150
Mean number closed claims/100 beds	2.4	4.6	.024	5.1	5.8	.453
<u>Hospital Named as a Defendant</u>						
Mean number filed claims/100 beds	3.7	6.2	.035	7.2	8.7	.172
Mean number closed claims/100 beds (Number of Hospitals)	1.9 (12)	3.6 (12)	.026	3.4 (10)	4.1 (6)	.265

\* Significance level based on difference of means (T), utilizing a 2-tailed test with pooled or separate variance estimates as appropriate. A *p* value of less than .05 is a frequently utilized standard for regarding a relationship as statistically significant.

## VI

## SUMMARY AND DISCUSSION

The major objective of this study was to explore possible relationships between risk management activities and the malpractice claims experience of forty community hospitals in Maryland. Because it often requires a considerable length of time after an incident occurs for claims to emerge and be resolved, the analysis utilized the earliest systematic information available on hospital risk management activities—a 1980 survey of all hospitals in the state conducted by the Maryland Hospital Education Institute. Survey responses included information on the role of the governing board in risk management activities, risk management program components, hospital policies for handling adverse medical incidents, and educational programs offered by the hospital in quality assurance and risk management.

The professional liability experience of each hospital was assessed through data on claims resulting from hospital-based incidents that occurred during 1980 or later and that were completely resolved by the end of 1987. The majority of these claims were the result of episodes that occurred in 1980 and 1981. Indicators of the malpractice claims experience for each hospital included the total number of filed claims per 100 beds, the number of closed claims per 100 beds, the number of filed claims settled privately per 100 beds, the number of filed claims per 100 beds that received a panel decision in favor of the claimant, the total dollars awarded per bed, and the total dollars in private settlements for filed and unfiled claims per bed. These indicators were examined separately for claims arising from all hospital-based episodes and for only those claims in which hospitals were named as defendants. An effort was made to take into consideration hospital differences in exposure to the risk of malpractice claims by including in the analysis information on the volume of services performed in high-risk locations, including surgical and obstetrical suites and emergency departments.

Results of the analysis indicate that malpractice experience, as measured by numbers of claims, was highly correlated with hospital exposure to claim risk. After adjusting for exposure, the only risk management program activity related to lower numbers of claims experienced was in-hospital educational programs regarding physician and nurse responsibilities in QA/RM.

Hospital exposure to claim risk was not associated with the rate of panel decisions favoring claimants or total dollars awarded per bed for either all claims resulting from hospital-based incidents or the subset of claims in which hospitals were named as defendants. These measures of claims experience based on all hospital incidents were significantly less, however, in hospitals that by 1980 had established a governing board oversight committee for QA/RM, included risk management information in regular reports sent to the governing board, and had a formal policy that clinical chiefs must be notified of adverse medical incidents. In addition, the rate of adverse panel decisions regarding provider liability was significantly lower for hospitals that had formal policies indicating whether patients or families should be informed of medical errors, and specifying who had responsibility for communicating such information. This pattern of favorable results does not appear to have been at the expense of significantly higher rates of private settlements, since hospitals with these programs and policies in place were no more likely to settle claims outside the formal legal process.

These findings provide some support for several key tenets in the literature on clinical risk management, including the importance of educating clinicians regarding their role in risk management efforts, formalizing channels of communication that can facilitate early intervention if needed with patients and families following adverse medical events, and establishing a strong organizational structure for dealing with information generated by occurrence screening or clinical incident reporting. Notification of the clinical chief of adverse medical events emerges as a particularly strong

predictor of more favorable experience regarding panel liability determinations and awards. Strategies employed by clinical chiefs for utilizing such information were beyond the scope of this study. Options suggested by the recent literature<sup>44</sup> include informally using adverse incident reports as the basis for discussion with the physician involved, or as a grounds for closer observation and/or study of relevant medical records. More formally, on the basis of a particularly serious event or pattern of incidents, a clinical chief may recommend remedial education, required proctoring, or the restriction of privileges.

The potential significance of the role played by the clinical chief suggested by this analysis is consistent with recent findings on the importance for higher quality patient care of formalized controls exercised by the medical staff themselves for the monitoring and review of physician performance.<sup>45</sup> There also is accumulating evidence that higher volumes of specific services or procedures are associated with better outcomes of care.<sup>46</sup> In this study, the delivery of more services in high-risk locations was considered an indicator of greater exposure to claim risk. Higher volumes also may be associated, however, with increased specialization, experience, and clinical skills. It is important to note that clinical chief notification emerged as a significant predictor of better claims experience in hospitals with lower volumes of high-risk services. This pattern could be interpreted as an indication that formalized medical staff controls may be of particular importance in settings less likely to have the staff experience and specialized work routines that emerge over time in hospitals with higher volumes of services.

A number of potential limitations inherent in the study design have been noted. Only one state was included—an approach that may limit the generalizability of analysis results. A relatively small number of variables have been used as indicators of hospital exposure to claim risk; these may be confounded with hospital clinical experience and thus the capability for better quality care—a possibility that poses difficulties for interpretation of both the presence and the absence of significant relationships involving the measures of claim risk exposure. In addition, the risk management activities found to be significantly related to better claims experience may have been present in hospitals with other unmeasured characteristics in common (for example, more stringent privileging and credentialing standards) that were actually responsible for the identified relationships of interest. Although these limitations must be acknowledged, the analysis results provide the first evidence available for a relatively large number of hospitals that risk management efforts may be associated with a more positive malpractice claims experience.

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44. See Md Hosp Educ Inst, *Application of Occurrence Screening* (cited in note 32).

45. See Ann Barry Flood & W. Richard Scott, *Hospital Structure and Performance* 348-49 (Johns Hopkins U Press, 1987).

46. See *id* at 348. See generally Harold S. Luft & Sandra S. Hunt, *Evaluating Individual Hospital Quality Through Outcome Statistics*, 255 J AM Med Ass'n 2780 (1986).