

INDUSTRIAL SECTOR GROWTH PATTERNS
AND THE IMPLICATIONS FOR HEALTH CARE

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Discussion Paper No. 43

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Discussion Paper Series

The National Health Care Management Center (NHCMC) of the University of Pennsylvania is an interdisciplinary center for research, advanced education, and technical assistance in the area of health care management. The NHCMC was established in 1976 under a grant from the National Center for Health Services Research of the Department of Health, Education and Welfare. The NHCMC is one of six centers established to improve the quality, quantity, and relevance of health services research in the United States. Two of these, including the NHCMC, have been designated as special emphasis centers.

The NHCMC has a special mandate to focus on the improvement of management and organization in the health field; the training and retraining of administrators of health care enterprises; and the development of leaders, planners, and policy analysts in health care. Through the NHCMC, University of Pennsylvania faculty work together on problems facing institutions such as hospitals, health maintenance organizations, home health agencies, long-term facilities, emergency medical services, and health planning agencies. The activities of the Center have involved faculty from the School of Medicine, the School of Dental Medicine, and departments of the Wharton School, including Insurance, Management, Accounting, Marketing, and Decision Sciences.

The Discussion Paper Series is intended as a forum for dissemination of the work of faculty and staff associated with the NHCMC. Included in this series are reports of research project results, policy analyses, and theoretical discussions of various issues in the health field. Many of the papers will appear in revised form at a later date in academic journals. Comments of readers are invited in response to the ideas and findings presented.

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INTRODUCTION

In recent years, health care in the United States has undergone fundamental and pervasive changes at both institutional and inter-institutional levels. The role and identity of the hospital are expanding beyond acute care to encompass comprehensive health care for a community. Hospitals are increasingly interested in long term care and ambulatory care. New forms of care are emerging as alternatives to the traditional acute care orientation. Concurrently, pressures for accountability have led to efforts to develop better measures of performance and output. Institutions are also undergoing internal changes. As examples, management is increasingly professionalized, and planning--particularly long range planning--is a frequent occurrence. Moreover, the overall structure of the health care field is changing with medical and economic relationships among institutions increasingly common.

Questions have been raised about the permanence of these changes and their implications for the future of health care. These discussions have focussed in particular on the growth of multi-institutional systems and the reasons for the development of systems: Are they responses to short-term situational concerns or are they indicative of a general industry trend? What are their prospects for their future? The literature indicates that these questions have not been satisfactorily answered. Indeed, the principal thrust of current work concerning multi-unit systems has been essentially descriptive and exploratory in nature. Most of the writing has been devoted to describing the history and development of individual systems, (1, 4, 13, 17) developing classification schemes to describe the variety of system arrangements, (1, 16) and defining factors important in making a system operational. (10) Some attention has also been devoted to estimating the impact of multi-institutional systems; this latter literature has included anecdotal discussions of system effects (18, 10, 7) and, less frequently, empirically-based discussions of impact. (19)

This paper brings a different perspective to discussions of multi-institutional relationships as a means of gaining a better understanding of the growth and direction of this phenomenon. Specifically, the purposes are to: 1) review briefly recent trends in the hospital field, 2) present highlights of the evolution of non-hospital industries, 3) suggest implications of the non-health industry's development for the hospital field, and 4) based on this review, present some hypotheses concerning the development and organization of the hospital field.

TRENDS IN THE HOSPITAL FIELD

The recent changes in the hospital field concern the overall structure of the industry and the operations of individual institutions. These changes, described in numerous contexts, will be reviewed here briefly as general background.

During the last few years, multi-hospital systems have grown at a significant rate. In 1979, about 30% of hospital beds and a slightly smaller percent of hospitals were controlled by multi-hospital systems (5). For all types of systems (investor-owned, religious, other non-profit), a 7% increase over 1978 in number of beds and an 11% increase in number of hospitals was reported. A major source of this recent growth was due to management contracts; these increased by 29%, while acquisitions and leases increased 6%. (8) In addition, voluntary relationships across institutions for joint planning or other shared services, which have increased by about 20% from 1975 to 1979, are common for most hospitals in the United States. Overall, these figures indicate that fully autonomous institutions are becoming rare exceptions. The term "cottage industry" no longer accurately describes the U.S. hospital field.

On an institutional level, individual hospitals are also undergoing changes. For example, hospitals are expanding their roles in their communities. In many cases, hospitals are providers of not only acute care, but preventive, ambulatory, rehabilitative and/or long term care as well. Rather than being one important point for delivery of care for a community, they may serve as the nucleus for a total set of health services. A second area of change involves the role of the hospital administrator. The complexity of hospital operations and the interface required with external agencies have strengthened the role of the administrator, vis-a-vis trustees or physicians. Hospitals in general are becoming increasingly aggressive in dealing with their environment and increasing their control over it. This involves interacting with planning agencies, payers, regulators and other state and national organizations. The administrator plays the critical role in developing and maintaining this interface.

An additional area of change at the institutional level relates to planning. Short and long term planning, directly encouraged by HSAs, is now commonly accepted as a necessary and important function in hospitals. In many cases, this has resulted in the addition of staff especially designated to develop this role. These institutional changes are significant and point towards hospitals taking an increasingly aggressive stance to mold their futures.

The changes--macro and micro--are not occurring in a vacuum. While it is difficult to define a cause and effect sequence, the pressures for hospitals to alter their behavior are many. Cost containment has become a dominant theme in recent years, with pressures to reduce the rate of cost increases coming from payers, regulators, and purchasers. This has forced hospitals to examine their operations critically to discover areas for

better cost control. Hospitals are also under pressure to be accountable for their operations. For example, payers are concerned with the cost-effectiveness, necessity and appropriateness of services; and corporations, as important purchasers of health care, are interested in knowing what their dollars are buying. As a case in point, some Philadelphia area corporations have joined together to develop data reporting requirements to monitor where their health dollars are going and the differences in the nature and cost of services provided by area hospitals. The use of case mix measures to define a hospital's product and to set reimbursement represents another example of attempts to describe better what a hospital does.

Institutional growth is also challenged on a number of fronts. Planners and regulators have become more active in efforts to restrain physical expansion and reduce beds. Capital is also more difficult and costly to acquire. It is expected that debt financing will increase in prevalence, with the relative importance of philanthropy continuing to decline sharply. However, debt capacity is shrinking as hospitals are increasingly leveraged, with an increasing number regarded as risky investments. For not-for-profit hospitals, this trend towards debt financing is fueled by the lack of return on capital and inadequate depreciation accumulation permitted under reimbursement regulations (22).

Technology is another area which has brought pressure on hospitals. New technology is often offered at exceedingly high cost--the CT Scanner is only one example of expensive equipment. This affects the capital needs noted above. In addition, regulatory efforts to contain costs through control of technology acquisition mean that hospitals must justify the uses of the equipment for patient care and for its impact on other health care institutions in the region. Decisions on acquisition are no longer simply a matter of availability of capital.

In general, these and other pressures on hospitals have worked in concert to alter the rules under which hospitals operate. The overall environment has become less supportive and more challenging. A net effect is to encourage hospitals to consider new options for their continued existence, both internally in structure and operations, and externally in relating to their environment. As mentioned before, one option lies in multi-institutional arrangements. Over the last century, many other industries have experienced a similar transition from single unit to multi unit enterprises. A review of these historical industrial trends may provide a perspective for policies and decisions in the health care industry.

LESSONS FROM NON-HOSPITAL INDUSTRIES

Most of the industrial sector has witnessed transformation during the last century from single unit entrepreneurial firms to industries containing large, multi-unit, multi-location enterprises. These changes were accompanied by alterations in operations, management and organizational structure. It is important to note that, while virtually all segments of the industrial sector were affected, the pattern of transformations was not monolithic; heavy manufacturing, petroleum and airline companies developed differently from food stores, hotels and beer brewing.

In the early 19th century, private enterprise in this country was characterized by small markets, slow transportation, limited information needs and decisionmaking at the owner/operator level. Under these conditions, the firm had little to gain from sophisticated accounting or logistics systems (2, 3). With the introduction of new technologies, initially in transportation and communication (railroad and telegraph) and later in manufacturing and distribution, strategic choices leading to large-scale integrated organizations emerged. Markets expanded both in size and in complexity (product/service mix), with concomitant needs for financial accounting, line-staff hierarchical organizations and data flows to handle the large volume of transactions, capital requirements, and performance appraisal. The successful firms established brand reputations, built large distribution systems and developed multiple products/services. Excess production capacity driven by the new technology forced firms to develop large distribution systems. Excess marketing and distribution capacity in turn forced the broadening of product lines and services. In this way, integration and diversification had a complementary feedback relationship. The impetus for these changes was to gain and exploit competitive advantages and to achieve corporate objectives of survival and growth.

In general, American manufacturing firms became large multi-unit enterprises in two ways: via vertical integration, adding distribution organizations and/or input supply activities; or via horizontal integration, through mergers or acquisitions (2, 3). Vertical integration sought to increase profits by: 1) decreasing costs and risks of supply shortages or distribution breakdowns; 2) expanding productivity through administrative coordination of many units; and, 3) diversifying products. Horizontal integration sought to maintain profits by controlling the price and output of operating units in a large market area.

Chandler notes that horizontal combination rarely proved to be a viable long-term business strategy (3). The firms that first grew large by the merger route often remained profitable only if after consolidating, they then adopted a strategy of vertical integration. In this way, they remained competitive by achieving economies of scale in production, and by reducing risk through the control of the distribution and/or supply system.

The strategic choices made with regard to growth and expansion subsequently induced changes in organizational structure. Early on, a functional organization developed to minimize costs and organize the decision making. As the heterogeneity of the product/service line grew and as markets expanded, the multi-divisional form evolved. This form decentralized operating authority but centralized planning, coordinating, financing and strategic decision making. The importance of this organizational evolution is noted by Chandler:

"Unless the newly formed consolidation used the resources under its control more efficiently than had the constituent companies before they joined the merger, the consolidation had little staying power. Few enjoyed continuing financial success until they had followed the example of the pioneering mergers and evolved an organization that was able to coordinate a high volume flow of materials through the processes of production and distribution, from the suppliers of raw materials to the ultimate consumers."(3)

Other authors have refined Chandler's analysis of strategy and structure with regard to product/service lines, markets, and other effects of technology. Perhaps the most interesting work relating strategies with characteristics of the managerial systems and organizational types (simple functional, centralized functional, multidivisional, holding, global multidivisional) is by Galbraith and Nathanson (6) and Arthur D. Little Inc. (11) Growth strategy affects managerial structure but must be viewed in conjunction with the life cycle of the firm.

Most of the preceding comments apply to product-oriented industries with many customers. Service industries such as restaurants, laundries, banking and hotels and other non-manufacturing industries such as housing, road construction and wholesale and retail food sales often developed horizontally integrated multi-unit multi-location firms. These firms realized increased profits and stronger competitive positions through economies of scale in purchasing, financial control, standardized quality control, administrative procedures and policies, and ease of access to capital markets. These industries generally do not have significant entry barriers--large economies of scale, heavy capital investment, significant technical know-how, great "brand" or "reputation" preference--and are often highly labor intensive. As a result, it is less common that a few large firms have been able to dominate the national market. Regional domination for those industries is sometimes observed where transportation costs (of workers, products or customers) are high. In the presence of these conditions, the large national firm such as the grocery chains, hotel chains and restaurant chains frequently are highly decentralized in operations or are franchised.

RELEVANCE TO THE HOSPITAL FIELD

The foregoing synopsis of the evolution of industrial sector suggests that growth, expansion, diversification and structural changes are natural stages in the life cycle of individual institutions, as well as whole industries. The necessity and inevitability of these trends is highlighted by the observation that, while different industries may have proceeded at varying paces, the bulk of the industrial sector adhered to a basic pattern, with variations contingent upon their particular characteristics and situations.

This background begins to place into perspective current developments in the hospital field. Multi-unit developments (horizontal or vertical) and the changes observed in institutional structures and managerial methods may not necessarily be short-run or particularized responses to external challenges. Rather, they may represent, in all likelihood, an important evolutionary stage in the development of the hospital field. To illustrate the relevance of the revolutionary trends in non-health industries to health, the following briefly discusses parallels with respect to the goals and objectives motivating the development of multi-unit institutions in these sectors and some of the key features of successful organizations.

Goals and Objectives The industrial sector and hospitals are both motivated by needs for survival and the development of ways to insure continued strength. For industries, survival commonly means growth and/or retention or expansion of market share. For hospitals, given external regulatory constraints on growth, survival may imply more emphasis on solidifying influence and retaining size or prestige than physical growth per se. For both, however, survival involves achieving control over the environment and the market. Means to achieve these ends for hospitals may lie in mergers and consortia arrangements with other institutions and through diversification of services—strategies that non-health industries have found successful.

In industry, a firm is motivated by a concern to reduce unit costs and to control rates of cost increase because competitive pressures for efficiency and cost control exist. For hospitals, however, while efficiency and cost control are relatively new concerns raised by external bodies concerned with cost containment, the effect is to encourage greater internal efficiency.

In industry, the complexity of the environment and the need to compete in conjunction with technological developments that both permitted and necessitated economies of scale were forces for development of multi-unit systems. As noted, health care has experienced similar environmental shifts which are pushing hospitals in the same directions. Larger scale, particularly multi-unit enterprises, are in a better position to negotiate the environment and provide supportive services (e.g., management, financial control, and operational services) to member institutions. In addition, large systems present a strong force in arguing for better use of expensive equipment; this enhances their chances for approval by regulatory and planning bodies and, ultimately, their competitive advantage over neighboring institutions.

In industry, multi-unit relationships were viewed as strategies for capitalizing on technological developments, increasing competitive advantage and reducing risk and uncertainty. Such strategies have similar viability in the health care field.

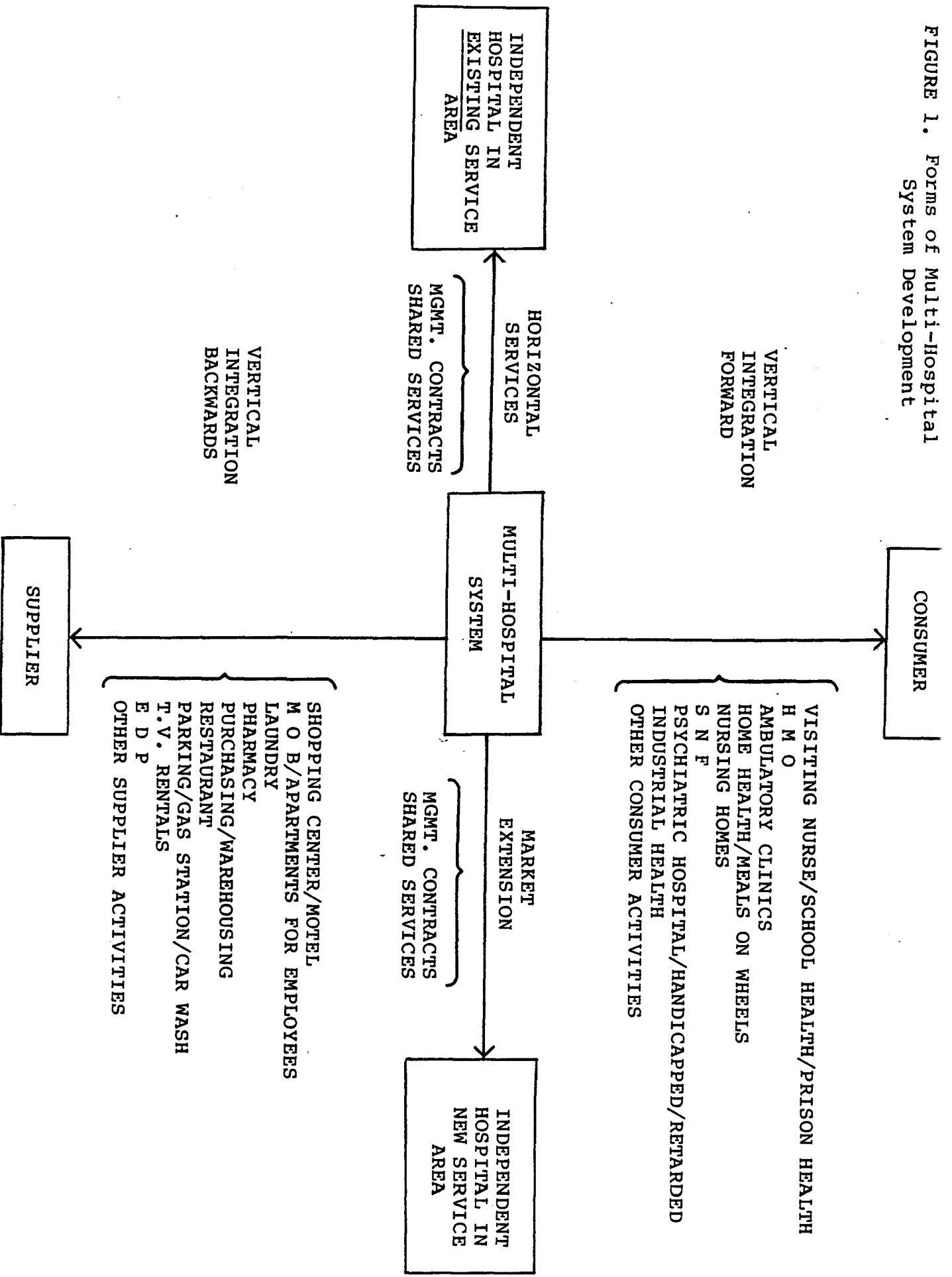
Changing Technologies Until the mid 60's, most health care technologies generally had low capital intensity, such as new surgical and medical procedures for handling specific diseases and new drugs, and usually high labor intensity. However, space age discoveries (in fiber optics, miniaturization, computer capabilities, radiography, and synthetic materials) as well as greater scientific, clinical and administrative knowledge are now yielding technologies with high capital intensity. Examples include CAT scanners, open heart surgery, CCU's, burn units, large computers and EMS facilities. In addition to having high initial investment requirements, such technologies also are labor intensive and require high skill levels. The recent pressures to achieve full utilization of such technologies require hospitals to increase the demand for such technologies. Three options exist for this: (1) expand the geographic market area, (2) expand the intensity of utilization, and/or (3) expand the number of illnesses served by the technology. If the last two options are either not possible or not fully successful, then the first avenue, increasing geographic market share, remains. But the drive to increase market share may lead to increased competition by hospitals for physicians and patients. The form of this increased competition may be even more and varied development of multi-institutional systems. For some of these possibilities, see Figure 1.

Technological advances have also led to new services offered and old services modernized. Open heart surgery was uncommon before the early 1970's and is now available in many hospitals. Over a thousand radiology departments have acquired CAT scanners in recent years.

Multi-hospital arrangements, particularly regional ones, have enabled many systems to make more effective use of these new technologies. Examples where this has occurred includes the mobile scanner units for regional hospital networks, sharing of specialized clinical services and other arrangements which give member institutions access to services that they could not maintain individually because of cost or insufficient volume.

Increasing Competitive Advantage An additional feature of manufacturing industry's growth was the move to increase the competitive advantage. Again, there are parallels in the hospital field. Horizontal hospital systems improve their position over others in the region by several means: brokerage of influence, access to capital, and cost containment through administrative and/or clinical efficiencies. The collective action by the system is frequently an important source of influence. MHS are expected to have greater power with external agencies, such as government, payers, planners and regulators and with the local health community (22). Particularly for systems with pooled assets, systems are viewed as more favorable credit risk since financial risk is spread over a larger operating base (22). Size also permits achievement of economies of scale for support and ancillary services resulting in savings unavailable to individual institutions. In addition, as mentioned previously, systems are able to support expensive technologies which require high volume. And, while data are anecdotal, systems, by virtue of size and resources, apparently are able to upgrade and maintain quality. These benefits of collective action help to establish a favorable position for survival and growth and for attraction of physicians and patients.

FIGURE 1. Forms of Multi-Hospital System Development



Risk Aversion/Reduction of Uncertainty All of the factors previously mentioned, (i.e., technology, increasing competition for markets, capital needs and increasing regulation and control) have led to an increase in uncertainty for single institutions. From studies in industrial settings, career managers, as distinct from entrepreneurs, tend to be risk averse. This aversion leads to strategies and decisions which will reduce uncertainty (3). It is likely that hospital administrators and trustees are also risk averse and make decisions which reduce uncertainty. One such decision is to form alliances such as multi-hospital arrangements. Longest makes this point:

"Participation in a multihospital arrangement is part of a strategy adopted by many hospital managers in an effort to achieve a higher level of organizational stability than is available to them when their organizations remain completely autonomous and independent." (31)

Pfeffer also notes that:

"Interorganizational linkages enable the organization to manage some of its environmental constraints and control some of the contingencies it confronts." (12)

The tradeoff is that an institution can rely more on the other's performance but loses some autonomy and discretion. Industrial organizations have also responded in this manner. Much vertical and horizontal integration, even when there were few if any economies of scale was done to reduce the uncertainty in supply lines or in distribution lines or in the production process via production smoothing and inventory management. (3)

Current research in regionalized blood banking indicates the reduction in the uncertainties of supply and of demand is one of the greatest benefits. (14)

Role of Management The changes in the industrial sector were accompanied by an increasing acceptance of the role and importance of management. As Chandler points out, the most successful efforts occurred in industries where management achieved dominance, standardization of procedures occurred and financial control was achieved. Over time, entrepreneurs and technicians were superseded by professional managers. This change was due to the need for administrative control over an increasingly complex environment.

The managerial complexity of hospital care delivery has grown rapidly in the past thirty years. New services (clinical and ancillary), more specialization, more equipment, larger markets and more importantly, the increasing complexity of reimbursement, capital expenditures and regulations have led to a need for more sophisticated decision support

systems ranging from market analysis and forecasting to financial and accounting controls to operations management and productivity measurement. These developments, as in industry, have also led to a need for sophisticated managers to organize the internal operations and to interact with the environment (3). Wegmiller indicates that a basic reason for the growth of multi-hospital systems (MHS) was to handle this management complexity:

"The separation of management into individuals responsible for the direction of the overall system apart from the administrators responsible for the management of the individual institutions has given to the health care industry the corporate structure necessary to more effectively plan, finance and meet the objectives of the organization." (20)

Hospital chains, for example, cite as important strengths standardization of administrative procedures and protocols, the establishment of productivity measures, the availability of specialized personnel and the institution of quality assurance mechanisms.

Chandler also indicates that the most successful industries were those that took full advantage of economies of control and management. This suggests that the voluntary consortium will be less effective than corporate style alignments. Along these lines, Longest (12) has characterized the voluntary arrangements as "stabilizing" strategies to counteract environmental forces, rather than proactive efforts to achieve changes in operation and structure. However, it is possible that over time, such arrangements may, if mutually satisfactory, become more formalized. Jones has suggested, for example, that multi-hospital systems (MHS) over time exhibit a maturation process in which the structure, focus, governance, management and financial control become increasingly formalized (9). Wegmiller has also suggested an evolutionary cycle for systems: first five years--development and coordination of relationships and developing management functions; second five years--development of sharing arrangements for clinical services (primarily horizontal); third five years--achievement of vertical integration (21).

Differences: Nature of Industries

The initial comments concerning industrial trends suggested that differences in the nature of some industries resulted in differences in patterns of development in multi-unit systems. Health systems also differ from industry in ways that will affect its development. Notably, manufacturing industries can achieve economies of scale in production; there are more limited opportunities in health. In this sense, health behaves like a service industry. A related point is that hospitals are labor intensive; unlike industries where technology is cost reducing (usually as output increases), new technologies in health do not necessarily reduce costs. Due to the reimbursement system there has been a push for technologies which tend to improve the quality and quantity of

care rather than lower the cost of care. As Chandler has noted, in sectors where technology did not bring a sharp increase in output and where markets remained small and specialized (as in health), administrative coordination yielded small gains. In these areas, modern business enterprise was late to appear and slow to spread. Another difference is that industry can develop markets on a national and international scale; while national hospital chains have become important, hospitals still have predominantly a local or regional focus. Furthermore, the hospital field experiences controls on individual unit growth that are not duplicated in industry. And, perhaps most importantly, the normal market forces do not exert an influence on health care: cost in general is not a deterrent to consumption, since the consumers, patients and physicians, are not the direct payors; insurance shields the financial brunt for the individual and the individual consumer is usually not well-informed about the alternative modes of care or quality of care.

We suggest here that these differences will only result in differences in benefits observed and the forms of MHS most useful to hospitals, rather than serving to discount the relevance of the industrial experience.

HYPOTHESES

Drawing on the experience of the industrial sector, hypotheses can be suggested relating to the growth and organization of the hospital sector. The industrial experience suggests that MHS are not a chance occurrence, but rather a necessary stage in the evolution of the hospital field. The complexity of operations in combination with the changes in the environment indicate that MHS are an important means of coping with the future. These hypotheses may be true or false; we state them because we believe they should be investigated and their significance assessed for the future directions and impact on policies for health care delivery in the United States.

H₁: MHS will continue to increase in number and size.

A corollary of this is that:

H₂: The hospital industry will be characterized by increasing concentration of providers.

In industry, the prevalence of multi-unit arrangements has been shown to be related to many factors, one of which is the level of competition within an industry. Competition is also expected to have an influence on MHS development.

H₃: In areas where there are few providers, or where these providers serve distinctly different populations, MHS will be less prevalent.

H₄: In areas where hospitals compete for physicians, resources and patients, MHS will occur as a means of reducing uncertainty and utilizing additional capacity created by technological advances.

- H₅: The likelihood of an institution selecting contract management or acquisition is inversely associated with size, particularly relative size, to neighboring institutions. This choice is a means of improving their competitive advantage in areas of service, management and capital.

The overall planning environment will be an important stimulus for change in the hospital field. The way in which it is carried out will influence the shape of MHS.

- H₆: MHS are likely to occur in areas where regulatory/planning efforts to reduce hospital capacity or costs are strong. In particular, measures for reduction of acute care beds will be accompanied by VIS.

In industry, the trend for multi unit systems was accompanied by a growing importance of management and management controls. The same general trend has been noted for health care; the role of management is expected to be further enhanced in MHS.

- H₇: In all hospitals entering MHS, management control will increase.

- H₈: Hospitals entering into MHS relationships that change their legal status will exhibit internal changes in the direction of more centralized strategic management and decision making.

- H₉: Hospitals which are members of a national or multi-state chain will experience greatest change in the role and influence of management, with regard to strategic decisions and least change with regard to operating decisions than hospitals involved regional associations.

In industry, some of the largest benefits of multi unit systems occurred through economies of scale in production. As noted, such economies are more difficult in health.

- H₁₀: For MHS, the greatest efficiencies in the short term lie in management improvement and standardization of administrative operations, rather than in clinical areas.
- H₁₁: Economies of scale in clinical services are likely to be observed only in regional associations

H₁₂: Not-for-profit MHSs, if they centralize strategic decision-making for equipment, facilities and services and if they are efficiently managed, will have the lowest charges (and costs) of care for given quality levels of any MHS or individual institution. (These effects will occur through realization of economies of scale in clinical, ancillary and supportive services, by low cost of debt capital (tax free bonds), by philanthropy and by low return on equity.)

Conclusion

The MHS trend is an important stage in development of the hospital industry. Strong similarities are noted with industrial sector development in the goals, conditions, and objectives. However, it is expected that benefits will differ to some degree with hospitals forming MHSs as a means of managing its environment, controlling competition and improving coordination — as opposed to achieving significant economies of scale in patient care. These economies, while not impossible, are more difficult to achieve in health. The points of relevance noted here suggest that continued study of the industrial sector experience will help to resolve many of the questions about the development, future, and role of MHS.

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