MODEL FINANCIAL STATEMENTS -- BASIS OF A PROPOSED REIMBURSEMENT FORMULA TO CONTROL HOSPITAL COSTS

Thesis for the Degree of Ph. D.
MICHIGAN STATE UNIVERSITY
David A. Drinkwater
1966

This is to certify that the

thesis entitled

MODEL FINANCIAL STATEMENTS--BASIS OF A PROPOSED REIMBURSEMENT FORMULA TO CONTROL HOSPITAL COSTS

presented by

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has been accepted towards fulfillment of the requirements for

Ph.D. degree in Business Administration

Adolph E. Summwald
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Date August 17, 1966

ABSTRACT

MODEL FINANCIAL STATEMENTS--BASIS OF A PROPOSED REIMBURSEMENT FORMULA TO CONTROL HOSPITAL COSTS

by David A. Drinkwater

Hospital care--its role and its problems--is a subject of national concern. It is the responsibility of the accounting profession to make its contributions toward solving the macro problem of steadily escalating hospital costs and rates, and the micro problem of accurate identification of costs. The purpose of this study is to develop model financial statements as a basis of a proposed reimbursement formula to control hospital costs.

The role of the hospital is traced from its early days as a temporary refuge for the sick poor to its present position as a community institution involved in education and research as well as modern medical care. This change of role is discussed in terms of its effects on hospital ownership, medical care expenditures, hospital costs, and methods of financing.

The two aspects of the economic problem of providing hospital care of acceptable quality at lowest long-run average cost are: (1) form of ownership, and (2) method of

financing. An analysis is made of the reasons for the present combination of voluntary ownership and financing through prepayment plans. This analysis reveals that the ultimate success of the present economic basis depends upon operation efficiency.

To achieve greater efficiency, the writer proposes a reimbursement formula entitled "Community Service Method" which contains an "Eligibility Cost Control System." In constructing this new type of control, a review is made of the present accounting system approved by the American Hospital Association. Revisions are proposed in order to make financial statements control-oriented. The balance sheet indicates clearly the centers of responsibility and the purposes of assets. The income statement, based on the concept of cost variability, highlights capital and community costs and the individual contributions of revenue-producing departments.

The Community Service Method and three other reimbursement formulae are tested insofar as they affect financial capacity and cost incidence. The four methods differ as to the items to be reimbursed, the method of cost apportionment, and the system of controlling costs. When two non-parametric tests are applied to simulated data, the differences are found to be significant in terms of total and relative financial capacity. The highest cash balances

result under the Community Service Method. Moreover, the cost incidence is most equitable under this method.

This policy-oriented study concludes by recommending that the principal features of the Community Service Method be adopted by all hospitals and all third-party purchasers of care. The recently announced Medicare formula does, in fact, contain the following features:

1. Reimbursement on the basis of costs
2. Inclusion of capital and community costs
3. Uniform statistical bases for allocating costs of general service departments
4. "Relation of Costs to Charges" technique for general cost apportionment.

If the Federal government were to strengthen the Medicare formula by adopting an incentive-penalty control system such as the writer has devised for the Community Service Formula, then hospital management would be more motivated toward an optimum use of the assets entrusted to them by the community.

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A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Accounting and Financial Administration

1966

ACKNOWLEDGMENTS

I wish to express my appreciation to the persons who have assisted me in the preparation of this thesis. Special thanks are extended to my dissertation committee composed of professors Adolph E. Grunewald, James Don Edwards, and Leo G. Erickson. Professor Grunewald, as chairman, was a constant source of encouragement and provided expert direction toward avoiding many pitfalls.

Many others should be mentioned, but space does not permit their identification. However, I would like to single out those without whom this dissertation never would have become a reality. Dr. Edwards, for his untiring academic, moral, and financial support. Professor Paul Devlin of Boston College for introducing me to the field of hospital administration and for his expert advice during the early stages of the study. And my family, Mary Jayne and Diane, for their personal contributions.

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CHAPTER I

INTRODUCTION

Purpose of the Study

The precise purpose of this study is to develop model financial statements for the hospital industry which will serve as a basis for a control-oriented formula to reimburse the cost of hospital care purchased by third-party agencies.

The payment method proposed in this study provides a solution to two economic problems of the hospital industry: first, the macro problem of an increase in hospital costs and rates in excess of those attributed to population growth, technological advancement and the general price level; second, the micro problem of an identification of costs which will provide an accurate basis for a reimbursement formula.

The passage of the Medicare Act on July 31, 1965, brings the medical care industry, hospital care in particular, into the national limelight.[1] Government planners,

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[1]The passage of hospital care plans on the state level for the "medically indigent" serve to further broaden the scope of the national plan. For example, New York has announced a program (April, 1966) to finance the medical care expenditures of people deemed "indigent," according to an income-dependent scale, as well as those persons presently on welfare.

individual and institutional providers of medical care, third-party purchasers, and the general public are focusing their attention on the role of medical care and its economic impact. The government's concern is to purchase hospital care at a reasonable cost and to assure an optimum allocation of medical care resources. The providers of hospital care are seeking sufficient compensation to enable them to maintain and constantly improve the present quality of care. Third-party purchasers of care and the general public are demanding that costs be accurately identified and that negotiations between providers and purchasers of care be based upon sound reporting policies. In sum, the specific role of hospital care is coming under the direct scrutiny of organized groups having a parochial interest.

Sources of Data

The four sources of data used in this study are: first, available literature (government publications, specialized hospital journals, texts in medical economics, and hospital studies published by insurance institutes and hospital associations); second, personal interviews and correspondence with government officials, hospital executives and representatives of prepayment plans; third, actual financial statements of selected hospitals; fourth, financial statements based on simulated hospital operations.

Plan of Chapters

The information provided by these data sources is presented in six chapters. Chapter II describes the historical development of the hospital as a community-centered institution and the impact that this has had on medical care expenditures, hospital costs and methods of financing. Chapter III in its discussion of types of hospital ownership and methods of financing indicates the economic reasons for our present combination of voluntary hospitals primarily financed by third-party agencies. Chapter IV provides model financial statements which are based upon a revision of the present accounting system of the hospital industry. In Chapter V a reimbursement formula, constructed by the writer, is introduced. This formula and three others are tested for their impact on financial capacity and cost incidence. In Chapter VI cost control systems, different from those now existing in the hospital industry, are proposed for incorporation into a reimbursement formula. In conclusion, Chapter VII makes recommendations and discusses their implications.

CHAPTER II

HISTORICAL VIEW

Hospitals were originally temporary refuges for the sick poor.[1] In modern times, the role of the hospital has been modified and enlarged.[2] Care, formerly given only to the medical indigent, is now available to all social classes. The present-day hospital, through its involvement in education and research, is serving the healthy as well as the sick. It is a community institution. This change in the role of the modern hospital has affected hospital ownership, medical care expenditures, hospital costs, and hospital financing.

Hospital Ownership

Since the latter part of the eighteenth century hospitals in the United States have been built and operated

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[1] E. R. Rorem, "Impact of Third-Party Payment on Hospital Economics," Hospitals, January, 1953, p. 49.

[2] H. J. Cody, "The Contribution a Hospital May Make to Its Community," Hospitals, January, 1940, p. 3.

by government,[3] by proprietary groups,[4] and by voluntary,[5] nonprofit corporations.

Trends in hospital ownership between 1928, 1948, and 1964 are shown in Table 2.1. The proportionate number of federal and nonfederal hospitals has remained approximately the same during the past forty years. Nevertheless, admissions and plant investment statistics indicate that federal hospitals are assuming a minor role.

As for nonfederal hospitals, there have been significant changes. In number, admissions, and plant investment there have been a shift toward short-term general hospitals at the expense of psychiatric, tuberculosis, and long-term general hospitals. This is indicative of a change in attitude which favors the general hospital for the acutely ill rather than the specialized hospital for chronic cases.

Within the group of short-term general hospitals, the voluntary nonprofit type has assumed a leading role over the proprietary because the quality of care demanded by the community could no longer be provided at a profit. At the end of 1964 the voluntary nonprofit hospital was the

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[3]Federal hospitals have cared for merchant seamen, veterans, Indians, armed forces personnel, drug addicts, and selected government personnel.

[4]Proprietary hospitals usually have been built by physicians as instruments of profit.

[5]Voluntary hospitals were originally founded by religious orders. Today, many still reflect this original religious affiliation.

Table 2.1. Relative changes in distribution of hospitals, admissions, and plant investment, for 1928, 1948, and 1964, by type of hospital

Type of Hospital	Hospitals			Admissions			Plant Investment		
	1928 (%)	1948 (%)	1964 (%)	1928 (%)	1948 (%)	1964 (%)	1928 (%)	1948 (%)	1964 (%)
All Hospitals	100	100	100	100	100	100	100	100	100
Federal	4	6	6	..	8	5	7	15	11
Nonfederal	96	94	94	..	92	95	93	85	89
Psychiatric	3	8	7	..	2	1	14	18	18
Tuberculosis	8	7	2	..	1	1	10	5	2
Long-term	6	5	4	N/A	1	1	6	5	5
Short-term	79	74	81	..	88	92	63	57	64
Voluntary	38	46	48	..	62	66	46	45	49
Proprietary	36	14	12	..	8	6	9	2	2
State	5	12	20	..	18	20	8	10	13

Sources: C. R. Rorem, The Public's Investment in Hospitals, University of Chicago Press, 1930; and American Hospital Association, Hospitals, Vol. 39, No. 15 (August, 1965), Guide Issue, Part 2, 448-449.

predominant provider of hospital care in the United States. Past trends and the present philosophy toward medical care indicate that this predominance will continue.

In addition to general medical care, the voluntary hospital is being called upon to provide the facilities for the continuance and advancement of modern medical research. Moreover, it will have to provide for the education of medical and paramedical personnel. As a community-centered institution it will also continue to recognize its obligation toward the sick poor.[6]

Medical Care Expenditures

During the period between 1948 and 1963 there was a rapid and sustained increase in expenditures for medical care, especially hospital care. Table 2.2 compares personal consumption expenditures by type of product. Total expenditures for all personal consumption expenditures doubled whereas those for medical expenditures tripled. The proportion of public expenditures for medical care rose from approximately 4 percent to 7 percent during this fifteen year period. A portion of this increase may be attributed to a population increase and an increase in medical care prices above the general price level. However, on a per

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[6] R. E. Brown, "Some Implications of Hospital Costs and Use," Greater Detroit Area Hospital Council, Inc., The Council, April 20, 1960.

Table 2.2. Personal consumption expenditures by type of product, 1948 and 1963

	1948		1963	
Type of Product	Amount	Percent	Amount	Percent
Medical care	$ 8	4	$ 25	7
Food	64	35	95	26
Household operation	24	14	52	13
Transportation	17	10	47	13
Housing	16	9	50	13
Clothing	24	14	37	10
Recreation	10	6	23	6
Personal business	7	4	25	7
Personal care	2	1	7	2
Religious and welfare	2	1	5	1
Private education	2	1	6	1
Foreign travel-net	1	1	3	1
Total	$178	100	$375	100

Source: United States Department of Commerce, United States Department of Health, Education and Welfare.

capita basis, with an adjustment for the increase in the general price level, a "real" rise in medical care expenditures has occurred.[7]

The most notable feature of the rise in medical care expenditures is the portion of the medical care dollar going to hospital care. Table 2.3 indicates that the hospital portion rose from 22 percent in 1948 to 30 percent in 1963. This rise was at the direct expense of physicians' fees which correspondingly declined from 33 percent to 25 percent. This substitution of the hospital for the physician gives further evidence of the changing attitude in favor of the hospital as the primary medical care unit.

Hospital Costs

The rapid increase in expenditures has not been without a concurrent increase in hospital costs and rates. Table 2.4 illustrates the rise, during 1948 to 1964, in the costs of short-term general hospitals. During this time the average hospital expense per patient-day increased by about 200 percent. The net increase in the Consumer Price Index during the same period amounted to about 25 percent. The rise in the general price level, therefore, accounted for

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[7]Public Health Service, Medical Care Financing and Utilization, Health Economic Series No. 1, 1962, Table 2 for statistics.

Table 2.3. Percentage distribution of private medical care expenditures, by type of service, 1948 and 1963

Type of Expenditure	1948 (%)	1963 (%)
Hospital care	22	30
Physicians' services	33	25
Dentists' services	12	10
Drugs	19	19
Eyeglasses	6	6
Nursing home care	1	1
Net cost of insurance	3	5
Other	4	4
Total	100	100

Source: Social Security Administration, "Private Medical Care Expenditures and Voluntary Health Insurance, 1948-63," Social Security Bulletin, Vol. 28, No. 12 (December, 1964), Table 4, 15.

Table 2.4. Hospital costs (short-term general) and consumer price index and percent of increase, for selected years 1948 through 1964

Year	Hospital Costs	Percent of 1948	Consumer Price Index	Percent of 1948
1964	$ 41.58	310	$ 108.1	125
1960	32.23	250	101.4	115
1956	24.15	190	94.7	108
1951	16.77	125	95.4	109
1948	13.09	100	88.2	100

Source: American Hospital Association, Hospitals, Vol. 39, No. 15 (August, 1965), Guide Issue, Part 2, 448; and Survey of Current Business, July, 1965.

only one-eighth of the rise in hospital costs per patient day.[8]

There are regional, state, and local differences in hospital costs and rates. Table 2.5 indicates a regional range in total costs per patient day from $36 to $58 and a range in hospital rates from $35 to $55. Even within a region as small as New England, there are inter-state differences. Costs range from $36 to $52 and rates from $34 to $49. These variations also hold true on a local level. For example, within the small state of Rhode Island, costs range from $23 to $30 and rates from $24 to $33. It is important that these differences be recognized in any attempt to establish a nationwide reimbursement formula for the purchasing of hospital care by a third-party agency.

With the steady increase in hospital costs and rates the need for a control-oriented reimbursement formula becomes imperative. Without such a formula, the macro problem of rising costs will become more acute.

Hospital Financing

The financing of hospital operations has passed through four developmental[9] periods and is now entering a

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[8]For a full explanation of factors contributing to this rise see Seymour E. Harris, The Economics of American Medicine (New York: MacMillan Company, 1964).

[9]Many authorities consider these periods "revolutionary" rather than "developmental." L. Block, Hospital Accounting, March, 1966, p. 3.

Table 2.5. Total expense and hospital rates per patient day by principal regions, New England States and selected Rhode Island hospitals for 1964

Area	Total Costs Per Patient Day	Patient Rates Per Patient Day
Region		
Middle Atlantic	$ 43	$ 39
East North Central	42	42
East South Central	36	35
West North Central	36	35
West South Central	39	37
Mountain	43	41
Pacific	58	55
New England	49	44
States		
Connecticut	51	49
Maine	36	34
Massachusetts	52	44
New Hampshire	41	34
Vermont	40	39
Rhode Island	28	24
Hospitals		
Rhode Island	30	33
St. Josephs	22	27
Newport	23	24

Sources: American Hospital Association, Hospitals, Vol. 39, No. 15 (August, 1965), Guide Issue, Part 2, 456-472; Hospital Association of Rhode Island, Comparative Graphs and Schedules, 1965.

fifth. As a result of the hospital's more extensive role and the economic impact of rising expenditures, costs, and rates, the pattern of fund sources has undergone radical change.

Prior to 1910

Prior to 1910, hospitals were financed entirely by philanthropic sources. Only non-paying patients were admitted; paying patients were treated at home by local physicians.[10]

1910 to 1930

With the discovery of the x-ray, smallpox vaccination, and insulin, physicians and the public came to accept the idea that the sick--even the well-to-do sick--might be better off in a hospital than at home.[11] These paying patients were accepted by the hospital out of courtesy to those physicians devoting their services to free patients. Consequently, the private patients of physicians were charged for the use of hospital facilities and service.[12] This new source of revenue was soon to become the nonfederal hospitals' most important financial source.

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[10] Davis and Rorem, The Crisis in Hospital Finance (Philadelphia: W. B. Saunders Company, 1936), p. 108.

[11] Impetus was given this new way of bringing health care to the people by the American College of Surgeons in 1913 and by its first hospital approval program in 1918.

[12] L. Block, op. cit., p. 4.

1930 to 1940

During the early thirties, hospital pricing policy was highly flexible. In an attempt to counterbalance losses resulting from below-cost rates for routine services, above-cost rates were set for special service departments.[13] Deficits and capital needs were met through voluntary giving promoted by fund drives. Philanthropy continued to be a major fund source.

In the development of hospital financing, this decade was characterized by the birth and growth of prepayment plans.[14] Premium payments, on a community rating basis, are made to third-party organizations which in turn reimburse the hospital for the care of their beneficiaries. The number of these plans increased from zero to fifty-three and their subscribers from zero to 2.9 million.[15]

The depression gave impetus to this new phase. Hospital debts were mounting and receipts were decreasing because patients could not afford to pay their bills. In

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[13] W. J. McNerney, "Public Wants Voice in Hospital Financing," Modern Hospital, September, 1963, p. 140.

[14] Prepayment as we know it today began in 1929 in Dallas, led by Justin F. Kimball. Drawing upon their experience with a sick benefit fund, a group of teachers agreed to pay Baylor University Hospital six dollars per year in return for hospital benefits when needed.

[15] W. J. McNerney et al., Hospital and Medical Economics, Vol. I (Chicago, Illinois: Hospital Research and Educational Trust, 1962).

the absence of the profit motive and lacking any actuarial certainty, the birth of Blue Cross during this period of time must be considered as a social occurrence which brought hospitals and patients effectively together.[16]

1940 to 1960

The idea of prepayment was becoming more widely accepted. Between 1950 and 1960 premium payments increased approximately 350 percent.[17] Prepayment plans stabilized and increased the percentage of disposable personal income allocated to health care. Consequently, hospitals grew significantly in number and complexity.

Table 2.6 indicates the changed pattern of hospital financing during this twenty year period. The trend was toward more reliance on the patient and his third-party representative rather than on government and philanthropy. This shift lessened the flexibility of hospital pricing policies. It was no longer possible to set rates on an over-all basis, by unit of production, or according to the patient's income level. Rates were now negotiated.

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[16] W. J. McNerney, op. cit., p. 141.

[17] Ibid., p. 142.

Table 2.6. Proportion of voluntary general hospital revenue derived from patients, government, and philanthropy, for selected years 1935 through 1964

Revenue Source	1935 (%)	1940 (%)	1948 (%)	1959 (%)	1964 (%)
Patients*	56	66	76	89	93
Government	19	13	7	6	4
Philanthropy	25	21	17	5	3

*Patients are defined as self-paying or represented by third-party organization.

Source: Adapted from E. Ginzburg, A Pattern for Hospital Care (New York: McGraw Hill, 1961), pp. 64-65; and Health Insurance Institute, 1965 Source Book of Health Insurance Data.

The hospital, in turn, attempted to adapt to the demands of third-party agencies and at the same time to retain its former prerogative of determining its own prices. Hospital administrators were preoccupied with the influence this new revenue source would have on the quality of care, if the terms of the reimbursement contract were not favorable.

1960 to Present

The present phase of hospital financing is characterized by the emerging concern of the public and of third-party agencies to obtain care which weds quality and quantity

at a reasonable price. Emphasis is being placed on the need for controls in order that this ideal may be attained.

With the passage of Medicare on July 31, 1965, approximately twenty million Americans became eligible participants in a medical insurance program sponsored by the Federal government. This program will reduce the number of federal hospitals. Essentially, the government is "buying into" the voluntary hospital system instead of "buying it out."[18] As a result, voluntary hospitals will assume more responsibility toward persons previously cared for in government institutions (veterans, merchant seamen, drug addicts).

How will the voluntary hospital system be financed? The continued growth of prepayment plans and the inclusion of special social groups, such as the aged and the medically indigent, point toward third-party reimbursement contracts as the main source of funds. Self-paying patients will be expected to make up any balance. The reorientation of the voluntary hospital will have to be in the direction of these reimbursement formulae and their attendent administrative controls.

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[18]A phrase coined by R. E. Brown in his address at the New England Assembly, March 29, 1966, Boston, Massachusetts.

CHAPTER III

THEORETICAL CONSIDERATIONS

Economic Basis for Hospital Care and Payment

There are two aspects to the problem of providing adequate hospital care: form of ownership and methods of financing. There are three forms of hospital ownership: proprietary, voluntary, and federal. There are three methods of financing: payment by private patients, federal support through tax levies, and prepayment plans. The ultimate objective is to determine which combination of ownership form and financing method will result in the provision of hospital services of acceptable quality at the lowest long-run average cost. The following factors influence this optimum combination: the shape and level of hospital industry supply curves, the effect which the form of ownership has on these curves, and a change in payment method resulting from individual reaction to a change in hospital rates.

Hospital Industry Supply Curves

The shape and level of an industry supply curve are derived from the horizontal sum of the marginal cost curves

of the individual firms. This is true in the long run as well as in the short run, except that in the long run the curve is affected by the number of firms.

Studies of hospital short-run costs reveal that the functional form of the relationship between total costs and patients days is linear.[1] Linearity of total costs implies that marginal cost is constant over the observed range of output. This is in contrast to general economic theory that the short-run marginal cost curve is upward-sloping, owing to the onset of diminishing returns when one or more factors of production are fixed while others vary.

In the hospital industry a horizontal marginal cost curve results necessarily from a hospital's desire for flexibility. If a hospital's rate of output could be predicted, the goal would be to minimize the cost of servicing that fixed volume. Since, in reality, a hospital's rate of output varies, owing to fluctuations in demand, the objective is to select that production method which will result in the fewest cost differences over the probable range of outputs.

The shape and level of the long-run supply curve of the hospital industry are determined by two factors: the shape of the marginal cost curves of individual hospitals,

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[1] P. J. Feldstein, An Empirical Investigation of the Marginal Cost of Hospital Services (Chicago: Graduate Program in Hospital Administration, University of Chicago, 1961), p. 4.

and the reasons for the entry of new hospitals and the exit of existing hospitals.

Studies of long-run costs disagree as to the shape of the long-run average cost curve. Feldstein found that patient-day cost did not differ between small and large hospitals.[2] This means that economies of scale exist throughout the range. However, Feldstein's findings are not consistent with those of the Commission on Financing Hospital Care, which show high correlation between the range of services and the patient-day cost.[3]

A U-shaped cost curve for the long run is very plausible. Starting with very small output, efficiency will increase in size, owing to the specialization of labor and equipment. Starting with a large output, efficiency will diminish with size, owing to more complex management. Two additional factors reinforce this outcome. At the lower end of the scale, a low rate of occupancy raises average cost per patient-day. At the higher end of the scale, a wider range of services and expanded adjunct functions contribute to an increase in costs.

In the manufacturing industry the entry or exit of firms is determined by profit expectations. Current and future profits attract, losses repel. However, in the

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[2] Ibid., p. 63.

[3] J. H. Hayes, Factors Affecting the Costs of Hospital Care, Vol. 1 (New York: Blakiston, 1954), 107.

hospital industry it is the type of ownership that governs entry and exit.

Hospital Ownership

It has been noted that proprietary hospitals provide a small fraction of the service in the United States. Government hospitals are more numerous, but their services are normally restricted to special groups, rather than being extended to a representative cross-section of the community. In most areas it is the voluntary hospital that serves the population at large.

To say that a service, such as hospital care, falls properly within the scope of government expenditures is not the same as saying that government should produce that service. It is frequently practicable for government to purchase the service from private industry. In theory, there is no reason why the government could not purchase hospital care services for its beneficiaries from voluntary hospitals. Unlike the administration of courts, the administration of hospitals is a type of activity that can be entrusted to private operations. Certain government functions must be national in scope, e.g., defense, since it cannot be divided geographically, and radio and television, owing to the distances involved. What, then is the criterion for determining whether government should produce a service or purchase it? Most economists agree that the choice should be made on the basis of efficiency.

Present Economics of Care and Payment

The present economic basis for providing hospital care in the United States lies somewhere in the middle of a continuum polarized by socialized medicine and pure competition. It is not like the free health program of Great Britain in which hospitals are owned and operated by government, nor is it marked by the competition characteristic of other industries.

On the supply side, there are a large number of voluntary hospitals, organized into state and national associations, not in competition for the sale of services. On the demand side, the purchasers of hospital care are few, owing to the fact that many consumers are represented by large third-party agencies, of which the government is one. Therefore, the present economic system of providing hospital care in the United States consists, for the most part, of a combination of private voluntary ownership and private payment through third-party organizations which, by means of premium assessments and tax levies, distribute the financial burden over the entire community.

Reasons for the Present Basis

With the decrease among suppliers of hospital care of small proprietary units, on the lower end of the scale, and of government institutions, on the higher end of the scale, the implications are that the long-run average cost

curve is U-shaped and that the voluntary hospitals will be able to operate at its bottom.

On the demand side the preference for prepayment plans would seem to be based on an economic rationale normally associated with the utility maximizing criterion. In considering the very real possibility of illness in the future, many people are aware that few substitutes for hospital care are likely to be available. A plan of preventive health care and/or some current financial arrangement must be undertaken. A preventive plan ordinarily entails good general care, periodic examinations, and precautions regarding those foods, beverages, and activities considered harmful to health. The majority of people do practice some form of preventive medicine. However, certain types of illness cannot be prevented.

Persons who can afford to do so, may make financial provision by establishing a savings plan or by subscribing to a prepayment plan. This latter is the more common practice because it entails fewer difficulties. Those who cannot afford such a plan, rely on hospital charity and local welfare programs.

As hospital rates rise, there is an increase in the number of medically indigent who qualify for welfare support. Moreover, as hospital prices increase, more people, at the margin, decide that it is economically wiser to subscribe to a prepayment plan than to rely on savings. The rationality

of consumer choice of prepayment plans may be illustrated through microeconomic analysis. Let us assume a person is maximizing his total utility and is at an equilibrium point. This may be expressed thus:

$$\frac{Mu_1}{P_1} = \frac{Mu_2}{P_2}$$

where:

Mu_1 = the marginal utility received from each unit of hospital care.

Mu_2 = the marginal utility received from all other goods in present basket of goods.

P_1 = the price per unit of hospital care.

P_2 = the price per unit of all other goods.

If P_1 increases, in order to return to equilibrium, the consumer must choose either: (1) the practice of preventive medicine, or (2) a subscription to a prepayment plan. Either action will decrease the marginal utility of all other goods and bring the consumer back into equilibrium at a lower total utility level. This may be expressed thus:

$$\frac{Mu_1}{P_1} = \frac{Mu_2}{P_2}$$

Consequently, the rise in the number of prepayment plans and subscribers must be attributed to the fact that most people, in the face of steadily rising prices, are making the second choice.

The present system is not without its defects. With the voluntary form of ownership, there is the danger of inefficiency since the ordinary economic incentives are lacking. Hospitals claim that inefficiency of operation is diminished by the fact that the trustees of voluntary hospitals are men of affairs devoted to the institution's interest and that administrators are increasingly better trained. The writer is of the opinion that, despite their reliance on personal integrity and academic knowledge, voluntary type hospitals are in need of economic incentives. Even though management techniques are employed, singleness of purpose and consistent goals are impeded because of the traditional method of dividing authority among trustees, physicians, and administrators. This conflict between the physicians' demand for high quality of care at any cost and the administrators' desire for standard quality of care at least cost is magnified by the lack of cost-control measures in third-party reimbursement contracts.

The ultimate success of the voluntary hospital system in terms of an optimum allocation of resources depends upon operation efficiency. A formal control system is necessary as a substitute for the implicit controls of the pure competition model. This system would be most effective if incorporated directly into the reimbursement contract.

Reimbursement Contract Objectives

All purchasers and providers of service are in agreement as to the general objectives of a reimbursement contract. F. S. Groner, President of the American Hospital Association, expressed them thus:

> A reimbursement formula to be wholly satisfactory both to hospitals, the public, and the purchasers of care, should (1) assure fair and adequate payment of services purchased; (2) provide funds to maintain essential hospital services; and (3) encourage high standards of care.[4]

These broad objectives do not indicate ways of implementation. Purchasers and providers of hospital care do not agree upon the theoretical constructs of reimbursement. As a result, there exists a number of acceptable reimbursement formulae. The major formulae in use differ in the four following points: (1) the basis of reimbursement, (2) the elements of service to be included in the calculation, (3) the manner of allocating service costs among the purchasers of care, and (4) the techniques of limiting cost increases.

Bases of Reimbursement

Early Plans

The first reimbursement method was that of the "lump sum" payment. The purchaser of care, ordinarily an industrial

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[4]F. S. Gromer, "Changing Times Requires Revision of Government Reimbursement Formula," Hospitals, July 1, 1961, p. 76.

enterprise, entered into an agreement with a local hospital as to the total sum to be paid for the hospital care of its employees. The discontinuation of this reimbursement scheme was chiefly brought about by the recommendation, in 1937, of the American Hospital Association and the American Public Welfare Association.[5]

Subsequently, a number of methods based on some form of "per diem" schedule came into existence. These methods, in essence, were based upon a daily rate, predetermined through mutual agreement. Three of the most popular per diem plans were the "fee schedule," "straight per diem," and "weighted average."

The "fee schedule" was modeled after that of the government in its purchasing of physicians' services. A set amount was paid for each drug, test, service, and accommodation. There was no flexibility in the choice of accommodation nor was there any recognition of variation in quality of service. Furthermore, the fee schedule was subject to abuse and was extremely difficult to audit.

On a "straight per diem" plan, the third-party agency reimbursed the hospital an arbitrary amount for each day of care. The amount of daily payment was arrived at through negotiations between the hospital and the agency.

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[5]American Hospital Association and American Public Welfare Association, Statement of General Policy Regarding Hospital Reimbursement, The Association, 1936, p. 18.

This method was simple and easily understood by all concerned, especially by the public. However, this plan penalized the hospital in which higher costs resulted from the provision of better care. Moreover, it ignored other cost differences resulting from hospital location, size, and occupancy.

In the "weighted average method" each individual hospital in a specified group was paid an amount equal to the group's average "per diem" cost. This was a fair method for areas in which all hospitals operated under similar economic conditions. However, this similarity was rarely found.

These early plans were crude attempts to determine an adequate and equitable basis for reimbursement. Simplicity was their best feature. However, important individual differences went unrecognized. The inevitable result was the discarding of these early methods.

Current Plans

It is logical to assume that the general public and third-party agencies should pay equal rates. However, prior to the end of World War II, hospital rates were below cost. Rates were determined by social philosophies instead of price economies.[6] These losses were offset by endowment income, capital, and current gifts.

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[6] G. C. Stewart, "How Method of Payment Affects Cost of Prepayments," Hospitals, September 1, 1956, p. 40.

At the present time, losses incurred in certain departments are recouped by charging above-cost rates in other departments. This practice of subsidization is unfair to third-party agencies since, in effect, they are paying toward services not covered in their subscribers' contracts.

Although reimbursement based on rates was the current practice, only a passing reference was made to it at the 1951 conference of the American Hospital Association, attended by hospital and third-party agency representatives.[7] It was merely stated that rates to third-parties should not exceed those charged to self-paying patients receiving the same care.

Table 3.1 indicates the changes that have occurred in the type of payment method used by Blue Cross plans up until 1964. It is noteworthy that after 1951 the rate basis of reimbursement actually did lose favor. The number of plans using the rate basis decreased from 28 to 22; whereas, the number using the cost basis increased from 33 to 51. It is clear that the trend is toward the cost basis of reimbursement. The fact that large-scale contractors are prepared to guarantee definite and uniform payments for all their subscribers is the primary reason why they object to reimbursement based on rates. Unless some other agency or

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[7] E. R. Rorem, "Impact of Third-Party Payment on Hospital Economics," Hospitals, January, 1953, p. 51.

Table 3.1. Methods of payment by Blue Cross plans at inception, 1953 and 1964

Method of Payment	Number of Blue Cross Plans Using		
	At Inception	1953	1964
Charges-full	10	15	16
Charges-discount	5	13	6
Total	15	28	22
Cost-no limit	2	10	0
Cost-100% charge limit	0	13	39
Cost-discount charge limit	0	10	12
Total*	2	33	51
Negotiated	54	6	0
Other	3	7	3

*Of the plans using the cost method in 1964, six plans use previous years' cost and forty-five plans use current cost.

Sources: G. C. Stewart, "How Methods of Payment Affects Cost of Prepayment," Hospitals, Vol. 30, No. 40 (September 1, 1956), 41; and Graduate School of Business, Indiana University, Third-Party Reimbursement for Hospitals, Indiana University, Indiana, 1965, pp. 30-32.

group will become responsible for the balance, third-party agencies want payment to equal the actual cost of the services received.

The cost basis assures the hospital that it will recover its costs and assures the agency that it is not subsidizing nonplan patients. Nevertheless, unless the proper cost formula is used, an increase in prepayment premiums may result. The principal objections to the use of cost as a basis for reimbursement are: (1) there is no universally accepted listing of the items of service to be included, (2) it is difficult and expensive to install a uniform accounting system that will provide the necessary data for cost allocation, and (3) cost payments may subsidize inefficiency, since they lessen the motivation for holding costs to a minimum. The remaining sections of this chapter are devoted to a theoretical analysis of these objectives.

Debatable Items of Service

A hospital or group of hospitals must, over a period of time, be reimbursed for the full cost of services; conversely, all third-party contractors should pay the full cost of services rendered to their beneficiaries. Apparent though this may seem, it is not easily attainable. A principal difficulty lies in the interpretation of "full cost of services." There is little disagreement that "out of pocket

expenses" (normal operating costs) are admissible items of service. However, there is much disagreement over the inclusion of capital costs and the expenses of adjunct functions. Table 3.2 lists all the items of service subject to debate. The principal ones are: (1) depreciation, (2) interest, (3) education, (4) research, and (5) charity and bad debt losses.

Table 3.2. Handling of items of expense when cost method is used; by number of Blue Cross plans

Item of Expense	Included	Excluded	Inadequate Information
Interest			
On capital debt	18	14	1
On current debt	22	9	1
Depreciation*			
On buildings	28	5	0
On equipment	32	1	0
Rent	29	2	2
Donated services	31	1	1
Bad debts	5	28	0
Charity losses	5	27	1
Collection fees	16	15	2
Nursing education	31	0	2
Legal fees	29	2	2
Cost of research	5	24	4
Purchase discounts	14	16	3
Taxes	24	6	3
Real estate	27	2	4
Sales	32	0	1
Employee			

*Depreciation is based on arbitrary percentage in lieu of depreciation based on historical cost of plant and equipment in use.

Source: G. C. Stewart, "How Method of Payment Affects Cost of Prepayment," Hospitals, Vol. 30, No. 40 (September 1, 1956), 42.

Depreciation

The inclusion of depreciation on buildings and equipment as a cost of patient care has been the subject of debate for many years. Advocates of the exclusion of depreciation argue that since the original funds for construction were obtained from the public, through donations or taxation, it is unjust to assess the public once again for the use of these same facilities. Sands supports this position with the following theory:

> This decline in value (depreciation) is a current expense and is continuous throughout the useful life of the property. But as applied to hospital buildings it is an expense which has to be paid only once in--say a generation. As past and present generations have provided existing hospital buildings, it is both fair and financially sound to let following generations make similar provision. It is difficult enough for hospitals to provide for current needs without being further handicapped by providing for future needs.[8]

Those advocating the inclusion of depreciation consider it a necessary cost of service. The source of funds is irrelevant, they claim. The United Fund of New York supports this position with the following theory:

> Whether a building and its equipment are largely paid for in advance through contributed monies, or whether they are paid for in part out of personal savings and surplus earnings and otherwise financed through bond and mortgage indebtedness, the fact remains that, unused, they have a measured life, and in use that life

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[8]Herbert R. Sands, Accounting and Business Procedures for Hospitals (New York: United Hospital Fund of New York, 1933), p. 16.

> is shortened by normal wear and tear. This depreciation of the investment is as real a year-to-year cost to the public which supports the hospitals and related institutions as are salaries, wages, materials and supplies. To ignore that fact throughout the life of a property merely postpones the day of reckoning when the problem of financing a new plant or new equipment must be faced. If funds are not then available, it usually becomes necessary to continue the use of the old property long after it should have been replaced.[9]

The majority of third-party purchasers have agreed to include the cost of depreciation. However, few recognize depreciation on a historical cost basis. The objection is advanced, rightly so, that the accounting records of most hospitals are not sufficiently accurate to provide the necessary data. In view of this situation, most third-party agencies agree to pay for depreciation based on an arbitrary percentage instead of on historical cost.

Interest

The debate over the inclusion of interest centers around the difference between hospitals constructed from borrowed funds and those constructed from funds obtained from a community drive. In the first case, interest costs if included, will add to the amount of reimbursement required from third-party agencies. In the second case, the nonexistence of interest costs will lower the amount of reimbursement.

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[9]United Hospital Fund of New York, The Hospital Survey for New York, 1937, p. 67.

Those who propose the inclusion of interest argue that it is a cash outlay that must be financed.[10] Its relationship to service is irrelevant. Those favoring the exclusion of interest do so on a basis of inequity. They cannot reconcile the fact that hospitals providing the same services should have different costs.

In this debate over the inclusion of interest, it would seem to the writer that the real question is whether the community wants to provide the necessary construction funds initially or over a period of years. If they choose the former, then the funds will be provided by the community-at-large. If they choose the latter, then the burden of financing will fall solely upon the sick members of the community, unless third-party agencies agree to pay interest costs. In reality, owing to the many pressures on the community, not every fund drive can be successful. Therefore, if borrowed funds are used, interest and even principal should be included in the reimbursement agreement. Only in this way will the burden of financing be shared by the healthy as well as the sick, since third party agencies are supported by both.

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[10] H. Hinderer, "Of Carts and Horses," Hospital Accounting, December, 1964, p. 3; and W. J. Mueller and E. Soder, "Rate Setting," Hospital Accounting, December, 1964, p. 10.

Education

Traditionally, in the United States and in Canada, hospitals have undertaken the training of nurses and doctors.[11] It was the first adjunct function of the voluntary hospital. In order to operate at a level commensurate with the quality of care demanded, well-trained doctors and nurses are needed. By acting as an educational institution for their necessary personnel, hospital administrators obviated labor shortage problems.

Until a few years ago, third-party agencies did not question the cost of educational programs because the value of student labor exceeded the cost of their education. Today, studies indicate that the situation is reversed.[12] Advances in modern medicine and an educational emphasis on theory have reduced the amount of time which students devote to patients. The net cost of education is thereby increased.

Once again, as in the case of interest, there arises the question of who should assume the burden of financing.

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[11] Philip Taylor, C.P.A. and Benjamin O. Nelson, C.P.A., Management Accounting for Hospitals (Philadelphia and London: W. B. Saunders Company, 1964), p. 46.

[12] See Illinois Hospital Association, Report on 1958 School of Nursing Cost Study (Chicago, The Association, 1959); and Nursing Costs at Newport Hospitals (Newport, Rhode Island: Scovell, Wellington and Company, 1958). The Illinois study reported that the average net cost in excess of tuition was $1,620. The Rhode Island study indicated a net cost of $920.

Some authorities recommend a federal scholarship program.[13] In lieu of such a program, it would seem logical to include net educational costs in reimbursement contracts so that the financing will be more evenly shared.

Research

A second adjunct function of the voluntary hospital is that of research.[14] Many advances in modern medicine could not have been realized had it not been for the availability of extensive research facilities. The funds for these facilities were acquired from voluntary hospitals, government, industrial firms, and independent groups. Hospitals have tended to restrict themselves more to the area of applied research; whereas, government, industrial firms, and independent groups have contributed more to pure research.

As in the case of education, research is needed to maintain and increase medical care. New discoveries in medicine have benefited patients for whom there was little hope previously. However, there remains the problem of financing these extensive and expensive hospital research

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[13]See Walter J. McNerney et al., Hospital and Medical Economics, Vol. II (Chicago: Hospital Research and Educational Trust, 1962), 944; and H. Hinderer, op. cit., p. 4.

[14]Hospital oriented research programs are increasing each year. The U.S., Public Health Department indicates that in 1946 medical research amounted to $80 million; whereas, in 1963 the level had reached $700 million.

facilities. To some extent this problem has been solved by federal, state, and independent grant programs. The community should support these activities to the extent not subsidized. The inclusion in reimbursement contracts of the net cost of applied research would place the cost incidence on a sharing basis.

Charity and Bad Debt Losses

A hospital's third major adjunct function is the treatment of the medically indigent. In addition, every hospital has patients who subsequently do not pay their bills. There is a strong controversy regarding the inclusion of charity and bad debt losses as items of service in reimbursement contracts.

The American Hospital Association has stated the following principle of payment regarding charity and bad debt losses:

> Bad debts, charity and courtesy allowances are not proper items of expense. This principle is based on the only acceptable method for calculating these items. Bad debts, charity and courtesy allowances are not expenses, rather they are deductions from income.[15]

Although most industrial firms actually do include bad debts as an expense, accounting theorists consider the revenue and the related account receivable as nonexistent. They claim

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[15] Principles of Payment for Hospital Care, American Hospital Association, The Association, 1963, p. 9.

that the bad debt expense does not conform to the definition of cost and expense given by the American Institute of Certified Public Accountants.[16] Therefore, the proper accounting procedure is to reduce gross revenue. Supported by this accounting theory, third-party agencies have excluded charity and bad debt losses from the total costs to be reimbursed.

Those who argue for the inclusion of such costs are in agreement with the accounting theory, but not with its relevancy to reimbursement contracts. Mueller and Soder state:

> From a bookkeeping standpoint, costs of charity may be handled either as an expense item or a reduction of income. However, from a rate-making standpoint, charity is a very real cost and it must be included in income billed in order to cover the subsequent or concurrent reduction of income or addition to expense as it is recognized in operations.[17]

L. E. Martin writes:

> In those areas of the country that have voluntary teaching hospitals which depend upon the so-called service patients for teaching material, the problem of financing medically indigent patients has become acute. Even in those states where a welfare program pays a flat or a "cost" per diem, hospitals suffer a loss not only on these patients but also on those patients who do not qualify for aid, who refuse aid for one or more reasons or who just will not pay their bills.[18]

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[16] American Institute of CPA's, Terminology Bulletin, Number 4, The Institute, New York, 1956, p. 4.

[17] W. J. Mueller and E. Soder, "Rate Setting," Hospital Accounting, p. 11.

[18] L. E. Martin, "Free Work-An Element of Reimbursement," Hospital Accounting, July, 1963, p. 16.

The solution to the free care controversy would seem to lie in a combination of revenue modification and some mechanism by means of which more of the community shares in the financing. The West Virginia Hospital Association states:

> Items 17, 18, and 19 on page three of the statement provide a method of integrating losses on no-pay and part-pay patients into the hospital's statement of average per diem cost. Without such a system, third-party purchasers receiving the benefit of bare cost, throw the loss burden on private pay cases.[19]

In the West Virginia computation "total patient days" minus "charity patient days" equals "paid patient days." However, when cases are only part charity, a loss percentage must be arrived at by dividing charity allowances by total hospital income. Then, the final statistic expressing total hospital costs is in terms of "paid patient days."[20]

The West Virginia approach appears to be an adequate solution. It does not conflict with accounting theory and at the same time it does place on a community basis the burden of financing the medically indigent.

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[19]West Virginia Hospital Association, Manual on Hospital Statement of Average Per Diem Costs, West Virginia, The Association, 1960, p. 3.

[20]This procedure also recommended by J. B. Hayflick, "The Concept of Charity Allowances as an Expense," Hospital Accounting, April, 1964, p. 16.

Cost Allocation Techniques

After an agreement has been reached concerning the items to be included in reimbursement contracts, there remains the problem of an equitable allocation of costs between third-party purchasers and self-paying patients. Two major techniques are in use today. The first is the "average per diem," developed by the Federal government and employed also by many Blue Cross plans. The second is the "relation of cost to charges" (hereafter referred to as RCC), used by some state hospital associations.

The "average per diem" technique began with the E.M.I.C. (Emergency, Maternity, and Infant Care) program in 1941 and its use is supported by the government and the American Hospital Association. In this technique the averaging of all hospital costs is done without taking into consideration the fact that socio-economic differences exist between some third-party beneficiaries and the average hospital patient. In contrast, the RCC technique recognizes that, owing to the homogeneity of certain third-party beneficiaries, the type of hospital service varies and consequently, costs differ.[21] In this technique costs are

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[21] R. Penn, "Average Cost Statistic Is Obselete!" Hospital Accounting, July, 1961, p. 16.

allocated on the basis of the billings to each group.[22] In order that this allocation be fair, rates for a given service must be the same to all patients. Of these two techniques, the "average per diem" is more generally used because it is simpler to administer and easier for the public to understand. The RCC technique recognizes that no two patients are the same but it requires a more complex accounting system. The ultimate adoption of either technique will depend on the refinement of the accounting system of the hospital industry.

Efficiency Controls

Any pricing system based on costs, which does not have built-in controls is nothing but an invitation to unlimited spending. This is the danger of the present trend toward the cost basis for third-party reimbursement contracts. To date, techniques for a realistic control of costs are not incorporated into these contracts. The existing ones are negatively based. They control merely by limiting reimbursable costs to total charges, to a percent of

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[22] In the RCC approach costs are allocated to third-party contractors on the percentage of use. This calculation may be on a service-by-service basis or on a group service basis. For example, the Rhode Island Hospital Service groups ancillary services into Group I and Group II and determines usage percentages for each group. This approach will result in subsidization of "loss" services by third-party contractors, because loss services are combined with profit services in applying the lower of cost or charge ceiling.

total charges, or to the weighted average costs of hospitals within the same trading areas.[23] This ceiling-type approach controls costs only in the short run. In the long run, when costs are less than charges, this approach actually acts as an incentive to increase costs. The Michigan study reports that:

> In some situations, the payment method can be an incentive to increase hospital costs within allowable limits now in effect. Expenses that could have been delayed or were even unnecessary are incurred by the hospital to ensure that average adjusted per diem costs will approximate average per diem charges.[24]

When costs exceed charges, the tendency is to increase rates and similarly circumvent the ceiling control mechanism.

What is needed is a control technique which is positively based, involving monetary penalties and rewards. Such a technique would require a revision of the present system of hospital accounting.

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[23] James C. Ingram, "Reimbursement for In-Patient," Hospital Accounting, March, 1966, p. 9.

[24] W. J. McNerney, op. cit., p. 975.

CHAPTER IV

HOSPITAL ACCOUNTING

A necessary condition for the success of any financial control system is the existence of the quantified data necessary for installing the control system, determining that it is operating as planned, and enabling a follow-up of differences between the actual and the expected results. Accounting does provide such information. The functions of an accounting system are: to classify activities, to analyze costs, and to prepare financial statements. In this chapter these functions are reviewed as they are presently performed in the hospital industry. Revisions are proposed which will orient these functions toward a new control technique.

Classification of Activities

The American Accounting Association recently defined accounting[1] as "a process of identifying, measuring, and communicating quantifiable economic information relating to

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[1]American Accounting Association, A Statement of Basic Accounting Theory, unpublished final draft, dated January, 1966, p. 1.

the activities of an entity, to permit informed judgment and decisions by users of the information." This definition shows that "identifying" is the first step. It is clear that before quantifiable economic data can be communicated and interpreted by users, the information must pass through an identification (classification) process. The common practice is to prepare a chart of accounts by assigning a caption and a number to each activity.

American Hospital Association's Chart of Accounts

The chart of accounts for income and expenses recommended by the American Hospital Association was first set out in 1950.[2] It was later revised and reprinted in 1959, clarifying certain existing accounts and adding new ones necessitated by new services.[3] In this functional chart of accounts the broad classifications of income are: (1) Income from services to patients, (2) Deductions from patient income, and (3) Other revenue accounts. Subclassifications of income from services to patients are made according to type of service (routine or special) and according to type of patient (inpatient or outpatient). Income from inpatients is further subdivided by age (adults, children, new born) and by type of accommodation (private, semi-private, ward).

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[2]American Hospital Association, Handbook on Accounting, Statistics and Business Office Procedure for Hospitals, The Association, 1950, Section 1.

[3]American Hospital Association, Uniform Chart of Accounts and Definitions for Hospitals, The Association, 1959.

The broad classifications of expenses are (1) Administration and general, (2) Dietary, (3) Household and property, (4) Professional care to patient, (5) Outpatient, and (6) Other expense accounts. The only subdivision within these classifications is according to salaries and supplies, except in the case of professional care to patient, where salaries and supplies are indicated by each service (nursing, medical and surgical, maternity, pharmacy).

Proposed Chart of Accounts

Since the American Hospital Association's chart of accounts does not provide sufficiently detailed information for implementing a control technique, a further development and revision are proposed. At present it is geared to proprietary rather than to managerial reporting. The subclassifications of income from patients overlook the principal factors which cause costs to vary. Expenses are not subdivided sufficiently. The writer proposes a reclassification of revenue and an adoption by the hospital industry of the concept of cost variability. These revisions will form the bases for a new chart of accounts.

In the light of the present-day emphasis on highly specialized medical care, the subclassification of age and type of accommodation are not adequate for distinguishing sources of revenue. Type of accommodation can be eliminated

since different rates to not indicate proportionate variations in costs. Moreover, despite the dissimilarity of furnishings, accommodations vary little in their direct costs. Subclassifications should be made according to the type of unit, including the personnel and equipment involved, since it is this which leads to a variation in costs. These units, although some do reflect age differences, are mainly geared to the kind of care which is needed.

The gross revenue section in a revised chart of accounts would be similar (allowing for the necessary adaptions) to the following:

500.1 Routine care accommodations-medical and surgical
500.2 Routine care accommodations-maternity
500.3 Operating room intensive care unit
500.4 Operating room recovery unit
500.5 Coronary heart unit
500.6 Kidney special care unit
500.7 Pediatrics
500.8 Newborn infants.

The classifications of revenue from ancillary services would remain essentially the same.

It is recommended that the classification of expenses be revised according to the concept of cost variability. This concept, already adopted by some manufacturing firms, is described thus by Welsch:

> Variable budgets are schedules of costs or expenses that indicate, for each subdivision of the firm, how each cost or expense should change with changes in volume, or activity, i.e., what individual costs should be at various volumes rather than at one specific

> or fixed volume. The principle underlying the variable budget is the concept of cost variability, sometimes referred to as the principle of flexibility. The principle holds that costs can be related to activity, and that when so related, costs are primarily the result of two factors: (a) the passage of time, and (b) productive activity. The principle holds that when costs and expense are related to activity, two classes of costs emerge--fixed cost and variable cost.[4]

In a study regarding hospital costs, it is stated:

> Individual costs may be categorized into two classes, fixed and variable. Fixed costs are those which remain relatively the same over wide fluctuations in volume of service rendered. Variable costs are those which increase as the volume of services rendered increased, or vice-versa. This variation may range from a slight percentage increase with an increase in volume of services to an increase equal to the increase in volume.[5]

Costs will be classified in the chart of accounts as either fixed (herein termed "programmed") or variable (herein termed "direct"), under the various subdivisions of the four main divisions: (1) Operating Costs-Professional Services, (2) Operating Costs-General Service Departments, (3) Community Costs, and (4) Capital Costs.

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[4]G. A. Welsch, Budgeting: Profit-Planning and Control (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1960), p. 159.

[5]American Hospital Association, Cost Finding for Hospitals, The Association, 1957, p. 2.

A sampling would be:

600-Operating Costs-Professional Services

601-Routine Care Accommodations-Medical and Surgical

601.1 Direct Costs

601.11 Materials purchased directly from vendors
601.12 Materials issued from inventory
601.13 Salaries of Registered Nurses
601.14 Salaries of Licensed Practical Nurses

601.2 Programmed Costs

601.21 Salaries of supervisors
601.22 Pension contributions
601.23 Employee taxes
601.24 Minor replacement of equipment

602-Routine Care Accommodations-Maternity

601.1 Direct Costs

601.11 . . .

601.2 Programmed Costs

601.21 . . .

700-Operating Costs-General Service Departments

701-Accounting
702-Laundry
703 . . .

800-Community Costs

801-Research
802-Nursing Education
803-Intern Education
804 . . .

900-Capital Costs

901-Depreciation-Building
902-Depreciation-Equipment
903-Interest
904 . . .

This proposed modification of the AHA's chart of accounts obviates the necessity of a separate analysis later in order to determine fixed and variable costs. This information is noted at the time of the transaction.

Cost Finding[6]

Once the financial activities of the hospital are quantified and classified, the operating costs of the general service departments (herein referred to as "common") must be assigned to the areas served. This cost apportionment is made in order to determine the full costs in each area. There are two steps in the procedure: first, the accumulation of the necessary statistics according to a predetermined basis of allocation; second, the selection of a general method (step-down or double apportionment) of allocation.

Bases of Allocation

Generally, the basis of allocation should reflect the exact volume of service. When this is impracticable,

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[6]"Cost finding" is a phrase with a specific meaning in hospital accounting. It should be distinguished from "cost analysis" and "cost accounting." Cost analysis refers to the breakdown of total costs into component segments typically classified by factors influencing cost variance. Cost accounting is a more general phrase typically applied to the entire system of reporting cost data. Cost finding is the procedure by which the indirect or common costs of a hospital are allocated to those departments that provide revenue.

the basis is normally one which indicates the approximate volume and for which data is easily accumulated. In determining volume it is sufficient to arrive at statistics by means of a sampling. Once a reasonable measure of service is selected, a weighting procedure should be employed in order to allow for variations in volume of service. In this way a larger share of costs is allocated to the departments requiring more of a given service.

In Table 4.1 the most commonly used bases are square footage and payroll. Square footage provides accurate information and, once computed, seldom changes. Payroll statistics, in dollars or hours, give only a proxy measure but they are readily available. It is to be noted that in only a few cases is the allocation based on an actual count of a department's main service.

General Methods of Cost Apportionment

Two methods of cost apportionment are available. The first is known as the "step-down method" and is supported by the American Hospital Association. The second is the "double apportionment method" and is supported by the United Fund of New York.

The step-down method follows a progressive order in allocating the operating costs of general service departments to other departments. The service departments are ranked according to the number of departments they serve.

Table 4.1. Statistical bases for allocating common costs

Cost Center	Bases for Allocation
Operation of Plant	Square footage per cost center adjusted for period in use.
Laundry and Linen Service	Pounds produced per cost center from time period study.
Housekeeping	Hours of service by area or square footage to cost center within area adjusted for period in use.
Dietary	Allocate to cafeteria proportionate share of kitchen payroll and miscellaneous expense based on percentage of raw food weighted patient days per cost center.
Nursing Service, General	Cost per dollar of payroll to applicable cost centers. Patient television to nursing units on cost per set per days used.
Medical Records	Weighted admissions to inpatients, newborns, outpatients.
Inter-Resident Service	Gross billed charges per income-producing cost centers.
Administrative and General	On the basis of accumulated costs per cost centers at the time of distribution.

Source: R. L. Durbin, "Study of Variable Pricing," Arizona Medical Journal, July, 1965, p. 559.

That department which services the largest number of other departments is the first to have its cost allocated and is thereby closed out. Then the costs of the second department in rank, including the costs allocated from the first general service department, are allocated so that it is closed out. This procedure is followed until all general service departments are closed out. A change in the sequence of the departments to be closed out will ultimately result in a different cost allocation to revenue-producing departments. This sequence, or progressive order, is often difficult to determine owing to the amount of inter-service activity within the general service departments. It was because of this difficulty that the double apportionment method came into existence.

The double apportionment method is thus captioned because it requires an additional allocation procedure. A department's costs resulting from inter-service activity are not allocated until after the first distribution has been made. The extent of cost allocation refinement gained from the double apportionment method is subject to debate. Hay in reporting upon the experience of the United Fund of New York states:

> . . . a number of years' experience reportedly convinced accounting specialists of the Fund that the claimed advantage of the double apportionment method over the step-down method was

> not sufficient to compensate for the added complexity of the clerical work involved.[7]

In a study of Rhode Island hospitals, the following view was expressed:

> . . . we are justified in emphasizing the fact that the double apportionment method produces the closest approach to accurate costs . . . and the substitution of the step-down method is prompted only by expediency.[8]

In order to obtain some empirical evidence on these contradictory points of view a Michigan study of four hospitals reported the average cost per inpatient-day computed under each method. Table 4.2 clearly shows that the cost refinement of the double apportionment method does not result in significant average cost differences. This limited amount of evidence lends support to the acceptance of the step-down method as adequate for allocating operating costs of general service departments.

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[7]Leon E. Hay, Budgeting and Cost Analysis for Hospital Management (Bloomington, Indiana: Pressler Publishing, 1963), p. 49.

[8]Opinion of Scovell, Wellington and Company, Certified Public Accountants. The same opinion reiterated by P. Grant (formerly of Scovell, Wellington and Company) in speech before New England Hospital Assembly, March 28, 1966, attended by writer.

Table 4.2. Comparison of average costs computed under the step-down and double apportionment cost allocation methods; four Michigan hospitals

Hospitals	Step-Down	Double Apportionment	Difference
A	$ 32.96	$ 32.96	$ ...
B	33.36	33.36	...
C	31.74	32.00	.26
D	26.23	26.23	...

Format of Financial Statements

The final function of an accounting system consists of a presentation of financial data in a format supplying adequate information in accordance with the needs of individual readers. In the hospital industry the two standard financial statements, the balance sheet and income statement, differ in format from those of the manufacturing industry.

Balance Sheet

The format of a hospital balance sheet follows the fund concept of reporting; that is, the grouping of accounts into distinct sheres of activity in line with centers of responsibility.[9] There are three principal funds: General, Endowment, and Plant. The hospital board of trustees is

[9] M. Backer, Handbook of Accounting (New York: McGraw-Hill, Inc., 1958), p. 369.

responsible for the Endowment Fund. The hospital administrator is responsible for the General Fund and also for the Plant Fund. In addition to these principal funds, there may be smaller funds available for the hospital's restricted use.

The writer is of the opinion that a hospital balance sheet should be based on the fund concept because, unlike the proprietary and entity concepts, it does not place emphasis on profit making. Moreover, it is consistent with the community nature of a hospital. Hospital administrators are characterized by the "stewardship" image more than are their counterparts in the manufacturing industry. The legal restrictions usually connected with endowment and research funds give a further reason for the desirability of following the fund concept.

A few revisions in the format of the balance sheet are proposed by the writer. A combination of the general and plant funds would clarify the fact that the hospital administrator is their sole center of responsibility, and moreover, his performance could thereby be measured more easily. The assets in the general fund should be categorized according to purpose: liquidity or medical care. This would allow the reader to determine the financial capacity of the hospital in terms of current solvency and future potential. Table 4.3 is a balance sheet which incorporates these proposed changes.

Table 4.3. Recommended hospital balance sheet format

BLANK HOSPITAL

BALANCE SHEET

September 30, 19

DEPLOYMENT OF FUNDS	RESTRICTIONS ON FUNDS
GENERAL	GENERAL
Committed to Liquidity	
Cash	Accounts payable
Marketable securities	Accrued expenses
Accounts receivable	Notes payable
Due from third-party contractors	Mortgage payable
	Fund surplus
Committed to Service	
Land	
Buildings	
Equipment	
Supplies	
Prepaid expenses	
TOTAL	TOTAL
BUILDING	BUILDING
Cash	Accounts payable
Marketable securities	
Construction in progress	Fund surplus
TOTAL	TOTAL
PLANT REPLACEMENT AND IMPROVEMENT	PLANT REPLACEMENT AND IMPROVEMENT
Cash	
Marketable	Fund surplus
TOTAL	TOTAL
ENDOWMENT	ENDOWMENT
Cash	
Marketable	Fund surplus
TOTAL	TOTAL
RESEARCH	RESEARCH
Cash	
Equipment and supplies	Fund surplus
TOTAL	TOTAL

Income Statement

At the present time a hospital income statement is in the traditional proprietary format. Table 4.4 is a sample statement. The proprietary style is obvious. The reader's natural inclination is to focus his attention on the one statistic of "net income" in order to discover whether the hospital operated at a profit. The performance of individual revenue-producing services is not ascertainable except by secondary analysis. Furthermore, the impact of community and capital costs is not highlighted.

It is suggested that the format of the hospital income statement be revised in conformity with the concept of cost variability previously outlined. Table 4.5 is an illustration of such a revised statement. The total operating costs are divided into three categories: direct, programmed and common. In this manner, the operations of revenue-producing departments may be easily compared with one another. Capital and community costs are not apportioned to the individual departments but are shown as a burden on total operations. This format will highlight not only capital and community costs but also the individual contributions of each revenue-producing department.

Table 4.4. Income statement format-sample

HOSPITAL
Revenue and Expense Statement
For the Year Ended ____

Earnings from routine services
- Private
- Semi-private
- Ward
- Total

Earnings from special services
- Laboratory
- Pharmacy
- Operating room
- Radiology
- Total

Other revenue
- Tuition
- Cafeteria
- Equipment rentals
- Total

Total Revenue

Operating Expenses
- Administration
- Dietary
- Housekeeping
- Nursing service
- Medical records
- Laboratory
- Pharmacy
- Operating room
- Radiology
- Total

Other expenses
- Religious
- Chapel
- Miscellaneous

Total Expenses

Net Income

Table 4.5. Recommended hospital income statement format

BLANK HOSPITAL
EARNINGS STATEMENT
For the Year Ended September 30, 19

		Total	Inpatient Routine Care	Maternity and Pediatrics	Intensive Care	Operating Room	Laboratory	Pharmacy	X-Ray
Gross Revenue	(A)								
Charity Losses	(B)								
Net Revenue									
Operating Costs									
Direct	(C)								
Programmed	(D)								
Common	(E)								
Total									
Capital and Community									
Depreciation	(F)								
Interest	(G)								
Research	(H)								
Education	(I)								
Total									
Net Income									

Table 4.5--Continued

Financial Statement Notes

(A) Represents earnings from routine care and principal ancillaries. In practice, each type of revenue for which costs incurred or for which specific reimbursement contracts are in force, would be identified. There could be as many as fifty or more revenue classifications. (Initial subdivision would be between inpatient and outpatient service.)

(B) Includes free care and bad debt losses. In practice other deductions from gross revenue, such as contractual adjustments, courtesy allowances and service to employees would be deducted from gross revenue separately.

(C) This amount would be the accumulation of amounts for those accounts in the chart of accounts denoted as direct. In practice, this total would also include the direct portion of some programmed costs that are semi-variable in nature.

(D) This amount would be the accumulation of amounts for those accounts in the chart of accounts denoted as programmed. In practice, this total would also include the programmed portion of some direct costs that are semi-variable in nature.

(E) This amount represents the allocation of indirect, service department costs on appropriate bases (described in a previous section in this chapter).

(F) In practice, depreciation on equipment and other appurtenances that can be specifically identified with a service area would be included in the programmed costs for that area. This amount would then include only capital type depreciation on buildings and other equipment that serve the needs of all revenue areas; the allocation thereof would have to be arbitrarily determined.

(G) In practice, interest on equipment that can be specifically identified with particular service areas would be included in programmed costs for that area. This amount would then include only interest on capital debt used to finance the purchase of resources that benefit operations in total.

(H) In practice, a subdivision between pure and applied research, to the extent possible, would be made when applicable.

(I) This amount would be net of value of students' services performed in providing care.

An income statement in the suggested format would answer the current need for detailed information regarding costs and the factors conducive to their increase. Furthermore, it would make evident the existence of any flexibility in rates for the purpose of subsidizing operating losses in certain departments.

CHAPTER V

TESTING OF FORMULAE

Description of Formulae

Four reimbursement formulae are tested. The first is the "Proposed Revised Joint Hospital Form No. 1" (hereafter referred to as the JH Method) developed by the Public Welfare Agency of the Federal government. The second is an adaptation of existing Blue Cross formulae (hereafter referred to as the BCA Method), embodying their main characteristics. The third is the "Community Service Method" (hereafter referred to as the CS Method) which is a construct of the writer, based upon the recommended hospital accounting system outlined in Chapter IV. The fourth is the "Principles of Reimbursement under Public Law 89-97" (hereafter referred to as the Medicare Method) developed by the Social Security Administration for medicare patients beginning July 1, 1966.[1]

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[1]The details of this method was released to the public on April 29, 1966 subsequent to this study but before its publication. Consequently, the Medicare Method was added to the contents of Chapter V.

Proposed Revised Joint Hospital Form No. 1

The Proposed Revised Joint Hospital Form No. 1 does not differ substantially from the original Joint Hospital Form No. 1. The principal feature of the JH Method is the payment of an average "per diem" cost.[2] The underlying principle is akin to that used by insurance companies, namely that the costs of all services should be spread over the entire group of beneficiaries. A guide prepared by the Children's Bureau for use by state agencies purchasing hospital care states:

> The cost for hospital care should be developed on the basis of an average cost per day for all services that a hospital is able to provide. This method of computing average cost for inclusive services is in keeping with the insurance principle of spreading the costs of all services over the entire group receiving service.[3]

The revised form makes minor changes in the requirements. The costs of a greater number of special service departments are included, service department costs are included, depreciation is considered a reimbursable item, and outpatient costs are excluded. Costs of the adjunct functions of the hospital (research, medical education, and

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[2]Nelle L. Williams, Public Welfare Agencies and Hospitals (Chicago, Illinois: American Public Welfare Association, 1937).

[3]Third-Party Reimbursement for Hospitals, Purchase of Hospital Care, Children's Bureau, U.S. Department of Health, Education and Welfare, 1964, Indiana University, Section 12-7.2.

charity and bad debt losses) are still excluded from the list of reimbursable items.

Adapted Blue Cross Method

The adapted BCA Method was constructed by the writer from information given in Tables 3.1 and 3.2 of Chapter III. In accordance with the dominant trends, the BCA Method reimburses on the basis of costs limited to 100 percent of charges. In the list of items to be reimbursed, medical education and interest are included but research, charity and bad debt losses are excluded. Depreciation is included on the basis of a percent of operation costs. The allocation technique is that of the RCC (relation of cost to charges) discussed in Chapter III. Of the Blue Cross allocation techniques now in use, that of the RCC was selected for this BCA Method because it provides a better basis of comparison with the other methods.

Community Service Method

At the present time the CS Method does not exist in any real purchase-provision contract for hospital care. It is a construct of the writer, emphasizing the community aspect of hospital services. This accent on community service is shared by some third-party agencies. The Public Welfare Agency states:

> Hospitals that are considered (nonprofit or public) service organizations must stand ready to render all services needed by patients. This requires an institution to provide services that may not be used by every patient but which must be available, since it cannot be known who in a community will need a specific service at a given time.[4]

Despite the philosophy expressed in this quotation, it has not influenced the mechanics of the JH Method. In contrast, the CS Method recognizes that research, medical education, charity, and capital costs are community responsibilities assumed by the hospital, and therefore all of them should be included among the items to be reimbursed.

The accounting for the CS Method is based on the revisions of the chart of accounts and financial statements proposed in Chapter IV. The RCC technique is adopted since the writer is in agreement that third-party purchasers should not subsidize services rendered to patients other than their own. The CS Method does not control costs by limiting them to charges but by a new control system, proposed in Chapter VI.

Principles of Reimbursement Under Public Law 89-97

Of all the reimbursement formulae supported by purchasers of hospital care, the Medicare Method is the most liberal. There is provision for depreciation on an historical

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[4]Children's Bureau, op. cit., Section 12-7.2.

cost basis either accelerated or under extended life.[5] Educational costs for nursing and paramedical personnel are an includable item. Applied research costs are includable to the extent not financed by outside sources. Bad debts of medicare patients are reimbursed to that extent of the charge which represents cost.[6] There is provision for an additional 2 percent of operating costs in order to improve the provider's service-rendering potential in the form of new medical care services. The method of cost apportionment is RCC. The control system is that of limiting payment to costs or charges, whichever is lower.

Simulated Data

In testing the four reimbursement formulae under discussion insofar as they affect financial capacity and cost incidence, hospital operations are simulated in a heuristic manner for a three-year period.

Let us assume that there are six hospitals operating in a community having the same economic conditions throughout.

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[5]Funding is not a requirement for depreciation to be accepted as a reimbursable cost. However, funding is considered to be desirable by the Federal government so that such funds may be invested to increase the capital funds available for plant replacement. Incentive is given to funding by excluding interest earned as an offset to operating costs.

[6]Those persons qualifying for medicare coverage are required to pay the first $40 of charges and $10 per day after 90 days of stay. If these "deductibles" are not paid by the patient, the hospital may recover the costs applicable thereto; providing it has made a reasonable effort to collect.

For the sake of clarity, the hospitals are assigned the following names: Alpha, Beta, Gamma, Delta, Epsilon, and Zeta. The hospitals are similar in that they provide routine care and ancillary services, but they differ as to their adjunct functions and the source of their initial financing.

Table 5.1. Summary of hospital services

Service	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Routine care	x	x	x	x	x	x
Maternity	x	x	x	x		
Intensive care	x	x	x	x		
Operating room	x	x	x	x	x	x
Laboratory	x	x	x	x	x	x
Pharmacy	x	x	x	x	x	x
X-ray	x	x	x	x	x	x
Charity patients	x		x	x	x	
Research	x	x		x	x	
Education	x	x	x		x	

Table 5.1 lists the services provided by each hospital. Alpha provides service for all types of inpatient care and related ancillary services, and engages in all of the community adjunct functions. In contrast, Zeta provides only routine care and ancillary services; it does not have maternity, intensive care, or community-related functions. In between these extremes, the other four hospitals differ in the types of service they provide.

All, except Zeta, have financed their initial capital requirements by means of community fund drives. Zeta borrowed its funds, and consequently incurs an interest charge each year. Depreciation expense is replaced by a rental charge because the building and equipment are leased.[7]

Each hospital begins the year 19A in the same financial position. Table 5.2 is a partial balance sheet.[8]

Table 5.2. Partial balance sheet; all hospitals at the beginning of year 19A

GENERAL FUND

Assets

Committed to Liquidity	Amount
Cash	$ 500
Accounts Receivable	400
Committed to Service	
Supplies	100
Plant and Equipment	3,000
Total	$4,000

During the three years of simulated operations it is assumed that the accounts receivable remain at a constant level.

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[7]Rental payments typically exceed the depreciation charge. For purposes of simplicity, the amounts are equated.

[8]Data on assets approximate that reported for voluntary hospitals of 200 beds at the end of 1964. Hospitals, Vol. 39, No. 15 (August 1, 1965), 451.

Therefore, gross revenue, to the extent collected, is synonymous with cash receipts for any given period. It is likewise assumed that supply requirements do not change and that the balance of accounts payable remains constant. Therefore, costs and expenses, except for non-cash charges, are synonymous with cash disbursements.

Each hospital has 200 beds.[9] During each of the three years occupancy is approximately 80 percent or 60,000 patient days.[10] For the first year each hospital sets rates to cover only the total operating costs. Rates for certain ancillary services are set above their respective costs in order to subsidize those departments that ordinarily operate at a loss. The over-all rate for the year 19A averages $40.00 per patient day.[11]

Table 5.3 is an income statement of all services provided by all six hospitals for the three-year period. The cost structure is assumed to be the same for each hospital. Similarity of cost structures is necessary to eliminate any affect on financial position resulting from varying degrees of efficiency. However, the total operating costs

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[9]This size category had the highest admissions for 1964.

[10]1964 occupancy for voluntary hospitals of 200 bed size.

[11]Average patient-day revenue for all voluntary short-term hospitals.

Table 5.3. Basic earnings statement; all hospitals for the years 19A, 19B, 19C

BLANK HOSPITAL
EARNINGS STATEMENT
For the Year 19A
(000 omitted)

	Total	Inpatient Routine Care	Maternity and Pediatrics	Intensive Care	Operating Room	Laboratory	Pharmacy	X-Ray
Gross Revenue	$ 2,400	$ 1,000	$ 500	$ 100	$ 250	$ 300	$ 150	$ 100
Charity Losses	120	120	...	...	...	...	...	...
Net Revenue	2,280	880	500	100	250	300	150	100
Operating Costs								
Direct	1,340	350	300	100	250	180	100	60
Programmed	210	100	50	10	25	15	5	5
Common	850	500	200	30	75	30	5	10
Total	2,400	950	550	140	350	225	110	75
Net contribution to capital and community costs	(120)	(70)	(50)	(40)	(100)	75	40	25
Capital and Community								
Depreciation	250							
Interest	100							
Research	50							
Education	200							
Total	600							
Net Income	(720)							

Table 5.3--Continued

BLANK HOSPITAL
EARNINGS STATEMENT
For the Year 19B
(000 omitted)

	Total	Inpatient Routine Care	Maternity and Pediatrics	Intensive Care	Operating Room	Laboratory	Pharmacy	X-Ray
Gross Revenue	$ 2,570	$ 1,070	$ 535	$ 110	$ 265	$ 320	$ 160	$ 110
Charity Losses	130	130	...	...	...	...	...	...
Net Revenue	2,440	940	535	110	265	320	160	110
Operating Costs								
Direct	1,435	370	320	105	260	200	110	70
Programmed	230	110	55	10	30	15	5	5
Common	905	530	210	35	80	35	5	10
Total	2,570	1,010	585	150	370	250	120	85
Net contribution to capital and community costs	(130)	(70)	(50)	(40)	(105)	70	40	25
Capital and Community								
Depreciation	250							
Interest	95							
Research	60							
Education	215							
Total	620							
Net Income	(750)							

Table 5.3--Continued

BLANK HOSPITAL
EARNINGS STATEMENT
For the Year 19C
(000 omitted)

	Total	Inpatient Routine Care	Maternity and Pediatrics	Intensive Care	Operating Room	Laboratory	Pharmacy	X-Ray
Gross Revenue	$ 2,750	$ 1,145	$ 575	$ 120	$ 280	$ 340	$ 170	$ 120
Charity Losses	140	140	...	...	...	...	...	...
Net Revenue	2,610	1,005	575	120	280	340	170	120
Operating Costs								
Direct	1,535	395	340	115	275	215	120	75
Programmed	245	115	60	10	30	20	5	5
Common	970	575	225	35	85	35	5	10
Total	2,750	1,085	625	160	390	270	130	90
Net contribution to capital and community costs	(140)	(80)	(50)	(40)	(110)	70	40	30
Capital and Community								
Depreciation	250							
Interest	90							
Research	70							
Education	230							
Total	640							
Net Income	(780)							

for each hospital are not the same because not all the hospitals provide maternity and intensive care. The allocation of total costs to direct, programmed, and common costs approximates the cost composition found in some empirical studies.[12] In practice, the cost allocations would be made in accordance with the accounting procedures outlined in Chapter IV. For the years 19B and 19C operating costs reflect a 7 percent increase, and capital and community costs are increased in accordance with current trends.

Table 5.4 is an income statement by hospitals. The total operating costs equal gross revenues, thus placing each hospital at a break-even point before the deduction of capital and community costs. This break-even point was purposely specified in order to demonstrate the full effect of capital and community outlays. The writer estimated capital costs as 8 percent for depreciation and 5 percent for interest expense.[13] Community costs are based on empirical studies.[14]

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[12] R. L. Durbin, "Study of Variable Pricing," Arizona Medical Journal, July, 1965, p. 557.

[13] Approximates experience of five Rhode Island hospitals in letter from R. R. Mayer, Council of Community Services, Providence, Rhode Island, to the writer, March, 1966.

[14] See Illinois Hospital Association, Report on 1958 School of Nursing Cost Study (Chicago: The Association, 1959). The study reported that the average net cost in excess of tuition was $1,620.

Table 5.4. Summary of earnings statement

ALL HOSPITALS
For the Year 19A
(000 omitted)

	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Gross Revenue (1)	$ 2,400	$ 2,400	$ 2,400	$ 2,400	$ 2,400	$ 2,400
Charity Losses (2)	120	...	120	120	120	...
Net Revenue	2,280	2,400	2,280	2,280	2,280	2,400
Operating Costs						
Direct	1,340	1,340	1,340	1,340	1,310	1,310
Programmed	210	210	210	210	210	210
Common	850	850	850	850	760	760
Total (3)	2,400	2,400	2,400	2,400	2,280	2,530
Net contribution to capital and community costs	(120)	...	(120)	(120)	...	(130)
Capital and Community						
Depreciation (4)	250	250	250	250	250	...
Interest (5)	...	...	...	...	...	100
Research (6)	50	50	...	50	50	...
Education (7)	200	200	200	...	200	...
Total	500	500	450	300	500	100
Net Income	(620)	(500)	(570)	(420)	(500)	(230)

Table 5.4--Continued

ALL HOSPITALS
EARNINGS STATEMENT
For the Year 19B
(000 omitted)

	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Gross Revenue	$ 2,570	$ 2,570	$ 2,570	$ 2,570	$ 2,570	$ 2,570
Charity Losses	130	...	130	130	130	...
Net Revenue	2,440	2,570	2,440	2,440	2,440	2,570
Operating Costs						
Direct	1,435	1,435	1,435	1,435	1,415	1,415
Programmed	230	230	230	230	225	475
Common	905	905	905	905	815	815
Total	2,570	2,570	2,570	2,570	2,455	2,705
Net contribution to capital and community costs	(130)	...	(130)	(130)	(15)	(135)
Capital and Community						
Depreciation	250	250	250	250	250	...
Interest	...	...	...	...	...	95
Research	60	60	...	60	60	...
Education	215	215	215	...	215	...
Total	525	525	465	310	525	95
Net Income	(655)	(525)	(595)	(440)	(540)	(230)

Table 5.4--Continued

ALL HOSPITALS
EARNINGS STATEMENT
For the Year 19C
(000 omitted)

	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Gross Revenue	$ 2,750	$ 2,750	$ 2,750	$ 2,750	$ 2,750	$ 2,750
Charity Losses	140	...	140	140	140	...
Net Revenue	2,610	2,750	2,610	2,610	2,610	2,750
Operating Costs						
Direct	1,535	1,535	1,535	1,535	1,515	1,515
Programmed	245	245	245	245	245	495
Common	970	970	970	970	870	870
Total	2,750	2,750	2,750	2,750	2,630	2,880
Net contribution to capital and community costs	(140)	...	(140)	(140)	(20)	(130)
Capital and Community						
Depreciation	250	250	250	250	250	...
Interest	...	...	...	...	...	90
Research	70	70	...	70	70	...
Education	230	230	230	...	230	...
Total	550	550	480	320	550	90
Net Income	(690)	(550)	(620)	(460)	(570)	(220)

Statistical Methodology and Hypotheses

Statistical Methodology

The objective of the simulation test is to determine the inter-dependence between hospital financial capacity and reimbursement formulae. Differences in the four formulae being tested are reflected in the hospital's cash position after reimbursement. Therefore, the cash balance is the statistic that provides the data for testing.

Two non-parametric statistical tests are used. They are the Kruskal-Wallis One-Way Analysis of Variance by Ranks and the Spearman Rank Correlation Coefficient. Non-parametric tests are selected because the data simulated in this study do not fulfill the interval scale condition of parametric tests.[15] The cash balance is, at best, only representative of financial capacity in an ordinal sense. All other things being constant, a high cash balance indicates a better financial position than does a low cash balance but this statistic is not sufficiently exact to be treated numerically.[16]

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[15]See S. Seigal, Nonparametric Statistic for the Behavioral Sciences (New York: McGraw-Hill, 1956) for a complete discussion of the assumptions underlying parametric and non-parametric statistical tests.

[16]That is, one is not willing to say that a hospital whose financial position is say $60 is twice as financially capable as a hospital whose position is $30. Nor is the difference between values of $60 and $30 twice as large as the difference between $20 and $10. Although it cannot be asserted that the differences are numerically exact, one

The usual parametric test for determining whether k independent samples have come from the same population is the F test. The assumptions associated with the statistical model underlying the F test are that the observations are independently drawn from normally distributed populations, all of which have the same variance. The measurement requirement of the F test is that the research must achieve at least an interval measurement of the variable involved.

These rigid assumptions are not needed for the Kruskal-Wallis test which is non-parametric. This test requires only an ordinal measurement of the variable in order to test the null hypothesis that the k samples come from the same population or from identical populations with respect to averages. Compared with the F test, the Kruskal-Wallis test has an asymptotic efficiency of 95.5 percent.[17]

The usual parametric test for association is the Pearson product-moment correlation coefficient r. This statistic requires scores which represent measurement in at least an equal-interval scale. If we wish to test the significance of an observed value of r, we must also assume that the scores are from a bivariate normal population.

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can maintain that they are sufficiently meaningful that they may be ranked in order of size. The Kruskal-Wallis and Spearman tests are non-parametric tests employing this ranking technique.

[17] S. Seigal, op. cit., p. 112.

If these measurement requirements cannot be met or the normality assumption is unrealistic, then use may be made of the non-parametric test, the Spearman Rank Correlation Coefficient.

Of all the non-parametric tests, the Spearman Rank Correlation Coefficient was the earliest to be developed and is perhaps the best known today. It is a measure of association which requires that both variables be measured in at least an ordinal scale so that the objects or individuals under study may be ranked in two ordered series. Compared with the Pearson r, the efficiency of the Spearman test is about 91 percent.[18]

Hypotheses

Two research hypotheses may be stated in accordance with the theory that the type of reimbursement formula influences hospital financial capacity. First, one would expect that as the reimbursement formula is changed for all hospitals, the total financial position will change. Second, one would expect that given a particular reimbursement formula, the relative financial positions of the hospitals will be affected. For the sake of simplicity, the two research hypotheses have been combined in the following statement of the null hypothesis of no differences:

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[18] Ibid., p. 113.

Null Hypothesis - H_0: There is no difference in the total or relative financial position scores of hospitals reimbursed by third-party purchasers of hospital care using (1) Proposed Revised Joint Hospital Form No. 1, (2) Adapted Blue Cross Method, (3) Community Service Method, or (4) Medicare Method.

Positive Hypothesis - H_1: The four reimbursement formulae do not result in the same total or relative financial position scores.

Findings

General Observations

Table 5.5 indicates the cash reimbursement for each hospital according to the respective reimbursement methods. The CS Method results in the highest reimbursement to any individual hospital and moreover, the highest average to all hospitals. The other three methods result in approximately the same amount of reimbursement the first year and some widening of the differential during the following two years.

Although each hospital provides different services, the JH and BCA methods result in certain hospitals receiving equal payments. Consequently, no monetary incentive is given to engage in adjunct functions. For example, Delta receives the same reimbursement as Alpha, and yet Delta has no educational program. In contrast, under the CS and Medicare methods, dissimilar hospitals are not reimbursed equally. Payments reflect services, and therefore hospitals

Table 5.5. Summary of cash reimbursement for all hospitals by contract method (000 omitted)

	Joint Form No. 1	Blue Cross Adapted	Community Service	Medicare
Year 19A				
Alpha	$ 1764	$ 1690	$ 2115	$ 1750
Beta	1764	1690	2030	1688
Gamma	1764	1690	2080	1742
Delta	1764	1630	1970	1712
Epsilon	1680	1690	1995	1751
Zeta	1680	1635	1805	1654
Average	1736	1670	2000	1716
Year 19B				
Alpha	1946	1835	2255	1888
Beta	1946	1835	2165	1821
Gamma	1946	1835	2215	1877
Delta	1946	1755	2100	1859
Epsilon	1860	1835	2150	1883
Zeta	1860	1808	2136	1851
Average	1917	1808	2136	1851
Year 19C				
Alpha	2073	1960	2405	2023
Beta	2073	1960	2305	1951
Gamma	2073	1960	2355	2008
Delta	2073	1880	2240	1993
Epsilon	1988	1960	2305	2028
Zeta	1988	1885	2035	1914
Average	2045	1933	2276	1986

are encouraged in their efforts toward development and advancement.

Table 5.6 indicates the cash balances of each hospital after giving effect to the respective reimbursement methods. For the year 19A the balances range from a low of $140 for Alpha Hospital under the BCA Method to a high of $620 for Delta Hospital under the CS Method. The ranges of cash balances differ. The largest range occurs under the CS Method because the leased assets of Zeta obviate the need of funds for future replacement. If Zeta is excluded for the reasons that it provides the least number of services and incurs the highest capital charges, cash balances under the CS Method have the lowest range, only 9 percent. The ranges under the other three methods are 52 percent, 50 percent, and 58 percent.

During the following two years the trends established in the year 19A continue and, therefore, the cash balance differences widen. At the end of the third year, year 19C, deficit balances are found for all hospitals under the BCA Method, and for four under the JH and Medicare methods. Under the CS Method there are no deficits. Five hospitals under this method have a higher cash balance than the initial $500. Under the JH Method, only one hospital, Delta, has increased its initial balance. In the case of the BCA and Medicare methods, deficits are caused by the ceiling control system. The deficits under the JH Method and further

Table 5.6. Summary of cash balances after giving effect to respective reimbursement formulae; for the years 19A, 19B, 19C

	Joint Form No. 1	Blue Cross	Community Service	Medicare
Year 19A				
Alpha	$ 214	$140	$ 565	$ 200
Beta	334	260	600	258
Gamma	264	190	580	242
Delta	414	280	620	362
Epsilon	250	260	565	321
Zeta	270	225	395	244
Year 19B				
Alpha	(40)	(225)	620	(112)
Beta	205	20	690	4
Gamma	70	(115)	655	(21)
Delta	375	50	735	236
Epsilon	25	10	630	119
Zeta	100	(50)	285	(7)
Year 19C				
Alpha	(327)	(625)	665	(449)
Beta	53	(245)	770	(270)
Gamma	(147)	(445)	720	(303)
Delta	318	(200)	845	99
Epsilon	(227)	(270)	695	93
Zeta	(57)	(310)	175	(238)

deficits under the BCA Method are caused by the complete or partial exclusion of costs related to adjunct functions.

In the face of such deficits, hospitals are inclined to raise rates in order to recapture the costs not fully reimbursed. Under the CS Method there is no need to raise rates because service losses are recaptured through allocation to departments producing an income.

Total Financial Capacity - Kruskal-Wallis Test

In order to determine whether the differences which have been noted in the cash balances are significant in terms of total financial capacity, the Kruskal-Wallis test is applied. In this test all of the scores from all of the k samples combined are ranked in a single series from lowest to highest. When this has been done, the ranks in each column are summed. Then H is solved for by using the following formula:

$$H = \frac{12}{N(N+1)} \sum_{j=1}^{k} \frac{Rj^2}{Nj} - 3(N+1)$$

where:

H = notation of Kruskal-Wallis test
12 = a constant
N = total number of observations
Rj = summation of ranks
nj = number of observations.

Table 5.7 ranks the twenty-four cash balances resulting from the use of respective reimbursement methods for the year 19A.[19]

Table 5.7. Rankings of cash balances under respective reimbursement formulae, (low to high) for the year 19A

Hospital	Joint Form No.1	Adapted Blue Cross	Community Service	Medicare
Alpha	4	1	21	3
Beta	16	10	23	9
Gamma	12	2	22	6
Delta	19	14	24	17
Epsilon	8	11	20	15
Zeta	13	5	18	7
Total	72	43	128	57

When the formula is computed, the resulting value for H is 7.9. This H value is significant at the .05 level for nj's that are small. Therefore, the null hypothesis that there is no difference in the total financial position scores of hospitals reimbursed under the four methods is rejected at the .05 level and the alternative hypothesis H_1, that the

[19]The rankings for the years 19B and 19C do not change substantially.

four reimbursement formulae do not result in the same total financial position scores, is accepted.

Relative Financial Capacity - Spearman Test

The Spearman test is applied in order to determine whether the differences in cash balances are significant in terms of relative financial capacity. In order to make these differences more realistic, the previous assumption regarding rates is relaxed. Self-paying patients must assume their portion of the obligation of paying for capital and community costs. Therefore, the cash balances in Table 5.8 are larger because the simulated rates are increased in the amount necessary to cover 20 percent of the capital and community costs.

Table 5.8. Cash balances and rank (low to high) after community share adjustment

	Joint Form No. 1		Adapted Blue Cross		Community Service		Medicare	
Hospital	Cash Bal.	Rank	Cash Bal.	Rank	Cash Bal.	Rank	Cash Bal.	Rank
Alpha	$ 399	2	$ 325	1	$ 750	2	$ 385	2
Beta	484	5	410	4	750	2	408	3
Gamma	434	3	360	3	750	2	412	4
Delta	544	6	410	5	750	2	492	5
Epsilon	435	4	445	6	750	2	506	6
Zeta	375	1	330	2	500	1	349	1

Once this rate adjustment is made, the cash balances of each hospital under the CS Method are in an equitable position. The cash position of each hospital, with the exception of Zeta, exceeds the initial balance by $250.[20] This amount, representing the reimbursement of depreciation, may be invested for the purposes of future plant replacement and expansion. The JH, BCA, and Medicare methods do not effect this equity.

To the cash balances in Table 5.8 ranked in four ordered series, the Spearman test is applied. Using the formula:

$$r_s = \left[- \frac{6 \sum_{r-1}^{N} d_i^2}{(N)^3 - N} \right.$$

where:

r_s = notation of Spearman Rank Coefficient Test
6 = a constant
d_i = difference between rankings for a given hospital
N = number of hospitals ranked under each formula.

r_s indicates a value of .14. This r_s value is not significant at the .05 level. This means that the rankings of relative financial position differ significantly. Therefore, the null hypothesis that there is no difference among the relative financial scores of hospitals reimbursed under the respective methods is rejected at the .05 level and the

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[20]Zeta Hospital rents capital assets.

alternative hypothesis H_1, that the four reimbursement formulae do not result in the same relative financial position scores, is accepted.

Cost Incidence

Let us assume that the six hospitals are charging rates to cover operating costs only. In order to be at a cash position equal to $750 (initial balance of $500 plus funds for future replacement and expansion of $250), they decide to raise rates. There are two ways in which to do this: simply an increase in routine care rates, or a small increase in routine care rates plus an increase that brings below-cost services to a break-even point.

Table 5.9 indicates the room rates which will be needed, under each reimbursement method, to place each hospital in the desired financial position.[21] For each year the average room rate is highest under the BCA Method and lowest under the CS Method. For the year 19A, the BCA Method results in the largest room rate differential ($30.11); whereas, the CS Method has the lowest room rate differential ($6.50). In the years 19B and 19C the average rates increase, owing to the assumption that operating, capital, and community costs increase (see Table 5.3).

[21] These room rates are not realistic because the first year's increase starts from a base that already includes an amount for costs not recovered from third-party contractors.

Table 5.9. Summary of hospital room rates required to cover total costs after giving effect to respective third-part reimbursement formulae; all hospitals for the years 19A, 19B, 19C

	JH Method	BCA Method	CS Method	Medicare Method
Year 19A				
Alpha	$ 62.40	$ 67.33	$ 39.00	$ 63.33
Beta	49.77	53.87	35.00	54.00
Gamma	59.07	64.00	38.00	60.53
Delta	49.07	58.01	35.34	52.54
Epsilon	60.00	59.33	39.00	55.27
Zeta	39.44	41.94	32.50	40.88
Average	53.29	57.42	36.47	54.43
Year 19B				
Alpha	66.61	70.54	41.54	66.54
Beta	53.02	56.28	37.14	56.41
Gamma	62.61	66.87	40.54	63.40
Delta	52.28	61.22	37.88	55.75
Epsilon	64.21	62.54	41.54	58.48
Zeta	41.04	43.54	34.10	42.48
Average	56.63	60.17	38.79	57.18
Year 19C				
Alpha	70.28	73.21	44.21	69.21
Beta	56.41	58.84	39.70	58.97
Gamma	65.61	69.20	42.87	65.73
Delta	54.94	63.88	40.21	58.41
Epsilon	67.88	65.21	44.21	61.15
Zeta	42.76	45.26	35.82	44.23
Average	59.65	62.60	41.17	59.62

Moreover, the average rates increase and rate differentials widen under those plans in which costs are not fully reimbursed. Unless a patient has full coverage for routine care, he must bear the burden of steadily escalating rates for such care.

In the simulated income statements, in order that below-cost services cover their operating costs, the rate for maternity and pediatrics would have to be increased by 10 percent, for intensive care by 40 percent, and for operating room by 45 percent. If rates are increased to cover allocated capital and community costs as well as operating costs, the increases would be 26 percent, 85 percent, and 65 percent respectively.

Table 5.10 indicates the cash balances of all hospitals under the Medicare Method, after the "across-the-board" rate adjustment to cover capital, community, and operating costs.[22] At the end of the year each hospital has a cash position in excess of the initial balance of $500. This increase is explained by the fact that the across-the-board rate increase renders ineffective the "cost or charges, whichever is lower" ceiling. The amount in excess of $500

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[22]These cash balances do not reflect amounts that would be received for these services from self-paying patients. If these amounts were added, the cash balances under the Medicare Method would approximate the cash balances under the CS Method shown in Table 5.8.

reflects the formula's provision for financing new services and future plant replacement and expansion. Since bad debts are only partially recovered, a hospital not incurring such losses--Beta, for example--benefits vis-a-vis other hospitals.

Table 5.10. Cash balances under the Medicare Method after giving effect to room and ancillary rate adjustments; all hospitals for the year 19A

Hospital	Cash Balance
Alpha	$ 573
Beta	631
Gamma	584
Delta	599
Epsilon	599
Zeta	532

With any reimbursement formula that employs a ceiling approach in its cost control system, the tendency to raise rates will prevail. Consequently, third-party agencies will make larger reimbursements, the public will be faced with higher medical care expenditures, and hospital managements will be subjected to further criticism by the community.

CHAPTER VI

COST CONTROL SYSTEMS

The major reimbursement contracts in use at the present time are on a cost basis but, as demonstrated, they do not effectively control hospital costs which are rising at an annual rate of 7 percent. In the proposed CS Method the writer recommends the incorporation of an incentive-penalty system which will reward hospital management for effecting cost economies and will likewise impose a penalty for allowing unwarranted cost increases.

Target Rate System

Defense Department

The Defense Department had encountered difficulties similar to those of hospitals regarding the control of costs.[1] Its original "cost plus" approach proved unsatisfactory. It was realized that by reimbursing full costs plus a profit percentage, no incentive was being provided for holding

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[1]For a complete, detailed analysis of defense payment methods, see F. M. Scherer, The Weapons Acquisition Process: Economic Incentives (Boston, Massachusetts: Harvard University, 1964).

costs down. As a result, the Defense Department developed a form of negotiable contract with a "targe rate" feature; that is, at the time the contract is awarded, a per unit cost is estimated.[2] At the completion of the contract, if the actual cost is lower than the estimate, the difference is divided on a sliding scale. If the actual cost exceeds the estimate, the contractor is not reimbursed full cost, but is paid merely the estimated amount plus some percentage of the excess. This approach is by no means unusual. It simply incorporates the profit motive into a contractual arrangement, thus acting as a control on costs.

Proposed for Hospital Industry

Third-party purchasers of hospital care could incorporate this target rate system in their reimbursement methods by using an annual operating budget as the target. The information for the details of the budget would be readily available if the hospital used the classification and reporting system proposed in Chapter IV. No special analyses would be required. The budget would then be submitted to a committee representative of the community. The committee would review this budget in the light of over-all community needs, expected levels of operations, expected national and local cost conditions, and the endemic differences between hospitals as evidenced from past operations and special cost

[2] Ibid., p. 134.

studies. The budget would either be accepted or modified after consultation with hospital management.

Table 6.1 illustrates a cost budget for the two hospitals Alpha and Beta at the three operating levels of 50,000, 60,000, and 70,000 patient days. Let us assume that the budgets are accepted. Table 6.2 compares the budget at an operating level of 60,000 patient days with the costs actually incurred.

Alpha Hospital incurs costs in excess of the budget by $230 or 8 percent. Beta Hospital effects certain cost-reducing programs and as a result incurs costs of $170 or 6 percent less than budgeted.

Table 6.3 is an example of a sliding scale basis of payment. Using this scale, Alpha Hospital would be reimbursed a total of $2,980. This amount represents the budget of $2,790 plus 87 percent of $230, which is $50 less than actual costs. Beta Hospital would be reimbursed a total of $2,919. This amount represents actual costs of $2,900 plus 11 percent of $170, which is $19 more than actual costs.

At the present time, acceptance of the target rate system by the hospital industry would not easily be secured. The prevailing attitude of hospital administrators and boards of trustees seems to be adverse to the submission of their annual operating budget to an outside board of review.

Table 6.1. Budget statement of costs
Alpha and Beta Hospitals
For the Year 19A

	ALPHA			BETA		
	Patient Day Levels			Patient Day Levels		
	50,000	60,000	70,000	50,000	60,000	70,000
Charity Losses (at Cost)	$ 90	$ 100	$ 110	$ ...	$ ...	$ ...
Operating Costs						
Direct	900	1,200	1,610	1,200	1,400	1,800
Programmed	200	200	220	220	240	260
Common	780	800	830	800	900	1,000
Total	1,880	2,200	2,660	2,220	2,540	3,060
Capital and Community						
Depreciation	250	250	250	260	260	260
Interest	...	...	...	...	...	...
Research	50	50	50	50	50	50
Education	180	190	200	200	220	240
Total	480	490	500	510	530	550
Total Costs	2,450	2,790	3,270	2,730	3,070	3,610

Table 6.2. Comparison of budgeted and actual costs
Alpha and Beta Hospitals
For the Year 19A

	ALPHA			BETA		
	60,000 Patient Days			60,000 Patient Days		
	Budget	Actual	Over/(under)	Budget	Actual	Over/(under)
Charity Losses (at Cost)	$ 100	$ 120	$ (20)	$ ...	$ ...	$ ...
Operating Costs						
Direct	1,200	1,340	(140)	1,400	1,340	60
Programmed	200	210	(10)	240	210	30
Common	800	850	(50)	900	850	50
Total	2,200	2,400	(200)	2,540	2,400	140
Capital and Community						
Depreciation	250	250	...	260	250	10
Interest	...	...	...	...	...	...
Research	50	50	...	50	50	...
Education	190	200	(10)	220	200	20
Total	490	500	(10)	530	500	30
Total Costs	2,790	3,020	(230)	3,070	2,900	170

Table 6.3. Sliding payment scale

Budget-Actual Difference (%)	Hospital Share	
	Actual Over Budget (%)	Actual Under Budget (%)
5	90	10
10	85	15
15	80	20
20	75	25

The voluntary nonprofit hospital has traditionally defended its right to operate without the need to report to outside groups. In view of the expanded role of government in the purchasing of hospital care, hospital managements are wary of any program which may impinge upon the authority delegated to them by the community. At the time that the reimbursement principles of the Medicare Act were being discussed, Philip Bonnet, M.D., President of The American Hospital Association wrote the following to the secretary of the Department of HEW:

> We wish to express great concern about the proposed reimbursement principles presented to the American Hospital Association. . . . It is our belief that unless several important adjustments are made, the principles will represent a major threat to the future of the voluntary hospital system . . . the American Hospital Association constantly brought to the attention of the

> Congress its concern over the involvement of government as a major financer of health services.[3]

From these attitudes, it seems unlikely that the target rate system would meet with approval at this time. Therefore, some other type of control system must be devised.

Eligibility Control System

Since the budget review seems to be the obstacle of the target rate system, the writer has constructed a system which omits this feature but retains the effectiveness of the incentive-penalty characteristic. This system is termed an "eligibility control system."

This control system would be incorporated into the reimbursement contract. In order to qualify for such a contract, all hospitals would be required to meet the following general standards:

1. Accreditation by the Joint Commission on Accreditation of Hospitals for the United States.
2. A medical review committee that periodically studies and reviews patient utilization and quality of care.
3. A cost accounting system approved by the American Hospital Association.
4. An annual operating budget prepared and approved by the board of trustees.

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[3]Letter from Philip D. Bonnet, M.D., President, American Hospital Association to John W. Gardner, Ph.D., Secretary, Department of Health, Education and Welfare, April 20, 1966.

5. An annual review of the previous year's budget by the board of trustees. Their statement on budget performance together with financial statements to be furnished to the fiscal intermediary.

6. Use of the Patient Analysis Service, Inc. (PAS) for statistics and the Hospital Analysis Service, Inc., (HAS) for operating costs.[4]

7. An annual audit of hospital financial statements by a certified public accountant.

8. A placing on public file of annual financial statements.

The operating results of all hospitals that meet these standards would be reviewed by a special board which would determine whether an incentive or penalty is to be given.[5] This board of review would be composed of three persons: a representative of the fiscal intermediary, a member of the state hospital association, and a knowledgeable person selected from the community at large.[6] This review would be based on the financial statements filed with the fiscal intermediary and the data compiled by PAS and HAS. The board would begin by setting up performance standards for every cost center. Recognition would have to be given

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[4]A majority of the presently accredited hospitals are members of these services.

[5]Scherer, op. cit., p. 400, also suggests a board of review for defense contact performance to establish profit awards.

[6]The person should be knowledgeable concerning hospital operations and problems. He could be an accountant, lawyer, banker, or an officer of a major business within the community.

to those factors (size, ownership, location, socio-economic conditions, etc.) that contribute to cost variations.

If the board judges that a hospital meets these performance standards, then the third party would make an incentive payment based on a predetermined sliding scale. The percentages would increase in proportion to the extent of the cost economies effected. Conversely, the penalty of less than full reimbursement is imposed on hospitals whose costs are considered excessive.

The eligibility system could mark the beginning of a new method of cost control for the hospital industry. In this study it is suggested as part of the writer's CS Method. However, there is no reason why the Federal government could not incorporate this system as the principal feature of cost control for the Medicare Method. If this system were adopted, it could be the means of manifesting the benefits to be obtained from co-operation between hospital management and an outside board of review. In its present form it is an "after-the-fact" evaluation system, but it could evolve into an even more effective control system at a time when annual budgets would be willingly submitted as a standard of operating performance.

CHAPTER VII

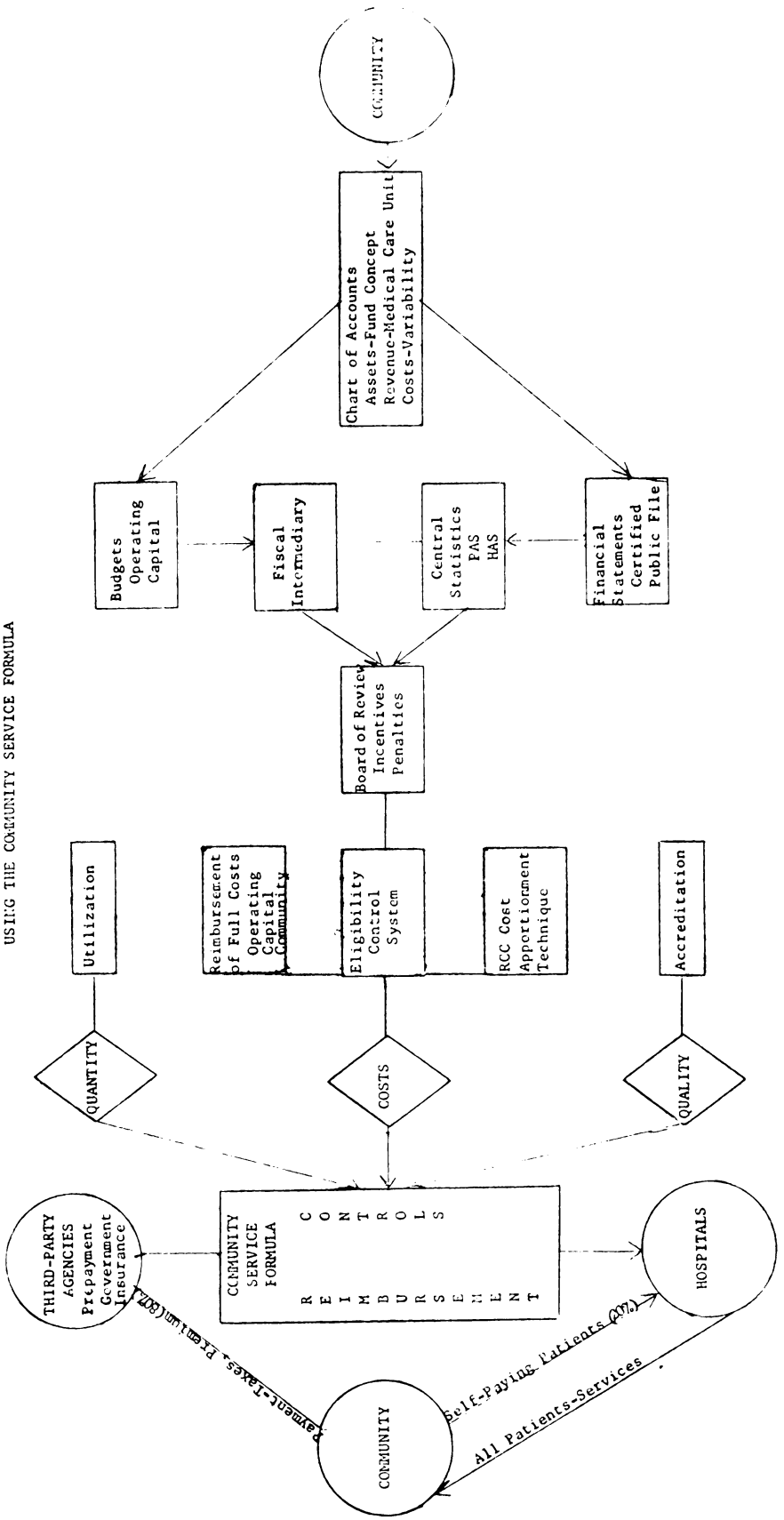
SUMMARY AND CONCLUSIONS

Summary

At the present time, the economic system for providing hospital care in the United States consists, for the most part, of a combination of private voluntary ownership and private payment through third-party organizations which, by means of premium assessments and tax levies, distribute the financial burden over the entire community. This system is not without its defects. With the voluntary form of ownership there is the danger of inefficiency, since the ordinary economic incentives are lacking. The ultimate success of the voluntary hospital system, in terms of an optimum allocation of resources, depends upon operation efficiency. A formal control system is necessary as a substitute for the implicit controls of the pure competition model. The writer is of the opinion that such a control system would be most effective if incorporated directly into the reimbursement formula.

Figure 1 portrays the relationship between the community, third-party agencies, and hospitals and the particular

HOSPITAL INDUSTRY -- REIMBURSEMENT AND CONTROLS
USING THE COMMUNITY SERVICE FORMULA



role the Community Service Reimbursement Formula would be expected to play. Specifically, the CS Method would be both a reimbursement and cost control mechanism acting to wed quantity and quality of hospital care at the least cost. The principal instrument of control for all three areas of hospital care (quantity, quality, costs) is the review committee. Concerning costs, the control feature is termed an "Eligibility Cost Control System" having a special board of review to determine monetary incentives and penalties according to hospital operating performance. The board would make its decisions based on information received from the fiscal intermediary and two central statistical services (PAS and HAS). Hospitals would provide these intermediaries with budget and actual operating data at regular intervals. The data compiled by the hospitals would be reported according to a uniform chart of accounts.

Conclusions

It is customary to conclude policy-oriented studies with a set of definite recommendations and a discussion of their implications. The main contribution of this study is the development of a control-oriented reimbursement formula, entitled the Community Service Method, which has as its principal feature an "Eligibility Control System," involving monetary incentives and penalties, and based upon revised financial statements for the hospital industry. It is

recommended that all hospitals and all third-party purchasers of care adopt the principal features of the Community Service Method as the basis of settlement for hospital care provided to beneficiaries of third-party agencies. Therefore, it is recommended that:

1. reimbursement be on the basis of costs, not rates.
2. capital and community costs be included in the list of items to be reimbursed.
3. the chart of accounts be revised to classify revenue according to the type of medical care unit, and to classify expenses according to the concept of cost variability.
4. uniform statistical bases be used for allocating the costs of general service departments.
5. the format of the balance sheet, developed according to the fund concept, combine the general and plant funds and categorize assets according to purpose.
6. the format of the income statement be revised in conformity with the concept of cost variability.
7. each hospital prepare an annual operating budget, have it reviewed by the board of trustees, and have the board submit a statement on budget performance together with certified financial statements to the fiscal intermediary.

8. each hospital submit its patient and cost data to Patient Analysis Service, Inc. (PAS) and Hospital Analysis Service, Inc. (HAS) respectively.
9. a special board of review be established to determine monetary incentives and penalties for hospital operating performance.

If the foregoing recommendations are adopted, there will be far-reaching implications.

1. There will be uniformity in third-party reimbursement formulae, thus eliminating the present problems due to diversity.
2. Hospital accounting will become more refined. This will increase the demand for mechanized record-keeping and more proficient accounting personnel. It is very possible that hospitals in the same area will share the services of a central computer.
3. There will be a greater need for the services of the public accounting profession for systems' advice as well as for certified financial statements.
4. More people will provide for the financing of hospital care expenditures through prepayment plans.
5. Premiums and taxes for financing hospital care will increase because of higher reimbursements to be made.

6. There will be an increase in the charges for below-cost services (maternity, pediatrics, operating room) and a reduction in the rate of increase of charges for routine services.
7. Owing to the inclusion of capital and community costs in the reimbursement formula, third-party contractors will have more influence on the amount of new construction, the extent of the hospital's role in medical education, the type and amount of research, and the hospital's procedures for collecting from patients.
8. Owing to the provision for financing plant replacement and expansion, hospital administrators will need advice regarding long-term investments. Therefore, they will provide a new outlet for the suppliers of securities and a new market for financial counseling services.
9. Hospital administration and hospital financial problems will be given more attention by business educators and researchers.

The increased assurance of financial support from large third-party contractors, including the Federal government, should contribute to the expansion and improvement of the voluntary hospital system in the United States. The advent of Medicare, thereby enlarging the government's role

in the purchasing of hospital care, should lead hospitals toward a deeper awareness of their commitment to the community. In the writer's opinion, if the Federal government were to strengthen the Medicare formula by adopting the "Eligibility Control System" as its cost control feature, then hospital management would be further motivated toward a conscientious performance of their stewardship so that maximum service would be rendered for each dollar of hospital investment.

BIBLIOGRAPHY

Books

American Hospital Association. Report of Task Force on Principles of Payment for Hospital Care. Chicago, Illinois: The Association, 1963.

American Hospital Association. Principles of Payment for Hospital Care. Chicago, Illinois: The Association, 1963.

American Hospital Association. Cost Finding for Hospitals. Chicago, Illinois: The Association, 1957.

American Hospital Association. Uniform Chart of Accounts and Definitions for Hospitals. Chicago, Illinois: The Association, 1959.

Commonwealth of Massachusetts. Final Report of the Special Commission to Investigate and Study the Rising Cost of Hospital and Medical Care, and Hospital Accommodations. The Commonwealth, 1964.

Graduate School of Business. Third-Party Reimbursement for Hospitals. Indiana: Indiana University, 1965.

Harris, Seymour E. The Economics of American Medicine. New York: MacMillan Company, 1964.

Hay, Leon E. Budgeting and Cost Analysis for Hospital Management. 2nd ed. Bloomington, Indiana: Pressler Publishing, 1963.

Health Insurance Institute. 1963 Source Book of Health Insurance Data. 488 Madison Avenue, New York: Health Insurance Institute.

Hospital Association of Rhode Island. Report-Financing Voluntary Hospital Service. Providence, Rhode Island: Hospital Association of Rhode Island, 1963.

Klarman, Herbert E. The Economics of Health. New York and London: Columbia University Press, 1965.

Lybrand, Ross Bros. and Montgomery, Certified Public Accountants. Analysis of Total Costs and Cost per Patient Day by Class of Patient and Calculation of Settlement for Blue Cross Ancillaries for the Year Ended September 30, 1965. Prepared for Rhode Island Joint Hospital-Blue Cross Committee. Boston, Massachusetts: Lybrand, Ross Bros. and Montgomery, 1965.

Lybrand, Ross Bros. and Montgomery. Accounting and Economic Aspects of the Medical Program to Health Care Institutions. News Letter Special Report. Boston, Massachusetts: Lybrand, Ross Bros. and Montgomery, February, 1966.

McNerney, Walter J. et al. Hospital and Medical Economics. Vol. I and II. Chicago, Illinois: Hospital Research and Educational Trust, 1962.

School of Public Health and Administrative Medicine. Prepayment for Hospital Care in New York States. New York: Columbia University, 1960.

Seawell, L. V. Principles of Hospital Accounting. Berwyn, Illinois: Physicians' Record Company.

Seigal, S. Nonparametric Statistics for the Behavioral Sciences. New York: McGraw Hill, 1965.

Serbein, Oscar N., Jr. Paying for Medical Care in the United States. New York: Columbia University Press, 1953.

Sherer, Frederick M. The Weapon Acquisition Process: Economic Incentives. Boston, Massachusetts: Harvard Graduate School of Business, Harvard University, 1964.

Stedry, Andrew C. Budget Control and Cost Behavior. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1960.

Taylor, Philip and Nelson, Benjamin O. (C.P.A's.) Management Accounting for Hospitals. Philadelphia and London: W. B. Saunders Company, 1964.

United States Statistics on Medical Economics. U.S. Department of Health, Education and Welfare, January, 1964.

U.S. Department of Health, Education and Welfare. Chart Book of Basic Health Economics Data. February, 1964.

U. S. Public Health Services. Medical Care Financing and Utilization. Washington: Government Printing Office, 1945.

University of Michigan. The Economics of Health and Medical Care, Proceedings of the Conference on the Economics of Health and Medical Care, May 10-12, 1962. Ann Arbor, Michigan: University of Michigan, 1964.

Williams, Nelle L. Public Welfare Agencies and Hospitals. American Public Welfare Association, 1937.

Articles

American Hospital Association. Hospitals, Vol. 39, No. 15 (August, 1965), Guide Issue.

Block, L. "Hospital Income, Hospital Topics, Vol. 35 (January, 1957), 63-5.

Block, Louis. "Another Revolution in Hospital Financing," Hospital Accounting, March, 1966, pp. 3-6, 33-35.

Clark, D. A. "How Changing Patterns of Payment Affect Hospital Planning," Hospitals, Vol. 35 (February 16, 1961), 60.

Cody, H. J. "The Contribution a Hospital May Make to Its Community," Hospitals, January, 1940.

Durbin, R. L. "Study of Variable Pricing," Arizona Medical Journal, Vol. 22 (July, 1965), 557-60.

Durbin, R. L. "Third-Party Relationships of the Future," Hospital Accounting, April, 1964, p. 13.

Edmundson, J. B. "An Administrator Speaks Out," Hospital Accounting, Vol. 16 (February, 1962), 6.

Esselstyn, C. B. "Trends in Financing Health Care," American Journal of Nurses, Vol. 63 (November, 1963), 24-7.

Everett, Roy. "Someone Must Pay for Hospital Care," Hospital Accounting, Vol. 17 (March, 1963), 22-4.

Everett, Roy. "Hospitalization Insurance and Its Problem," Hospital Accounting, Vol. 14 (January, 1960), 16-19.

Feildstein, Martin S. "Hospital Cost Variation and Case-Mix Differences," Medical Care, Vol. 3, No. 2 (April-June, 1965), 95-103.

Flores, Carlton. "Contractual Allowances Are Compounding Hospital Bills," Hospital Accounting, March, 1966, pp. 14-16.

Folsom, B. et al. "Governor's Committee on Hospital Costs: Survey," New York State Journal of Medicine, Vol. 65 (August 1, 1965), 2031-41.

Gromer, F. S. "Changing Times Require Revision of Government Reimbursement Formula," Hospitals, Vol. 35 (July 1, 1961), 76.

Hayflick, J. B. "The Concept of Charity Allowances as an Expense," Hospital Accounting, April, 1964, p. 16.

Hinderer, H. "Of Cart and Horses," Hospital Accounting, Vol. 18 (December, 1964), 2.

Hole, T. "Cost Formulae and Its Limitations," Hospital Management, Vol. 96 (October, 1963), 42-50.

Hole, T. "Is the Cost Formula Outmoded?" Hospitals, Vol. 36 (August 1, 1962), 41-6.

Ingram, James C. "Reimbursement for In-Patient," Hospital Accounting, March, 1966, pp. 8-11.

Klarman, H. E. "Distinctive Economic Characteristics of Health Services," Journal of Health and Human Behavior, Vol. 4 (Spring, 1963), 44-9.

Kotzen, S. "How Much Control Do We Have Over Our Hospitals?" Hospital Management, Vol. 94 (August, 1962), 42-5.

Lancaster, Fay. "Cost Finding Just Cannot Be Done in Our Hospital," Hospital Accounting, March, 1966, p. 13.

Lane, I. M., Jr. "Better Cost Contract Negotiation," Hospital Accounting, Vol. 15 (October, 1961), 6-8.

Martin, L. E. "Free Work--An Element of Reimbursement," Hospital Accounting, Vol. 17 (June, 1963) 16x.

McClanahan, M. H. and Roemer, M. I. "Impact of Government Programs on Voluntary Hospitals," Public Health Report, Vol. 75 (June, 1960), 537-44.

McNerney, W. J. "Public Wants Voice in Hospital Financing," Modern Hospital, Vol. 101 (September, 1963), 140-7.

Meisshardt, H. J. "Do Hospitals Need a New Method of Measuring Costs?" Hospital Accounting, Vol. 17 (Nobember, 1963), 11-13.

Moss, J. H. "Missing Woof Which Puts the Warp Into Third-Party Reimbursement Plans," Hospital Management, Vol. 86 (November, 1958), 48x.

Mueller, W. J. and Soder, E. "Rate Setting," Hospital Accounting, December, 1964, p. 8.

Neeley, J. R. "Need for a Cost Finding Program," Hospital Accounting, Vol. 16 (February, 1962), 5.

Odoroff, M. E. and Abbe, L. M. "Use of General Hospitals: Variations with Methods of Payment," Public Health Report, Vol. 74 (March, 1959), 316-24.

Penn, R. "Average Cost Statistic is Obsolete!" Hospital Accounting, Vol. 15 (June, 1961), 16-18.

Rorem, E. R. "Impact of Third-Party Payment on Hospital Economics," Hospitals, Vol. 27 (January, 1953), 49-52.

Sibley, H. "Hospital Reimbursement for Welfare Patients," Public Health, Vol. 69 (March, 1954), 323-26.

Springer, E. L. "The Community and Hospital Financing: Who Should Foot the Bill?" Hospitals, Vol. 33 (April 1, 1959), 28-29.

Steinert, C. H. "Changing Status of Third-Party Contractors," Southern Hospitals, Vol. 28 (March, 1960) 73-4.

Steinert, Jeff. "Reimbursement and Cost Finding," Hospital Accounting, March, 1966, p. 12.

Steinert, J. "Cost Finding and Contractual Reimbursement," Hospital Accounting, April, 1964, p. 21.

Stewart, G. C. "How Method of Payment Affects Cost Prepayment," Hospitals, Vol. 30 (September 1, 1956), 40.

Tekolste, E. "How Should Blue Cross Reimburse Hospitals?" Modern Hospitals, Vol. 101 (February 1, 1963), 90+.

Thomas, R. Z., Jr. "Payment for Indigent Care," Southern Hospitals, Vol. 18 (October, 1950), 19-22.

Westbury, A. H. "Payment by Third-Parties for Hospital Service," Canadian Hospitals, Vol 29 (November, 1952), 32x.

Interviews - Correspondence - Speeches

Council of Community Services, Providence, Rhode Island. Correspondence and telephone conversation with Robert Mayer, Director. March, 1966.

Devlin and Bruno Associates, Hospital Consultants, Boston, Massachusetts. Personal interviews with Paul Devlin and Richard Bruno. December, 1965 through March, 1966.

Greater Detroit Area Hospital Council, Detroit, Michigan. Personal interview with William Werdell, Director. May, 1966.

Michigan Public Service Commission, Lansing, Michigan. Personal interview with Knight McKesson, Secretary. April, 1966.

Michigan State Insurance Commission, Lansing, Michigan. Personal interview with Alber Paulus, Director of Health Insurance Division. April, 1966.

New England Hospital Assembly, Forty-Fifth Annual Meeting, March 27, 28, 29, 30, 1966. Attended speeches and personally interviewed: Walter J. McNerney, President of Blue Cross Association; Ray E. Brown, Duke University; William K. Turner, Director, Newport Hospital, Newport, Rhode Island; Patrick Grant, Partner, Lybrands, Ross Bros. and Montgomery, Certified Public Accountants; Lawrence Martin, Associate Director, Massachusetts General Hospital, Boston, Massachusetts.

Our Lady of Fatima Hospital, Providence, Rhode Island. Personal interview with Edward E. Asevedo, Controller February, 1966.

Public Health Service, Department of Health, Education and Welfare. Correspondence with Mrs. Agnes Brewster, Medical Economist. March 1966.

St. Joseph's Hospital, Providence, Rhode Island. Personal interviews with Sr. Thomas Elizabeth, Administrator and John Corrigan, Assistant Controller. February, 1966.