PRODUCTIVITY AND TASK DELEGATION

Tirado NC, Guzman M, Burgos FL. "Workload contribution of a physician assistant in an ambulatory care setting." Veterans Administration Medical Center, San Juan, PR 00927. ***P R Health Sci J.*** 9(2): 165-7, Aug 1990.

Journal abstract: To evaluate the workload contribution of a Physician Assistant (PA) in an Ambulatory Care-Walk-in setting the number of patients registered, seen by the PA, and by the Supervising Physician (SP) was used. The simple average was drawn for comparison purposes. Quality of care assessment was done by record review of patients seen. The workload contribution of the PA was 10.8%, that of the SP was 11.6%, with a joint contribution of 22.5%. The non supervising physician average was 11.2%. The quality of care assessment showed 100% compliance with the first four, and 93% compliance with the last three criteria. A PA makes an efficient workload contribution in this setting, not endangering the workload contribution of the supervising physician, who is able to maintain a similar workload contribution to that of a non-supervising physician.

Hurdle S, Pope GC. "Improving physician productivity." ***J Ambulatory Care Manage.*** 12(1): 11-26, Feb 1989.

In research supported by the Health Care Financing Administration, the findings of productivity studies conducted in the 1970s were updated with data collected in 1984 and 1985. The data suggest there is still considerable potential for increasing physician productivity. Among the findings are that physicians seeing more patients per hour use more aides on average, are more likely to practice in small groups, and tend to be more experienced (i.e. older).

Johnson RE, Freeborn DK, McCally M. "Delegation of office visits in primary care to PAs and NPs: the physicians' view." ***Physician Assist.*** 9(1): 159-60, 165-9, Jan 1985.

Crandall LA, Santulli WP, Radelet ML, Kilpatrick KE, Lewis DE. "Physician assistants in primary care. Patient assignment and task delegation." ***Med Care.*** 22(3): 268-282, Mar 1984.

Journal abstract: This paper reports a concurrent self-report study of 2,456 office encounters with physicians and/or physician assistants (PAs) in 16 primary care, private practices in Florida. Initial patient assignment to either a physician or PA varies according to demographic and visit-specific characteristics. Patients who are male, younger than 65 years, new patients, seeking help for acute problems, and those who are "walk-in" or "work-in" patients are more likely to be assigned to a PA. Among frequently performed procedures, physicians are more likely to perform the partial histories, partial physicals, and pelvic examinations, as well as counsel patients on diet and psychosocial problems. PAs are more likely to perform the complete physical examinations, record vital signs, conduct diagnostic tests, and perform therapeutic procedures (administer injections, change dressings, etc.). Most tasks performed by PAs receive supervision through chart review rather than direct oversight. The typical patient visit in a practice employing a PA involves the receipt of services from only one provider. Approximately 50% of patient services are performed by physicians only, while 35% of the services are performed solely by PAs, and 15% are performed by both. Most patients have received care from both the physician and the PA.

Fottler MD. "Manpower utilization practices in physician offices: the role of physician extenders." ***J Health Hum Resour Adm.*** 5(2): 159-85, Fall 1982.

Rabin DL, Spector KK. "Delegation potential of primary care visits by physician assistants, Medex and Primex." ***Med Care.*** 18(11): 1114-1125, Nov 1980.

Journal abstract: In order to determine the proper level of support for primary care new health practitioners (NHP) programs, an estimate needs to be made of the demand for these programs; the degree to which primary care NHPs can substitute for physicians' services will have an impact on this demand. Using community-wide data on the nature and volume of care provided by physicians in their ambulatory practices, the authors estimated the proportion of care that three common types of primary care NHPs could handle: Primex nurse practitioners, 2-year physician assistants and Medex. Panelists with expert knowledge of each NHP type assessed primary care abstracts to determine if the NHPs could have handled all, some or none of the visit. Overall, the three groups considered collectively were deemed capable of assuming all or some responsibility for a large proportion of primary care--92 per cent. Differences among NHP type were found with regard to the morbidity each could handle, with 2-year physician assistants capable of handling the broadest spectrum of care. Community-wide estimates made regarding the number of NHPs employable by physician specialty showed general practitioners and pediatricians having the practice volume and type of morbidity sufficient to most easily employ NHPs.

Ekwo E, Dusdieker L, Bean J, Daniels M. "How lengths of office visits vary when primary care practices employ physician assistants." ***Inquiry.*** 17(2): 145-154, Summer 1980.

"... In primary care practice settings employing PAs, the following patient-related factors appeared to be the most significant predictors of the time patients spent in the clinic: (1) the reasons for office visits, and (2) the performance of data-collecting, nursing, and diagnostic tasks by the health providers during patient care. Only a small part of the variabilities in the total time PAs spent with patients was predicted by the independent variables included in this analysis...."

Major E. "A comment on 'A re-appraisal of the productivity potential and economic benefits of physician's assistants'." ***Med Care.*** 18(6): 686-690, Jun 1980.

Ms. Major raises some questions about the use of a combined optimization-simulation model described by Hershey and Kropp. She suggests that the authors consider the questions and incorporate some of the suggestions, such as utilizing a variety of specific environments to test different parameters.The authors reply and re-state their support of the statements made in their article. They conclude that in many cases, PAs are hired in spite of limited increases in productivity and income. They agree that the effects of various practice parameters should be examined. They state that the model has even greater potential as a planning tool for optimum utilization of PAs.

Mendenhall R, Repicky P, Neville R. "Assessing the utilization and productivity of nurse practitioners and physician's assistants: methodology and findings on productivity." ***Med Care.*** 18(6): 609-623, Jun 1980.

Journal summary: This article describes the research design, survey instrument and methodology employed in a national study to assess the utilization and productivity of nurse practitioners and physician assistants (NP/PAs) in primary care settings ....Data are presented on the productivity of NPs, PAs and physicians as measured by seven basic variables related to patient volume, time in patient care and revenue generated. Numerous inter- and intraspecialty comparisons were made across various practice arrangements and across location variables such as rural vs. urban, remote vs. nonremote, and health care resource areas. Interpretations of the data indicate clearly that PAs are considerably more productive than NPs. However, although NPs spend more time with individual patients, the cause of this differential productivity was not revealed.

Breslau N, Novack A. "Public attitudes toward some changes in the division of labor in medicine." ***Med Care.*** 17(8): 859-867, Aug 1979.

Journal summary: This study examined public attitudes toward the delegation of medical tasks to nonphysician health workers.... Physicians' responses paralleled the responses of the lay public regarding most tasks. However, with respect to regular checkups on babies and prenatal checkups, markedly higher proportions of the physicians than the public were willing to delegate to nonphysicians. The analysis indicated that public attitudes toward task delegation in medical practice do not bear strong relationships to social status indicators, political self-designations, or perceived health status.

Wilson HT. "Strategies for using and evaluating physician assistants and family nurse practitioners." ***South Med J.*** 72(8): 911-913, Aug 1979.

Journal abstract: New health practitioners are no longer new on the medical scene, but they still present a radical innovation in the provision of medical care. As such, they pose both rational and emotional threats to physicians, nurses, and administrators. Two pivotal questions related to their acceptance and use will be discussed in this presentation: (1) How can new health practitioners best be introduced to office and hospital health workers? (2) How much responsibility can these new health workers be allowed? Strategies and tactics for the introduction and honest evaluation of these new health workers will be provided.

Ekwo E, Dusdieker L, Fethke C, Daniels M. "Physician's assistants in primary care practices: delegation of tasks and physician supervision." ***Public Health Rep.*** 94(4): 340-348, Jul-Aug 1979.

Journal synopsis: "Little information is available on factors influencing physicians (MDs) to delegate health care tasks to physician's assistants (PAs). Information about assignment of tasks to PAs was sought from 19 MDs engaged in practice in primary care settings in Iowa.... Tasks assigned to PAs appeared to be those that MDs judged to require little or no supervision. Tasks that could be performed efficiently by other non-MD personnel were not assigned to PAs. However, PAs were observed at the practice sites to perform tasks which the MDs had indicated could be appropriately assigned to PAs, as well as some tasks that could be performed by other non-MD personnel....In these settings, the PAs functioned with a high degree of autonomy in providing health care. These findings have implications for educators and potential employers of PAs." Among the physicians, only 5.3% said PAs are not qualified to prescribe medication, and none said it required direct supervision by a physician. The remaining 94.7% were of the opinion that PAs are qualified to write prescriptions under no MD supervision or only minimal supervision. Among PAs, 3.6% listed prescribing medication as a task they are not qualified to perform; another 3.6% felt prescribing should be done under direct MD supervision. The remaining 92.9% believed prescribing needed minimal or no supervision.

Fethke C, Ekwo E, Daniels M. "Management practices: task allocation between physicians and physician assistants." ***J Ambulatory Care Manage.*** 2(2): 31-45, May 1979.

Scheffler RM. "The productivity of new health practitioners: physician assistants and Medex." ***Res Health Econ.*** 1: 37-56, 1979.

O'Bannon J, Mullooly J, McCabe M. "Determinants of lengths of outpatient visits in a prepaid group practice setting." ***Med Care.*** 16(3): 226-244, Mar 1978.

Journal abstract: In this paper we have examined the amount of time that physicians (MDs) and physician's assistants (PAs) expended on office visits. The purpose was to determine the extent to which a series of patient-related and system-related characteristics explain variations in that time. Using regression analyses, we found most of the explained variation generally to be due to system-related characteristics. Whether the provider was an MD or PA made little difference in the length of time spent with patients. The principal determinant of provider time for unscheduled and scheduled 15-minute visits was the patient-load (number of patients per minute); for scheduled 20-minute visits, the number of associated morbidities was relatively more important than patient-load....

Hershey JC, Kropp DH, Kuhn IM. "The productivity potential of physicians' assistants: an integrated approach to analysis." ***J Med Syst.*** 2(2): 123-138, 1978.

Journal abstract: Although many previous analytical studies indicate that physicians' assistants can substantially increase productivity and reduce costs, the utilization of physicians' assistants in ambulatory health care settings has grown at a disappointing rate. This apparent discrepancy may be explained in part through close examination of the models used in the analytical studies. This paper describes the limitations of previous studies and shows how analysis can be improved through the use of a combined optimization-simulation model. The model is applied to a hypothetical example to demonstrate how productivity and income benefits can be overstated, and to test the sensitivity of such benefits to a range of management policies for the ambulatory care practice regarding patient load, physical resources, appointment scheduling, and more flexible assignment of providers to patients.

Perry H. "An analysis of the professional performance of physician's assistants." ***J Med Educ.*** 52: 639-647, Aug 1977.

Journal abstract: The job performance of a national sample of 939 physician's assistants has been assessed by means of a self-rating as well as by a rating scale completed by supervising physicians. Three-quarters of the participating supervising physicians are greatly satisfied with the work of their physician's assistants and a similar proportion indicate that they would definitely hire the same assistant if they "had it to do over again." The influences of background and work environment characteristics upon performance were assessed by means of multiple regression. Graduating from a military sponsored physician's assistant program appears to have a beneficial effect upon performance. Performance during training exerts only a weak effect upon job performance. Amount of education and medical experience prior to beginning physician's assistant training do not affect job performance.

Nelson E, Johnson K, Jacobs A. "Impact of Medex on physician activities: redistribution of physician time after incorporating a Medex into the practice." ***J Fam Pract.*** 5(4): 607-612, 1977.

Journal abstract: A study was conducted in 11 practices to measure the impact of Medex physician assistants on the activities of physicians.... 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.

Kane R, Olsen D, Wilson W, Reynolds L, Hogben M, Castle C. "Adding a Medex to the medical mix: an evaluation." ***J Med Care.*** 14(12): 996-1003, Dec 1976.

Journal abstract: Three classes of Medex were followed during their preceptorship training and subsequent employment to assess the impact of adding such physician assistants on 13 private practices. The data suggest that the Medex are readily incorporated into the practice, seeing a similar spectrum of patients and generally functioning as a semicolleague. Although the Medex was almost universally a contributing addition to the practice, increasing patient volume, the specific effects varied with the setting.

Glenn J, Goldman J. "Strategies for productivity with physician extenders." ***West J Med.*** 124(3): 249-257, Mar 1976.

Golladay F, Smith K, Davenport E, Hansen M, Over A. "Policy planning for the mid-level health worker: economic potentials and barriers to change." ***Inquiry.*** 13: 80-89, Mar 1976.

Supports the view that utilization of health practitioners can reduce the cost and expand the supply of quality health care. Major barriers to productive utilization appear to be patient acceptance, the need for team building to include the new worker, and risk reduction, both moral and legal, for the physician. Only through overt efforts to facilitate the utilization of midlevel health workers will the potential benefits be realized. The need for analytic as opposed to descriptive studies of the change process is stressed.

Glenn J, Goldman J. "Task delegation to physician extenders--some comparisons." ***Am J Public Health.*** 66(1): 64-66, Jan 1976.

A survey using a task delegation questionnaire to compare 1973 physician extender (nurse practitioners and physician assistants) practices to data obtained in 1969 by the American Society of Internal Medicine on physician attitudes toward anticipated task delegation to physician extenders. Actual task delegation conformed, with a few exceptions, to the 1969 attitudinal study of what physician extenders "could and should" do.

Schneider D, Kilpatrick K. "An optimum manpower utilization model for health maintenance organizations." ***Oper Res.*** 23(5): 869-889, Sep-Oct 1975.

Journal abstract: This paper describes the development and validation of a set of mathematical programming models directed at optimal manpower utilization in Health Maintenance Organizations (HMOs). An application of the models in a planning context for an emerging HMO is presented and the results compared to those of actual staffing patterns. Two basic models are discussed in detail: an overall planning model and a subscriber maximization model. Each model treats the interaction between effective manpower utilization, facility requirements, and available capital. The objectives used in the models pertain to either minimum cost or minimum feasible use of

physicians through the substitution of physician extenders. Field trials indicate that the models accurately represent the actual system and can be used effectively as planning aids.

Golden A. "Task analysis in health manpower development and utilization." ***Med Care.*** 13(8): 704-710, Aug 1975.

The systems methods of job analysis and task analysis allow better utilization of health manpower by restructuring the jobs of health professionals and the curricula of training programs to reflect the jobs to be performed. Further advantages are the interrelationship of resulting jobs and career mobility in both the work situation and curricula. Constraints, some of which are the lack of entry-level jobs and the need for proficiency tests are also discussed. Analysis of four strategies—traditional, series, parallel and consultative—for using physician extenders to increase physician productivity is presented. Beyond the skills and task capabilities of physician extenders, it is the development of mutual trust and confidence between physician and assistant that determines the strategy used and consequently the productivity gains. The strategy chosen and employed dictates not only productivity but also the extent to which the physician must act as a manager or consultant for care rather than a direct provider of care.

Nelson E, Jacobs A, Breer P, Johnson K. "Impact of physician's assistants on patient visits in ambulatory care practices." ***Ann Int Med.*** 82: 608-612, May 1975.

Journal abstract: The addition of a physician's assistant to an ambulatory care practice increases the practice's productivity. Practices using physician's assistants (Medexes) had a 12% increase in the number of patient visits during the first year of training and 1 3/4 years later had an average increase of 37%. The Medex by himself provided care to 28% of the patients and, in company with the physician, to another 10%. No consistent changes across practices were noted in patient waiting times or time physicians spend with patients.

Nelson E, Jacobs A, Breer P. "A study of the validity of the task inventory method of job analysis." ***Med Care.*** 13(2): 104-113, Feb 1975.

Journal abstract:...The purpose of this study was to validate the task inventory method by using the observational technique. Two data collection instruments were developed, a Task Inventory and an Observer Check List; both contained the same set of task statements. Trained observers shadowed 18 primary care physicians in their offices for one week recording the frequency and duration of task performance on the Observer Check Lists. At the end of the week, the 18 physicians completed a Task Inventory indicating how often they had performed each task in their offices and how long it normally took. The observers' and physicians' respective sets of data were analyzed to determine the degree of agreement. The results indicate that the agreement is not sufficient between the task data obtained by the two different methods to conclude that one is substitutable for the other. The validity of the Task Inventory method is therefore not supported by the results.

Kehrer B, Intriligator M. "Task delegation in physician office practice." ***Inquiry.*** 11: 292-299, Dec 1974.

Task delegation to allied health personnel is examined based on data derived from the AMA's Seventh Periodic Survey of Physicians. Some of the findings demonstrate that delegation is greater in group practices and with easily routinized tasks than with activities requiring clinical judgment. Types of allied health personnel and regional differences in delegation are discussed.

Golladay F, Manser M, Smith K. "Scale economies in the delivery of medical care: a mixed integer programming analysis of efficient manpower utilization." ***J Hum Res.*** 9(1): 50-62, Winter 1974.

Use of an activity analysis model shows that staffing patterns and optimal choice of techniques depend on the scale of practice. Introduction of physician extenders increases the scale at which economies of staffing are obtained and raises the diseconomies of sub-optimal practice.

Lasdon G, Mark W, Major D, Oaks W, Kretzing H. "Physician time per patient reduced by the use of physician's assistants in two practice settings." ***PA J.*** 4(4): 27-31, Winter 1974.

Two types of practices were studied to measure the impact of a PA on health care delivery. One setting was a university medical center group of four physicians; the other was a group family practice in a small town. The small town practice data showed that the PA eventually handled his own patients, thereby increasing potential access to medical care by 50%. In the medical center practice, physician time for new patients and general patients (in a specialty practice) was saved by utilizing the PA.

Pondy L, Jones J, Braun J. "Utilization and productivity of the Duke physician's associate." ***PA J.*** 4(4): 32-53, Winter 1974.

Journal abstract: The objectives of this study were as follows: (1) formulate a theoretical model of the typical medical practice as a system for producing medical care, with particular attention to the role of middle-level health workers such as graduates of Duke University's Physician's Associate Program; (2) develop a methodology for collecting data necessary to estimate the relevant parameters in the model, and to describe current patterns of utilization of Duke PA's; (3) draw substantive conclusions, insofar as the model and data collection methodology permit, about the actual and potential productivity of Duke PAs.

Zeckhauser R, Eliastam M. "The productivity potential of the physician assistant." ***J Hum Res.*** 9(1): 95-116, Winter 1974.

A production function methodology is developed to estimate the potential contribution of physician assistants in the delivery of medical care in a paradigmatic delivery mode in an urban health center. A numerical production function is estimated following a discussion of efficient task delegation to physician assistants. With optimally efficient delegation, the physician assistant can replace half of a full-time physician.

Braun J, Howard R, Pondy L. "The physician's associate–a task analysis." ***Am J Public Health.*** 63(12): 1024-1028, Dec 1973.

Journal summary: The primary purpose of this study was to test the methods of analysis designed to explore two basic aspects of task performance by physician's associates–utilization of skills and extent of independence (or dependence).... On the basis of this study it seems reasonable to recommend that a similar test be conducted, analyzing physician task performance. If that were to prove feasible, then a large scale study, using random and larger sample sizes, should be conducted to determine if, how, and in what tasks the PA relieves the physician from his traditional duties. It is further recommended that the same method be used to study other types of physician extenders so that the various types can be compared with each other....

Golladay F, Miller M, Smith K. "Allied health manpower strategies: estimates of the potential gains from efficient task delegation." ***Med Care.*** 11(6): 457-469, Nov-Dec 1973.

The optimal role of the physician assistant in primary care practice and the implied manpower strategy is studied through the use of an analytic model of a primary care practice: "... The model requires the practice to delegate tasks to paramedical personnel including the physician extender in such a way as to minimize the total cost of delivering a list of required medical services. The alternative acceptable techniques for delivering care are defined by the number of minutes of each type of medical personnel that must be employed in producing each service." According to the model, physician extenders could increase the productivity of a representative practice up to 74%. Physician time needed to serve 100 patients in a week may be reduced by 14.2 hours through the efficient use of a physician extender.

Bassett G, DeMers JL, Stiening JA, Stone LA. "Tasks most frequently performed by advanced Medex trainees in their preceptors' medical practices." ***Physician's Associate.*** 3(1): 14-18, Jan 1973.

This report is an early description of the delegated medical tasks advanced Medex-trainees were performing in their preceptor's practices when two-thirds through the educational program. Fifty most commonly performed tasks are enumerated. Their relationship to overall program objectives is noted, with examples.

Parker H, Delahunt J. "Tasks for the physician's assistant: reactions of urban physicians." ***Dallas Med J.*** Jul 1972.

Journal summary: Dallas County Medical Society members responded to a survey regarding delegation of task performance to a physician's assistant.... Pediatricians were more approving of delegation on a wider array of tasks compared to all specialties; with Internal Medicine, Family Physician, Psychiatry, and Obstetrics-Gynecology next. Pathology showed the least number of task discriminations compared with all specialties. Year of graduation appeared to have an association with type of task response. Graduates during the last 25 years were significantly more approving of task performance...by a PA than were earlier graduates....Local physicians appeared to support the concept of the PA performing specified tasks under supervision....

Smith K, Miller M, Golladay F. "An analysis of the optimal use of inputs in the production of medical services." ***J Hum Res.*** 7(2): 208-225, Spring 1972.

Journal abstract: The purpose of this paper is to explore the implications of employing "physicians' assistants" in delivering primary medical care. It seeks to identify the optimal role of paramedical personnel and to assess the impact of efficient delegation of tasks on the productivity of the physician, his opportunities for leisure, and the cost of care. The technical opportunities for delegation and the specific demands for medical services imposed on the primary care practice are identified. These data are then analyzed in an activity analysis model of the practice to identify and assess the implications of efficient patterns of delegation.

Reinhardt U. "A production function for physician services." ***Rev Econ Stat.*** 54(1): 55-66, Feb 1972.

Study to identify impact of paramedical personnel in solo or group practice settings on physician's productivity level. Findings suggest "that the average American physician could profitably employ

roughly twice the number of aides he currently employs and thus increase his hourly rate of output by about 25 percent above its current level." Concluding remarks briefly discuss reasons why physicians may choose not to employ assistants.

Yankauer A, Schneider J, Jones S, Hellman L, Feldman J. "Physician output, productivity and task delegation in obstetric-gynecologic practice in the United States." ***Obstet Gynecol.*** 39(1): 151-161, Jan 1972.

Journal abstract: The number of office visits, operations and deliveries performed by obstetrician-gynecologists is higher in areas where there are fewer physicians, higher for specialist groups than for solo practice arrangements, and higher for specialists 40-50 years of age than for those in younger or older age groups.... The delegation of office tasks is related to the ratio of nonphysicians to physicians in the office setting and to the presence of a registered nurse among the employed workers.... The nature of the tasks delegated in office and hospital practice and the frequency with which tasks are delegated are not closely related to the level of decision-making and the training required to perform the task.

Hoff W. "Resolving the health manpower crisis--a systems approach to utilizing personnel." ***Am J Public Health.*** 61(12): 2491-2499, Dec 1971.

Journal abstract: This paper is particularly pertinent as an effort to develop a scientific approach to manpower development. Using a systems approach the author shows how manpower can be utilized in a specific situation.

Pondy L. "Evaluation of the physician's assistant's productivity." ***Physician's Associate.*** 1(3): 129-133, Oct 1971.

Reports progress of evaluative studies used to design a methodology for the quantitative analysis of Duke-trained PAs involved in direct patient care. Discusses productivity as a key factor in the development of a cost-benefit analysis of a PA program. The methodology of a baseline-experimental sequence is discussed. The sites of data collection are discussed. Results at one site demonstrated a potential productivity increase of 76% (i.e., the system could potentially handle 76% more patient visits after implementation of the PA, if the demand existed). Results of these studies may be applied to determine optimal time-activity utilization of the PA within each system and also which system may most effectively use a PA.

Smith R, Anderson J, Okimoto J. "Increasing physician productivity and the hospitalization characteristics of practices using Medex--a progress report." ***Northwest Med.*** 70: 701-706 passim, Oct 1971.

A study to determine whether productivity increased in practices employing Medex. Results indicated that productivity in Medex-assisted practices rose 40% and 50% as measured by patient visits. The mean hospital stay dropped in these practices and the Medex was able to act as first assist in surgery allowing for a greater number of surgical procedures.

Adamson T. "Critical issues in the use of physician associates and assistants." ***Am J Public Health.*** 61(9): 1765-1779, Sep 1971.

Discusses how PAs and associates may increase physician productivity through effective task delegation. Possible impediments to utilization of PAs such as legal issues, training programs and

role relationships with physicians are discussed. Acceptance of these NHPs may rest on demand for the services and incentives for the physician to hire them. A suggestion for facilitating acceptance is to have PAs and nurses trained with medical students in team situations.

Drachman R, Cooke R. "Physician productivity and medical care." ***J Pediatr.*** 77(5): 749-763, Nov 1970.

A thorough examination of the deficiencies and failures of health services to children, particularly those in inner city, low-income, and medically underserved areas. Authors state that "the most promising efforts to improve productivity appear to be in the use of various types of assistants at all levels in the health care system." A number of studies are cited to support this idea. Other suggestions for increasing productivity include screening tests and computer-patient history-taking or diagnostic programs.

Yankauer A, Connelly J, Feldman J. "Physician productivity in the delivery of ambulatory care: some findings from a survey of pediatricians." ***Med Care.*** 8(1): 35-46, Jan-Feb 1970.

Journal abstract: The delegation of ambulatory patient care tasks by pediatricians is directly related to the types and numbers of health workers per doctor employed in solo and two-man practice settings. Physician productivity rate is directly related to patient care task delegation in settings of all sizes. Larger size settings, especially multispecialty groups, compare unfavorably with those solo and small specialty group settings which employ two or more health workers per physician both in patient care settings may be a reflection of the community demand for care in areas where medical manpower is in short supply and where the physician, motivated to respond to their demand, employs more ancillary help as a method of discharging his responsibilities. Whether similar factors influence the productivity of physicians in multispecialty groups cannot be answered from the data at hand.

Estes E. "The critical shortage--physicians and supporting personnel." ***Ann Int Med.*** 69: 957-962, Nov 1968.

Increasing physician productivity rather than numbers of physicians is viewed as a major method for solving distribution problems. The employment of physician assistants, coupled with the use of computers and other technologies and improved organizational patterns, are proposed as viable means of solving manpower problems.

Golden A, Seidel H. ***A systems approach to the staffing patterns of a health maintenance organization (Staffing a health maintenance organization).*** 10 p. no date.

Study abstract: ... The systems approach of goal and objective setting and job and task analysis was the methodology applied to study existing health provider jobs in an HMO and determine an improved staffing pattern.... A review of all the tasks necessary to deliver comprehensive primary health care led to a recommended reallocation of tasks with the smallest number but most complex assigned to the physician and the highest number but least complex assigned to the assistant. This led to the development of a suggested staffing pattern whereby a team of 2 physicians, 4 associates, and 8 assistants would be able to manage the visits of 10,000 patients.