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## Research Grants Studies

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Section 1110 of the Social Security Act provides for a cooperative research grants program. The grants are given by the Social Security Administration (SSA) under this program to non-profit organizations for research in the broad area of social security. A report on a recently completed grants project is summarized below. The project, designed to evaluate the effectiveness of patient care in hospitals, was directed by Gerald Gordon of Cornell University and supported by SSA Grant No 56076

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### HOSPITAL ORGANIZATION EFFECTIVENESS OF PATIENT CARE

An assumption often made is that modern medical technology is costly. Clearly hospital medical costs are rising with a large percentage of the rise attributable to increased delivery of new and improved medical services made possible by advances in medical technology.

It is less clear, however, that new medical technology per se increases the costs for care. Indeed, the argument can be made that by increasing the ability to treat illness, technology that facilitates higher quality care may be reducing patient care costs. A major problem in dealing with the effect of technology and efficiency is the difficulty in applying econometric methods to nonprofit areas such as health. As a result of the difficulties in assessing quality of care from an economic perspective, many investigators have discussed medical cost reduction with little reference to the level of care provided. A consideration of the state of hospital technology, efficiency, and quality is necessary if the question of the utility of expenditures for health care is to be dealt with adequately.

Three factors were felt to be critically related to the effectiveness of a hospital. Its range of services, the modernity of its care system, and the cost of service.

This project was specifically designed to study the cited factors. In essence, 10 innovations in the area of respiratory disease were studied. These

innovations have been rated by panels of experts. Measures were developed to use in assessing which of these innovations should have been introduced, which have proved extremely beneficial, and which have proved less than beneficial. Records of adoption patterns for 845 hospitals were obtained that indicated those hospitals that were most able to introduce innovations in desirable areas, compared with those that were not. In effect, this is a measure of the modernity of care available. Data were also obtained on developed measures for the range of service provided by a given hospital and its efficiency (that is, cost of providing service). With these three measures, a viable index of quality care has been developed that can be termed "hospital effectiveness." The index may not be a "complete" one, but it does provide a meaningful mechanism for assessing the modernity and depth of facilities available, and the efficiency with which service is delivered.

Another key area of interest is the relationship between the quality of care and the general financial information procedures in hospitals. These procedures vary from no budgets and very rudimentary recordkeeping methods to very sophisticated financial procedures of cost analysis and expenditure forecasting. The hypotheses were that effectiveness of care would be related to financial information procedures and that such procedures affect the organization's flexibility and receptivity to change in treatment patterns, patient management, and patient support. It was further postulated that the effect of support and budgeting procedures upon hospital effectiveness would be mediated by the organizational and bureaucratic system of the hospital, and these factors were studied in depth.

The fact that a hospital can treat the whole

*The final report of this completed research grants project is in the Social Security Administration Library, 571 Altmeyer Building, 6401 Security Blvd., Baltimore, Md 21235, and in the Library of the Office of Research and Statistics, Room 320-0, Universal North Building, 1875 Connecticut Ave., N W, Washington, D C 20009. Copies of the reports may be obtained through interlibrary loans. (Also in these libraries are copies of more than 50 other research grants projects that have been completed since 1963. A list of these projects appeared in the May 1974 BULLETIN.)*

patient means that, in general, patients do not have to be transferred in order to receive emergency treatment, and facilities are available for handling complications associated with a particular disease. Such a situation appears to be fundamental to the concept of an effective hospital. Similarly, a hospital that lacks medical innovations deemed important by medical experts simply cannot deliver effective care by current standards. Finally, because medical care involves economic goods or scarce resources, cost inefficiencies may function to deny services to those who need them and hence limit a hospital's effectiveness. Thus, a hospital is considered effective to the extent that

- 1 It offers a full complement of services, enabling it to diagnose and treat the whole patient and all aspects of disease (Range of services dimension)
- 2 It has adopted and put into use technical innovations viewed by leading medical personnel as important for the diagnosis and treatment of disease (Modernity dimension)
- 3 It is able to deliver its services in an efficient manner (Efficiency dimension)

#### **Data Base**

Survey data has been collected on a random sample of 1,000 hospitals drawn from the 7,000 American Hospital Association (AHA) member hospitals. Data on these hospitals collected by the AHA in its annual survey in 1968 also are available. The case study design allowed comparison of hospitals with high or low technical modernity, range of service, and efficiency—controlling for the size of the hospital, location (rural or urban), and type of ownership (Federal, government, non-Federal, voluntary, or proprietary). The presence of these three controls facilitated the discovery of volitional factors (that is, those that can be altered) associated with effective hospitals.

#### **Conclusion**

At this point the findings indicate that major variations in cost are affected both by the structure of the hospital and the "visibility of consequences" occurring within the hospital. Visibility of consequences involves both the availability and use of economic and medical data

within the system. In the analysis, however, certain questions remain unanswered. Mainly, does this cost-saving reflect a decrease in the quality of care received? Preliminary indications are that these savings do not represent a decrease in quality. It is extremely important to stress the need for much more information on the quality question before drawing hard conclusions.

This analysis of economic costs was based primarily on secondary data sources such as the AHA data bank. In order to clarify questions regarding costs it would be necessary to do much more intensive case studies in the hospitals of the decision-making functions regarding resource allocation, as well as taking a closer look at actual accounting procedures employed within a hospital. This additional study should be done in conjunction with medical economists. If the current findings are verified, important savings in hospitals' costs can be effected through manipulation of visibility of consequences.

It should be pointed out that the savings are primarily effected through a reduction in the length of time a patient stays in a hospital. In hospitals with fewer than 200 beds, for instance, patients in hospitals with high visibility of consequences stayed on the average one day less than patients in hospitals with low visibility of consequences. This difference is critical because if further research should indicate that it reflects a more rapid recovery rate and/or a more rapid return to the job, the result would be decreased hospital costs and a potential decrease in overall disability costs. Moreover, the extra facilities that would become available if patients were not using hospital beds for as long a stay should result in efficiencies and economies in future construction.

Clearly, if hospital stays can be reduced without quality loss, there are rather considerable economic gains to be made on many levels. The preliminary findings indicate that this may be possible. A small study should be undertaken, before proceeding further, to investigate in greater detail quality and cost accounting questions, as well as the related question, "Under what conditions is visibility of consequences maximized?" This study should be done by using selected cases from the existing sample.

A different pattern is seen for large and for small hospitals. In small hospitals the involve-

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TABLE M-3—Selected social insurance and related programs Beneficiaries of cash payments, 1940-75

(In thousands. For explanatory footnotes on programs, see table M-1)

At end of selected month	Retirement and disability				Survivor				Railroad temporary disability <sup>4</sup>	Unemployment		Federal "black lung" <sup>5</sup>		
	OASDHI <sup>1</sup>		Railroad <sup>1</sup>	Federal civil service	Veterans	OASDHI	Railroad	Federal civil service		Veterans <sup>1</sup>	State laws <sup>6</sup>		Railroad <sup>4</sup>	
	Retirement <sup>2</sup>	Disability												
December														
1940.....	148		146	65	610	74	3		323		667	74		
1945.....	691		173	92	1,534	597	4	(7)	698		1,743	13		
1950.....	2,326		256	161	2,366	1,152	142	25	1,010	82	838	35		
1955.....	5,788		427	234	2,707	2,172	206	74	1,156	36	912	48		
1960.....	10,599	687	553	379	3,064	3,558	256	154	1,393	84	2,166	102		
1961.....	11,655	1,027	567	408	3,137	3,812	262	167	1,547	81	1,993	75		
1962.....	12,675	1,275	585	438	3,177	4,103	270	182	1,653	30	1,585	69		
1963.....	13,262	1,462	594	465	3,196	4,321	278	197	1,750	31	1,600	49		
1964.....	13,697	1,563	600	494	3,204	4,589	286	214	1,848	29	1,351	41		
1965.....	14,175	1,739	620	522	3,216	4,953	291	227	1,924	25	1,035	30		
1966.....	15,437	1,970	630	564	3,194	5,360	299	240	1,995	23	936	18		
1967.....	15,907	2,141	641	583	3,175	5,659	309	258	2,077	21	989	18		
1968.....	16,264	2,335	647	613	3,171	5,963	318	274	2,161	25	941	19		
1969.....	16,595	2,488	651	636	3,179	6,229	321	288	2,208	23	1,084	16		
1970.....	17,096	2,665	653	697	3,210	6,468	326	308	2,301	22	2,045	21		
1971.....	17,660	2,930	660	747	3,251	6,700	330	324	2,385	20	1,784	16		
1972.....	18,176	3,250	661	829	3,288	6,919	334	343	2,393	16	1,458	17	299	
1973.....	19,151	3,561	660	924	3,267	7,160	335	358	2,380	14	1,462	8	461	
1974.....	19,688	3,912	667	981	3,250	7,264	336	376	2,282	15	2,716	14	487	
1974														
December.....	19,688	3,912	667	981	3,250	7,264	336	376	2,282	15	2,716	14	487	
1975														
January.....	19,767	3,946	666	983	3,215	7,269	336	377		16	3,845	22	488	
February.....	19,798	3,983	666	992	3,212	7,286	337	379		16	4,240	24	489	
March.....	19,804	4,024	670	997	3,215	7,302	336	380	2,266	17	4,586	25	490	
April.....	19,836	4,061	674	1,000	3,220	7,321	336	381		16	4,328	26	488	
May.....	19,897	4,108	678	1,002	3,222	7,360	337	384		15	3,983	21	486	
June.....	19,925	4,125	681	1,002	3,227	7,321	336	391	2,268	15	3,572	19	485	
July.....	20,034	4,130	684	1,005	3,238	7,222	337	384		15	3,342	21	485	
August.....	20,094	4,176	689	1,012	3,235	7,255	337	385		15	3,090	25	484	
September.....	20,142	4,222	691	1,023	3,236	7,284	337	387	2,218	17	2,639	32	484	
October.....	20,226	4,264	693	1,025	3,238	7,311	338	389		18	2,449	33	484	
November.....	20,287	4,314	694	1,027	3,239	7,336	337	390		17	2,498	29	483	
December.....	20,364	4,352	694	1,029	3,244	7,368	337	391		19	(6)	37	482	

<sup>1</sup> Includes dependents

<sup>2</sup> Beginning Oct 1966, includes special benefits authorized by 1966 legislation for persons aged 72 and over and not insured under the regular or transitional provisions of the Social Security Act

<sup>3</sup> Monthly number at end of quarter

<sup>4</sup> Average number during 14-day registration period

<sup>5</sup> Average weekly number Includes regular State unemployment insur

ance, the Federal employees' unemployment compensation program, and the ex-servicemen's compensation program

<sup>6</sup> Includes dependents and survivors

<sup>7</sup> Less than 500

<sup>8</sup> Data not available

Source Based on reports of administrative agencies

## RESEARCH GRANTS

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ment of the board of trustees in daily operation is associated with decreased costs. As hospitals grow larger, the board's involvement has less relationship to efficiency. Indeed, this approach makes sense if it is assumed that in very large hospitals the extent to which part-time boards can actively intervene in daily activities is negligible. Even if large hospitals are excluded (that is, hospitals with 200 or more beds), the findings can be generalized to apply to more than half the hospitals within this country.

From an analytical perspective, as predicted, visibility of consequences increases the "power of prediction" of both costs and adoption. It

appears that hospitals achieve a "better fit" between internal structure and environmental requirements (implicit in the control factors) if they can reach higher levels of visibility of their own activities.

The questions now raised are: How can hospital owners and administrators raise the level of visibility of consequences in their hospital and to whom should such information be directed? It is appropriate to mention here various efforts made by hospital administrators to establish quality control procedures (under the stimulus of various external agents), but further study is necessary to find out whether medical audit reports, for example, are accessible and are in a form that is meaningful to administrators and owners.