

Impact of Medex on Physician Activities: Redistribution of Physician Time after Incorporating a Medex into the Practice

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A study was conducted in 11 practices to measure the impact of medex physician assistants on the activities of physicians. Data on location of work, characteristics of patient visits, and on office task performance were collected before and after the medex joined the practice.

The post-medex results show that the total number of hours worked by the physician was unchanged, although a larger proportion of time was spent at the hospital (26 percent before vs 32 percent after). In the office, the physician devoted less time to direct patient care (68 percent before vs 48 percent after) and proportionately more time in counseling patients (22 percent before vs 27 percent after), and on supervisory matters (5 percent before vs 11 percent after). In comparison with the physician, the medex works almost as many hours per week, but spends more time in the office (62 percent medex vs 56 percent doctor) where he/she sees younger patients with acute problems. The medex spends about half of the office time on direct patient-care tasks (49 percent medex vs 48 percent doctor). In some respects, the medex's task profile is similar to the physician's; both spend comparable amounts of time on history taking and physical examination tasks (57 percent medex vs 56 percent doctor). Overall, the physician's task profile is weighted in tasks requiring greater clinical judgment and authority.

Delegation of tasks from the physician to the assistant is the cornerstone of the physician extender movement.^{1,2} It is reasoned that routine tasks traditionally performed by physicians can be safely transferred to

trained assistants and that this will result in increased practice productivity. Several studies have found that adding a physician assistant to a primary care practice results in substantial increments in productivity.^{3,4} Findings from other studies indicate that the surge in productivity results in the generation of revenue sufficient to offset the costs of employing physician assistants.^{5,6}

Relatively little research has been conducted on the manner in which such favorable outcomes as increased productivity and economic viability are realized. Since the work roles of

the physician and assistant in general and their respective task profiles in particular characterize the process, and since modifying the process through task delegation is at the heart of the physician assistant movement, it is important to quantify the role of the assistant and to gauge the impact of the addition of the assistant on the role of the physician.

The authors' previous research suggests that observational methods as opposed to retrospective self-report methods should be used to obtain accurate information on task performance in primary care practices.⁷ Some researchers have used observers to gather valuable quantitative information on the role of the physician,^{8,9} and others have employed observers to assess the role of the physician extender.^{10,11} However, few if any studies have been published that use the observational method both to document the changes in the physician's activities which result from the addition of the physician assistant to the practice and to compare the role of the assistant with the role of the physician with whom he/she works.

Research done in 11 other MEDEX-New England practices comparable to those studied in this report indicated that the addition of a medex physician assistant resulted in an average increase in productivity of 37 percent and that the revenues generated by medex exceeded the costs of employing them.^{12,13} The goal of the study reported herein is twofold. First, to determine how the role of the physician changes after the medex joins the practice. Second, to compare and contrast the role of the medex with the role of the physician. The role of the physician and of the medex can be characterized by three factors: location of work, characteristics of patients served, and task performance.

Methods

The study was conducted in 11 primary care practices. There were two data collection periods. "Before" data on the physicians was collected in spring 1973, just prior to the time the

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Table 1. Percentage of Time Spent in Different Locations Before and After Medex Joined Practice

Location	Physician		Medex
	Before Medex	After Medex	
Home	67%*	67%	69%
Non-home	33	33	31
Total	100	100	100
Non-home			
Office	63%	56%	62%
Hospital	26	32	26
Other†	11	12	12
Total	100	100	100
Number of practices	9**	9**	11

Percentages in Table based on 14 consecutive 24-hour days.
 *Percentages rounded
 **The data sets provided by two physicians were excluded due to incompleteness.
 †The category "other" includes nursing home, patient's home, and miscellaneous work settings.

physician assistants entered the practices; "after" data on the physicians and the physician assistants were collected one year later, in spring 1974, after the assistants had completed their training and had become salaried employees in the practices. All physician assistants included in the study graduated from the MEDEX-New England Program in January 1974. Four of the physicians were general practitioners and seven were internists with general practices. Three of the practices were solo ones, four were partnerships, and four were small to moderate-sized group practices. The practices were located in rural New England communities ranging in population from 2,000 to 48,000.

Three separate instruments were used for both the before and after data collection periods to gather informa-

tion on where the practitioners spend their time, on the characteristics of patients served, and on the tasks performed.

Daily Log

Information on the amount of time the physicians and medex spent in various locations (eg, home, office, hospital, nursing home, patient's home), was gathered on daily logs. The logs were maintained by the providers for 14 consecutive days during both collection periods. The logs divided each day into 48 half-hour segments which the providers "blocked-out" indicating where they were each day and how much time was spent in each location. The logs were kept conscientiously and appear to provide relatively accurate information.

Data on the characteristics of patients (eg, age, sex, type of visit, diagnosis) seen in the office were collected on patient encounter forms filled out by the providers. Charge for the visit and time with providers was also collected on the patient contact forms. Forms were to be completed on all patients seen over 14 consecutive days in the office practice during each data collection period. Results from a previous study show that patient encounter forms are filed for nearly 100 percent of patients seen in the office.⁷

Observer Task List

Trained observers collected information on the tasks performed by the providers in the office practice. The observers shadowed the physicians and medex respectively for one full work week during both collection periods recording the frequency and duration of task performance on observer task lists. The task list was designed to include most observable tasks which are commonly done by a primary care practitioner in the office setting.

About 200 discrete tasks were included on the list and were grouped into 11 broad categories: history, physical examination, laboratory and diagnostic tests, counseling, office surgery, use of medication, documentation, analysis and decision, business and administration,* and miscellaneous. Each task statement on the list was followed by a space in which the observer recorded the starting and ending time of each task. One task list was completed by the observer for each patient seen by the provider being followed during the observational period. Data on individual providers were used to calculate averages for the physician and medex respectively. Therefore, the results reflect overall trends that occurred to a greater or lesser extent in each practice.

Results

The 24-hour log of activities, personal and professional, were completed by nine physicians and covered 14 consecutive days for two periods:

*The business and administration category was composed primarily of supervisory tasks (eg, supervise other employee).

Table 2. Patient Characteristics Before and After Medex

Patient Characteristics	Physician Visits		Medex Visits
	Before Medex	After Medex	
Sex			
Male	40%	42%	46%
Female	60	58	54
Visit Type			
Acute	37%	37%	55%
Chronic	44	41	20
Other	19	22	25
Age			
0- 4	2%	1%	1%
5-14	4	3	5
15-24	15	12	24
25-44	30	29	28
45-64	32	31	26
65 & over	17	24	16
Mean Age	44.6	47.0	40.7
N*	1,132	837	716

*N = total number of patients in 11 practices

before the arrival of the medex in the practice and after one year's experience of working with the medex (Table 1). The proportion of time spent in practice activities did not change with the arrival of the medex and represents 33 percent of the physician's day. However, there was a redistribution of the physician's time in practice activities. Time lost from office practice was offset by an increased proportion of time spent in the hospital. The practice activities of the medex were found to be almost identical in distribution to that of the physician before the arrival of the medex.

Data provided by the patient encounter forms related to an aggre-

gate of 1,132 patient visits in the sampling period of two weeks prior to the arrival of the medex and for a similar period one year after the medex's arrival. The majority of visits in each period were made by females (Table 2). The medex saw a slightly higher proportion of males (46 percent) than did the physician (42 percent). Patients with acute illness and less than 45 years of age comprised the majority of patients seen by the medex. By contrast the physician saw a higher proportion of patients with chronic illness than did the medex (41 percent vs 20 percent) and most of the patients seen by the physician were 45 years of age or older.

The relative frequencies of patient visits to physicians and medex by diagnosis in both sampling periods (Table 3), afford greater detail as to the delegation of patients with acute illness to the medex. Upper respiratory infections accounted for approximately 12 percent of patients seen by the medex. If the increase in upper respiratory infections observed during the second sampling period (March 1974) is ignored, the physician has enriched his/her case mix with a larger proportion of patients with chronic illness — with essential hypertension, arteriosclerotic heart disease, and diabetes. The diagnostic category "no abnormality" is a useful estimate of the performance of a history and

Table 3. Patient Visits by Frequency of Five Leading Diagnoses

Physician Visits						Medex Visits		
Before Medex			After Medex					
Diagnosis	No. Visits	%	Diagnosis	No. Visits	%	Diagnosis	No. Visits	%
1. Essential hypertension	151	13.3	Essential hypertension	116	13.8	Upper respiratory tract infection	84	11.7
2. Exogenous obesity	97	8.6	Upper respiratory tract infection	75	9.0	Essential hypertension	54	7.5
3. Arteriosclerotic heart disease	78	6.9	Arteriosclerotic heart disease	54	6.5	No abnormality	54	7.5
4. Upper respiratory tract infection	69	6.1	Diabetes mellitus	42	5.0	Exogenous obesity	35	4.9
5. No abnormality	67	5.9	Exogenous obesity	38	4.5	Anxiety	20	2.8
Number of patient visits in 5 diagnostic categories	462	40.8		325	38.8		247	34.4
Total number of visits	1,132	100		837	100		716	100

physical examination in asymptomatic patients; the frequency of the diagnosis in patients seen by the medex reflects the frequent delegation of asymptomatic patients to the physician assistant.

The third set of data generated from direct observation by trained personnel assigned to each practice during the two sampling periods is shown by two categories of practice activity: direct or face-to-face patient contact, and indirect tasks (Figure 1). In the pre-medex period, 68 percent of total time in office practice was given to direct tasks such as performing histories (24 percent) and physical examinations (30 percent), counseling

(22 percent), recording (10 percent), and other services (14 percent). One year after the arrival of the medex, the proportion of the physician's time spent in direct patient contact had fallen to 48 percent. Between the two sampling periods the average number of patients seen by the physicians had declined from 2.5 to 1.9 per hour; the average time the physicians spent with each patient dropped from 16.3 to 13.9 minutes. More of the physician's time with patients was spent in counseling (22 percent before vs 27 percent after).

The proportion of time that physicians spent on indirect tasks increased from 32 percent to 52 percent after

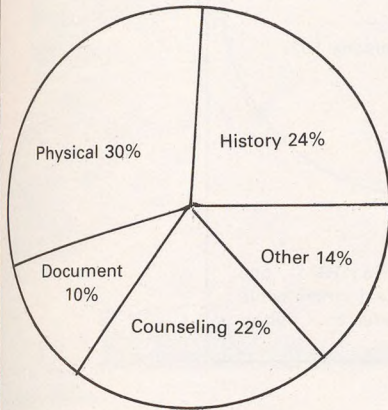
incorporation of a medex into the practice. The pre-medex and post-medex distributions of indirect tasks are similar with the exception of an increase (5 percent before vs 11 percent after medex) in the proportion of time spent in wholly supervisory matters due primarily to time spent in consultation with the medex.

The distribution of the medex's proportional times spent in direct and indirect tasks (Figure 2) demonstrates that the medex is in direct contact with patients 49 percent of the time and spending a third (33 percent) of the remainder in completing indirect tasks related to the visit (documentation and analysis). Seven percent of

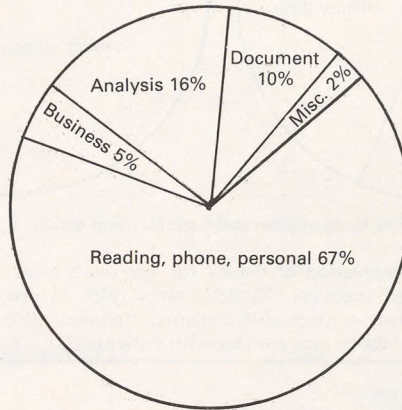
time spent in the office is devoted to consulting with the physician. In general, the physician's task profile is weighted in tasks that require clinical judgment and authority, eg, prescribing for and counseling patients, training and supervising staff.

Physician Time Before Medex

MD Direct Tasks
68% of total time

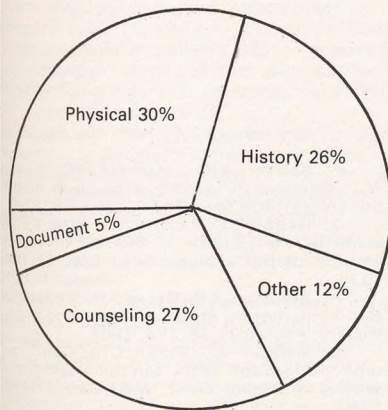


MD Indirect Tasks
32% of total time



Physician Time After Medex

MD Direct Tasks
48% of total time



MD Indirect Tasks
52% of total time

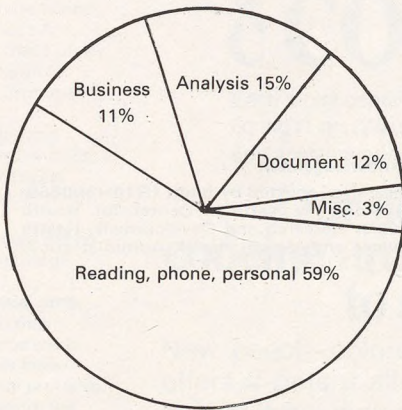


Figure 1. Percent of office time physicians spent performing tasks before and after medex.

Task times based on observation of physicians for one work week in the office setting before (spring 1973) and one year after (spring 1974) medex joined practice. "Direct" tasks refer to tasks performed while physicians were in face-to-face contact with patients; "indirect" tasks refer to activities performed while not in face-to-face contact with patients.

Discussion

The introduction of a physician assistant into a practice has been shown in this study to produce a redistribution of the supervising physician's activities. The total numbers of hours spent by the physician in practice has not diminished but the mix of activities has changed. The larger proportion of time spent by a physician who has an assistant in seeing older patients, hospitalized patients, the more seriously ill, and in counseling patients represents better use of the physician. The authors believe that these gains more than offset the additional effort required by the physician to manage a more complex organization and to supervise an assistant.

The results of the study lend support to the concept of the physician assistant's role as one of allowing the physician to devote more time to the seriously ill patient. Other medex studies describe benefits to be increases in productivity, accessibility, a reasonable cost-effectiveness, and a high level of patient acceptance.¹²⁻¹⁵

Advocates of new health-care practitioners have predicted that use of physician assistants would result in a greater emphasis on preventive aspects of medical care. The frequent delegation to the medex of the work-up of asymptomatic patients represents a strategy of assigning preventive services to the physician assistant. However, analysis of the patient encounter form and observational data showed no overall increase in the volume of preventive services provided and the modest amount of time medex invested in counseling patients does not allow much time for health pro-

Medex Time

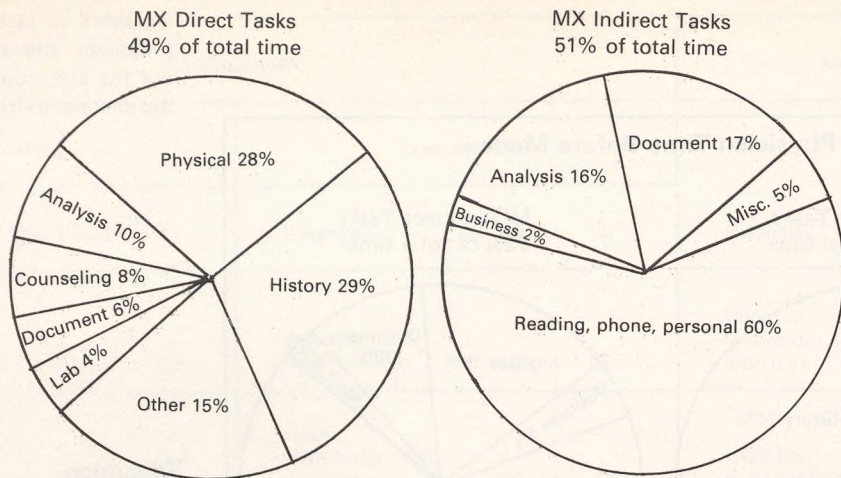


Figure 2. Percent of office time medex spent performing tasks.

Task times based on observation of medex for one work week (spring 1974), one year after medex joined practice. "Direct" tasks refer to tasks performed while medex were in face-to-face contact with patients; "indirect" tasks refer to activities performed while not in face-to-face contact with patients.

motion or patient education. The study by Miles of medex in the rural South produced similar findings regarding the impact of the physician assistant on delivery of preventive care.¹⁶ Nevertheless the delegation of major responsibility to the physician assistant for preventive services appears reasonable; it would enhance the job satisfaction of the assistant while relieving the physician of performing tasks which are necessary but often time consuming and unstimulating. A larger proportion of the physician assistant's time could then be spent counseling about important but non-emergent matters and with a comfortably solid base of knowledge. The influence of life-style on health status may be equal to the impact of personal medical care. Therefore, the long-term benefits to the patient of a special emphasis placed on such matters as nutrition and deleterious personal habits may be substantial.

Acknowledgement

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