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# Factors Affecting the Use of Surgical Physician Assistants

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## SYNOPSIS

*The actual use of surgical physician assistants in 1979 and the expected use of them in 1984 by 552 general hospitals in the United States with 400 or more beds was assessed by means of a questionnaire mailed to the hospitals' surgical department chairmen. The influence of geographic and institutional variables upon this use was determined by multiple regression analysis.*

*The most important determinants of actual use were the complexity of surgical care in the institution and its geographic location. Institutions with more complex surgical care and those located outside of the West were more likely to have used surgical physician assistants in 1979. Important determinants of the expected use of surgical physician assistants in 1984 appeared to be the complexity of surgical care and the degree of reliance upon foreign medical graduates (FMGs) in the surgical housestaff training program within the institution. Those surgical department chairmen in hospitals with a greater concentration of FMGs on their surgical housestaffs in 1979 anticipated a greater future role for surgical physician assistants.*

THE DEVELOPMENT OF THE PHYSICIAN ASSISTANT profession in the United States during the past 15 years received its major impetus from the shortage of physicians in primary care in rural areas (*1*). Now major U.S. medical institutions are increasingly using physician assistants in the care of surgical patients (*2–4*). Because it is generally accepted that the present supply of surgeons is adequate, or possibly even in excess of needs, and since the projected supply also appears to be more than adequate (*5–7*), interest is growing in exploring alternative approaches for meeting the continually growing need for surgical housestaff manpower to help deliver care in teaching centers. This is a need that has become more severe as the complexity and intensity of surgical patient care in major referral centers has increased. Furthermore, because the future supply of foreign medical graduates (FMGs), who account for 24 percent of all surgical housestaff, is uncertain at best, interest is growing in the use of the surgical physician assistant to reduce the reliance upon FMGs (*8*).

To obtain a better understanding of these trends, a national survey of surgical departments in major U.S. hospitals was undertaken (*9*). In this survey, 774 surgical physician assistants were identified in 165 of the 552 hospitals with 400 beds or more participating in the study. The surgical department

chairmen surveyed anticipated that 1,545 surgical physician assistants would be working in 267 of these hospitals in 1984.

The purpose of the present investigation was to determine what factors, if any, appeared to influence the current use, and appeared likely to influence the future use, of surgical physician assistants in major U.S. hospitals.

In mid-1979, a questionnaire was mailed to each surgical department chairman in all nonmilitary general hospitals in the United States with 400 or more beds. Veterans Administration and other government nonmilitary hospitals were included in the survey. Completed questionnaires were returned from 552 institutions, a result representing an overall response rate of 69 percent. When responding and nonresponding institutions were compared, no statistically significant differences were found between the two groups in their daily surgical census, annual surgical census, annual number of surgical outpatient cases, number of surgical housestaff positions, number of beds, total admissions, or total daily census (*10, 11*).

Two separate multiple regression analyses were performed with the same set of independent variables. The independent variables are listed and explained in the table. The two dependent variables used were number of surgical physician assistants actually working in the institution in 1979 ($Y_1$) and number of surgical physician assistants that the surgical department chairmen expected to be working in the institution in 1984 ($Y_2$). The regression equations used for the analyses follow. (For meanings of the symbols, see the table. Only cases for which complete information was obtained for all the independent and dependent study variables were included in the regression analysis. The total number of cases was thereby reduced from 552 to 409.)

$$Y_1 = B_{r1}R_1 + B_{r2}R_2 + B_{r3}R_3 + B_{t1}T_1 + B_{t2}T_2 + B_{t3}T_3 + B_wW_1 + B_xX + B_zZ + b$$

$$Y_2 = B_{r1}R_1 + B_{r2}R_2 + B_{r3}R_3 + B_{t1}T_1 + B_{t2}T_2 + B_{t3}T_3 + B_wW_1 + B_xX + B_zZ + b$$

The table shows how each independent variable affected, and was expected to affect, the use of surgical physician assistants in major U.S. hospitals. Two groups of independent variables, REGION and TEACHING, are categorical (that is, nonordinal) and therefore require conversion into a "dummy" variable format for multiple regression analysis. Such a variable is assigned a value of 0 or 1. In so doing, one of the categories becomes a "suppressed" dummy variable, and its relative influence is inferred from the regression coefficients for the other dummy variables associated with that category. For REGION, the suppressed dummy variable is the western region. TEACHING refers to the kind of teaching activities taking place in the institution. According to our definitions, a "university teaching hospital" has a medical school, a "nonuniversity-affiliated teaching hospital" shares in the use of surgical housestaff from a residency program based in a university teaching hospital, and a "nonuniversity independent teaching hospital" has its own surgical residency training program self-contained within the institution. The suppressed dummy variable is the nonteaching hospital with no residency program in surgery.

To assess COMPLEXITY, information was obtained from the surgical department chairmen on

Influences upon current use (1979) and anticipated use (1984) of surgical physician assistants

| *Independent variables* [1] | *Current use (1979)* | | *Anticipated use (1984)* | |
|---|---|---|---|---|
| | *Standardized regression coefficient (B)* [2] | *F value* [3] | *Standardized regression coefficient (B)* [4] | *F value* [3] |
| $R_1$—location in northeastern region | 0.13 | 2.85 | 0.06 | 0.75 |
| $R_2$—location in southern region | [5].15 | 4.45 | .05 | .43 |
| $R_3$—location in north-central region | [5].18 | 5.97 | .07 | 1.00 |
| $T_1$—university teaching hospital | .06 | .88 | .02 | .09 |
| $T_2$—university-affiliated teaching hospital | .10 | 2.74 | .12 | 3.67 |
| $T_3$—nonuniversity independent teaching hospital | .08 | 1.13 | .10 | 1.77 |
| $W$—number of beds | .06 | 1.32 | .03 | .36 |
| $X$—complexity | [5].14 | 5.52 | [5].19 | 10.03 |
| $Z$—FMGs (foreign medical graduates) | .01 | .01 | [5].13 | 4.42 |

[1] *R* stands for REGION, *T* for TEACHING, *W* for BEDS, *X* for COMPLEXITY, and *Z* for FMGs (foreign medical graduates).
[2] $R^2 = 0.046$.
[3] Degrees of freedom 3.399.
[4] $R^2 = 0.060$.
[5] Significant at 0.01 level.

the presence of the following within their institutions: (*a*) open-heart surgical program, (*b*) renal transplant program, (*c*) burn unit, and (*d*) trauma unit. The COMPLEXITY score was obtained by simply adding the number of such services that the institution had. Finally, the percentage of foreign medical graduates in each general surgical residency program in 1979 was determined (*11*).

When the actual use of surgical physician assistants was the dependent variable, the regression analysis indicated that at least among the variables tested, COMPLEXITY exerted a significant positive influence, whereas the location of the institution in the western region of the United States had a significant negative influence. The second of these findings was obtained by deduction, based on the interpretation of the dummy variables describing REGION. All of the REGION variables included in the analysis had a similar significant positive effect upon use. By inference, then, the suppressed dummy variable—location in the western region—had a negative influence upon actual use of surgical physician assistants in 1979, as the table shows.

The table also shows that based on the regression analysis for the anticipated use of surgical physician assistants in 1984, the major positive influences appear to be institutional complexity and having a high percentage of FMGs on the surgical housestaff of the institution. Regional differences in anticipated use were not significant.

## Discussion

It is now becoming increasingly clear that tertiary care centers are providing the kind of intensive and ongoing sophisticated care to surgical patients that requires substantial surgical housestaff support. With the growth of open-heart surgical programs, trauma units, transplant programs, and burn units in such institutions, the need for surgical housestaff in some instances has outstripped the available supply. Expansion of residency programs in surgical specialties is no longer a viable option for meeting this need, since the current level of training of surgeons is more than adequate to meet the projected manpower needs nationally (*7, 12, 13*). Thus, it appears that in hospitals that provide referral services, the surgical physician assistant is viewed as a partial solution to the need for surgical housestaff manpower and as a potential solution to future manpower needs, which, it is believed, are almost certain to grow.

The negative influence of location in the West on current use of surgical physician assistants partly reflects the fact that the concept of using surgical physician assistants in tertiary care centers arose principally in the East and South—at Albert Einstein, Alabama, Duke, Emory, and Yale. With time, however, this relative lack of experience with surgical assistants in the West should diminish, as the regression results for anticipated use of such personnel in 1984 suggest.

The independent influence of FMG concentration in surgical residency programs upon the anticipated use of surgical physician assistants probably reflects the current decreased inflow of FMGs into the United States, which has occurred partly as a result of the enactment of Public Law 94–484 (Health Manpower Assistance Act) in 1976. Since the future inflow of FMGs is also uncertain, institutions that have relied upon FMGs to fill residency positions in surgery are looking for alternative sources of manpower to compensate for an anticipated gradually diminishing supply. The use of surgical physician assistants appears to be one solution that these institutions are considering.

Obtaining an adequate supply of physician assistants to work in surgery is not likely to be difficult. The current production of physician assistants remains at 1,500 per year. With the marked expansion of physician manpower in primary care fields, employment opportunities for physician assistants in primary care may not be so abundant as before. Thus, with current production rates for physician assistants remaining constant and job opportunities in primary care possibly diminishing, the number of physician assistants attracted to employment in surgical specialties is likely to grow (*14*).

In summary, our analyses support the concept that the current and anticipated use of surgical physician assistants in large U.S. hospitals is in part a response to the growing need for the surgical housestaff type of manpower (a need that has arisen because of the increasing complexity and intensity of care of surgical patients in these institutions) and is in part a response to the necessity of finding an alternative source of manpower to replace the diminishing supply of FMGs for surgical training programs. Thus, surgical physician assistants appear to be a promising type of surgical housestaff manpower. The roles they play as members of surgical teams are likely to become increasingly important, especially in tertiary care institutions.

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# Dental Malpractice: Baseline Data from Insurance Claims Closed in 1970, with Analysis

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**SYNOPSIS**

*A study of dental malpractice claims closed during the 1970s was conducted using closed claim data available as a byproduct of a survey conducted by the Secretary's Commission on Medical Malpractice, U.S. Department of Health, Education, and Welfare. The intent of the authors of this study is to establish a baseline that can be used for future comparisons of dental malpractice.*

*Far fewer cases of dental malpractice were found than expected, and specialists such as oral surgeons were at higher risk than general practitioners. One-half of the claims resulted in no payment to the plaintiff. Trial verdicts were reached in just over 7 percent of the cases, and 93 percent of the verdicts were in favor of the defendant.*

*The amount of damages paid to claimants for dental cases was approximately one-third that paid on claims involving physicians or medical specialists. The median award to the plaintiff for dental malpractice was $750. Ninety-five percent of the awards made were under $5,000.*

FROM 1960 TO 1970, MEDICAL MALPRACTICE premiums increased from approximately $65 million to more than $330 million, an increase that is more than five-fold (*1*). Premium payments doubled among dentists, increased six-fold among physicians, and increased three-fold among hospitals. These increases reflect the increase in both frequency and severity of alleged incidents leading to malpractice claims as well as the increased willingness to file claims.

In September 1971, the Secretary of the Department of Health, Education, and Welfare created the Commission on Medical Malpractice. Its charge was to publish findings on current claims of medical