CHANGES IN HEALTH CARE SYSTEMS AND EVOLUTION OF COORDINATION MECHANISMS*

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ABSTRACT

This article explores how the evolution of health care systems impacts the physician-organization relationship. It is argued that the new health care context requires a stronger physician integration and affiliation into the organization.

After reviewing the physicians' role in modern health care structures, a theoretical comparison among different mechanisms of coordination is proposed, focusing on their ability to address and integrate decision-making and behavior towards the organization's requirements.

The effectiveness of the incentive structure as a mechanism of coordination of physicians' behavior is discussed, questioning the applicability of the agency theory framework in the context of health care organizations.

The institutionalization of organizational routines and standard is examined in terms of their ability to influence and address decision making in both clinical and managerial aspects of physicians' work role.

The socialization process is analyzed as a mechanism of coordination, arguing that, depending on the institutional and educational system, the overall process of socialization within medical professions can be a facilitating or blocking factor for health care organizations in attempting to integrate and coordinate physicians' behavior.

1. Introduction

The need to optimize resources and to exploit interdisciplinary skills to solve complex health problems have driven the health care system towards new models of organization. Organizational performance depends less on the ability of the single professional, albeit still fundamental, and more and more on the effective coordination among the different parts of the organization and the professionals as well as on the ability to plan activities and monitor results with respect to therapeutic efficacy and efficient use of resources.

This calls for a coherent evolution of the relationship between physician and organization. If previously the physician had a self-centered approach and the organization was considered only a place to carry out one's profession, he now has to develop an idea of belonging to the organization and is called to adopt management criteria and regulations. Moreover, personal decisional models must be adapted to common criteria of assessment and analysis which allow the whole structure and all the professionals involved to act as a single body.

In this view, the effective coordination of professional medical practice is a necessary condition to achieve satisfactory performance of the organization. However, to design an efficient coordination structure is a particularly critical task for two reasons: the difficulties involved in assessing output of clinical activities and the physician's identification with the regulations, standards and ethical values of his profession. Related to these two issues, different methods of coordination may be more or less successful in directing the physicians' behavior.

The aim of this article is to discuss the applicability of three different mechanisms of coordination in health care organizations: incentive measures, procedures, and the socialization process of physicians. Each of the above-mentioned provides a substantially different solution stemming from different views on the characteristics of activity and motivation of the professionals.

The paper theoretically compares the three above-mentioned mechanisms in order to point out the requirements and limits of each when applied to coordination of physicians' activity. The analysis suggests the opportunity to introduce a system based on a mix of coordination mechanisms in order to balance cost and benefits linked to each form.

Before analyzing requirements, features and costs associated with each different model of coordination, the article explores the evolution of the physician's role in modern healthcare organizations in order to explain the focus on physicians and to point out its implications on coordination mechanisms.

2. The role of physicians in health care organizations

Over the last decades, the growing complexity of the clinical solutions required and the technology employed have lead to a greater specialization of professions compelling physicians to be part of organizations which are able to provide patients a complete and integrated service (Friedson, 1970).

Complex organizations such as large hospitals and diagnostic and therapeutic centers perform a great heterogeneity of activities, and are characterized by differentiated organizational

units and different groups of professionals([1]). Among these, the most relevant group is that of physicians who are responsible of detecting the needs of the patient and subsequently provide the best treatment in terms of quality and quantity.

The critical role of physicians in health care organizations is due to several factors.

First, the physician's central role is based on the relationship of trust the patient establishes with him even in those situations, usual in hospitals, in which different kinds of professionals are involved in solving the patient's health problem. In this sense one may speak of "traditional power" (Weber, 1961) since the physician's authority within the hospital is legitimized by the personal relationship which the patient (incapable of assessing the technical quality of the service) establishes with him. In this respect, Friedson underlines that "*the professions strike a bargain with society* in which they exchange competence and integrity against the trust of client and community, relative freedom from lay supervision and interference, protection against unqualified competition as well as substantial remuneration and higher social status" (1983:41).

Second, several studies have found that the physician's behavior is the most important factor in patient satisfaction (Williams and Calnan, 1991). The physician's competence in treating a patient is based on different components: technical expertise, interpersonal skills and ability to transfer information. Some studies have found technical ability to be the most important determinant in patient satisfaction (Lee and Kapser, 1998), while others suggest that the patients perception of the quality of care and the quality of life is positively linked to the physician's ability to transfer relevant information to the patient (Larson, Nelson et al., 1996). In both cases patient satisfaction, which is one of the most significant components in assessing efficacy of the health care organization (Ware, Davies-Avery and Stuart, 1978; Donabedian, 1988), is tightly dependent on the physician's behavior.

Finally, clinical decisions affect health care organizations' performance not only in terms of efficacy but also in those of efficient use of resources. The physician decides the therapeutical process, whether the patient should be admitted to hospital, the choice of drugs to be administered or exams to be carried out and thus establishes most of the hospital costs.

In carrying out his job, the physician applies an expertise which in many cases may be considered as standard operating procedures (as for example in laboratories). At the same time, due to the extreme variability in patient response, medical practice cannot be completely codified and predetermined, and physicians must be granted autonomy in order to provide appropriate and timely treatment, according to the specific clinical conditions of the patient.

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[1] Health organizations have often been compared to the model of professional bureaucracy, according to Mintzberg well-known definition (1983). This model is characterized by the presence of adequately trained and primed specialists -professionals- who have considerable control over their own work, and by a mechanism of coordination based mainly on standardization of skills. Although the definition points out an important feature of health care organizations i.e. to base activities on skills and expertise of the professionals who carry out core activities, it fails to point out the great heterogeneity and internal differentiation which in our opinion mark modern health care organizations thus making them complex to manage.

On the other hand discretionary power of the physician may produce dysfunction which arise when the not-so-diligent or low-skilled professional confuses the clients needs with what he is able to offer, ruling out what he either doesn't know or does not prefer (Mintzberg, 1983). This risk may be particularly serious in health care organizations due to the complexity and continuous updating of medical knowledge which contributes to increase the specialization of professionals. Assuming that physicians are risk-adverse, some institutional settings may encourage excessively cautious decisional processes in which assessment of the most adequate treatment is more influenced by the level of risk the physician might run than by other determinants of the decision process such as therapeutic efficacy and costs.

In most industrialized countries, cesarean births statistics provide a clear example showing that the frequency in this kind of surgery is higher than the expected rate (Burns, Geller and Wholey, 1995). It is important to point out that dysfunctions due to physicians' autonomy not only influence therapeutic efficacy but also hospital costs and the allocation of resources invested in the overall health system.

The effective coordination of physicians practice cannot be limited to clinical aspects. In the context of modern health care organizations, the physician implicitly plays three different roles in patient care: clinician, patient educator, and resource manager (Gonnella and Louis, 1995). With regard to the clinical role, besides choosing the most adequate therapy, the physician must educate the patient, inform him on the characteristics of the disease and on the treatment and related risks.

As manager the physician must guarantee optimal use of resources, an effective coordination and motivation of his staff and collection of data and information. In addition, the physician is responsible for keeping his knowledge and skills up-to-date and for transferring and sharing competencies with colleagues and students.

An effective coordination system must be designed in order to consider these three different aspects of physicians' role, thus ensuring the adoption of common decision-making criteria which are consistent with the organization's objectives. In this respect, an effective system of coordination is an important tool to promote a substantial change of physicians' behavior and to promote a continuous process of learning, especially regarding the acquisition of managerial skills and competencies required by the new model of health care organizations.

3. Mechanisms of coordination in health care organizations

Coordination is an essential mechanism to effectively regulate interdependencies which arise whenever work is shared among different people; it is a process which leads to a configuration of interdependent actions such as to generate a positive, collective, integrated and global result (Grandori, 1999).

The need for coordination arises in all organizations; the extent depends on the number and kinds of interdependencies among organizational activities (Thompson, 1967). Organizational structures are designed to exploit such interdependencies. This is the aim of the Business Process

Reengineering projects (BPR) implemented to optimize operational processes beyond the limits of the organizational units.

Health care organizations have some complex factors which make coordination especially difficult. First of all, complexity and heterogeneity of services provided require participation of a number of very different professionals in terms of knowledge and expertise and in terms of culture and values. Second, proliferation of clinical specialization due to the increase in the variety of diseases and to radical technological innovation brings about a functional specialization, generally linked to increasing interdependencies and discretionary power and thus to an increasing need for coordination. Third, the growing use of outpatient practices, home care, day hospital, contributes to increase organizational complexity. Finally, a further element of complexity in coordination of physicians is represented by professionals strong ties with culture, standards and ethical values of their profession, which often do not fit with the belonging to an organization which requires to observe organizational rules and objectives even when in contrast with one's own interests or ethical values. The system of values of medical profession emphasizes autonomy and compliance with professional ethic. Conversely, the system of values of an organization is based on hierarchy, compliance to rules and procedures and efficient management of resources. Thus the difficulty in designing an effective coordination system aimed at reducing the area of potential conflict between the two systems of values.

In the following paragraphs, applicability of three different methods of coordination in health care organizations is discussed: incentive measures, procedures, and socialization of physicians. These three mechanisms differ in the way they align individual behavior with the expectations of the organization: incentive measures are based on assessment of each person's contribution, allowing him even to pursue objectives other than the organization's but with a personal loss of recompense; standardization solves the problem of coordination through rules, regulations and routines more or less formal which define the way to carry out activities; finally, the mechanisms of socialization (or cultural mechanisms) are based on sharing and interiorization of common values.

In the case of health care organizations, to design an efficient coordination system is a critical task. On the one hand, incentives cannot be the only measure applied due to the difficulties involved in assessing professional work output, while on the other hand, the great autonomy of professionals and wide range of clinical activities prevent rigid adoption of standardization and socialization mechanisms.

In this paper, the different mechanisms of coordination are analyzed as "ideal types" in order to point out the problems linked to professional medical practice although, obviously, none of such ideal types exist in health care organizations.

4. Incentive measures

Coordination based on financial incentives has been largely studied within the framework of agency theory (Jensen and Meckling, 1976; Ross, 1973).

The principal-agent models formally describe the contractual relationship established when "one or more persons (the principal/s) engage another person (the agent) to perform some service on their behalf which involves delegating some decision-making authority to the agent" (Jensen and Meckling, 1976: 308). The agency model assumes that information is incomplete, the principal cannot monitor the agent's behavior and results do not depend solely on the agent's actions but also on external factors. The incomplete information hypothesis distinguishes the agency relationship from the market and authority relationships (Grandori, 1999).

Contrary to authority, it is assumed that the principal cannot directly monitor the agent's behavior and is not able to asses - due to lack of time, resources or ability - whether this behavior serves his best interest. Contrary to market, it is assumed that results are influenced by external factors and are thus imperfect signals of the agent's real performance.

Finally, the agency theory assumes that behavior of both parties is based on maximization of subjective utility and that the existence of private information may induce the agent to choose a course of action which does not comply with the principal's objective if this behavior allows him to achieve higher utility level.

The risk of opportunistic behavior may be removed or, at least, limited by two different mechanisms: the introduction of a system of incentives related to results and/or a system of control. The agency theory focuses on the former mechanism which solves the problem of coordination by strengthening the motivational contents of the contract, providing financial benefits aimed at aligning the agent's objectives with those of the principal.

Some authors have tried to apply this theoretical framework to analyze the medical profession (Pontes, 1995). As a matter of fact, the problem of coordination of medical practice in health care organizations is characterized by the imperfect observability of behavior and results assumed in the agency theory. In the agency relationship, although the principal monitors the agent's actions, he does not have the necessary technical skills to assess appropriateness. Asymmetry, in this case, stems from imperfect distribution of knowledge more than of information; the principal may acquire information on the agent's behavior but he cannot easily reduce expertise asymmetry which is based on a body of continuously evolving specialized knowledge (Sharma, 1997). Even assessment of results is particularly complex due to several related factors (patients features, seriousness of disease, available resources) which, although out of the physician's control, influence quality of performance.

However, there are some limits to application of the agency theory in managing physician-hospital relationship.

First of all, to assume that physicians are driven only by economic motivation seems unrealistic. The literature on the nature of professions has pointed out the importance of altruism and trust, recognizing that in many professions the socialization process tends to inspire in new members feelings of commitment and pride for one's profession (Von Glinow, 1988).

In addition, social embeddedness of professionals softens the underlying assumption in agency theory that agents are autonomous and prone to maximizing their own interest at the

expense of principals, locating agents in "a network of social and economic relations" (Dingwall, 1983: 12). "Knowledge power and social embeddedness are, in short, two distinctive attributes of professional work that do not lend themselves readily to the agency lens without modification of some basic assumptions" (Sharma, 1997).

Second, when applied to real organizations the incentive measures are surely not as able to solve the problems of coordination as the agency theory forecasts. From a theoretical point of view, ability of incentive measures to align the agents behavior with the principal's objectives is tightly linked to the hypothesis of maximizing subjective utility. This theory implies that the actors' (principal and agent) behavior and preferences can be expressed in choices based on a single criteria or objective. However, since reality is perceived as multidimensional and it is usually very difficult to achieve a *single weak complete ordering* which would reduce analysis to a single assessment criteria, the decision process of actors implies assessment according to several criteria, each corresponding to a specific utility function (Laise and Valentino, 1995). This means that all theoretical models based on maximization of a single objective function, as in the agency theory, provide an extremely simplified and sometimes unsatisfactory picture of reality.

The multicriteria dimension of decisional processes is especially important in the health care system since provision of this kind of service is a critical social activity, involving many different aspects that cannot be easily reduced to a single criterion. These aspects include social equity of the overall health system, efficient use of resources, therapeutical efficacy and appropriateness, and ethical evaluations. Reducing the physician decision-making process to a single criterion risks to lead to sub-optimal decisions, failing to consider the other assessment dimensions. Consequently, it is difficult to design a system of incentives able to provide an optimal or at least satisfactory solution that takes into account several independent utility functions both from the point of view of the organization (principal) and from that of the physician (agent). A compensation system linked to partial measurement of outcome would run the risk of encouraging dysfunctional behavior which, according to the selected criterion, may discourage the physician from treating complex clinical cases or may lead to an inefficient use of resources.

The United States' experience provides a good example. In the U.S., physicians have different kinds of contracts. The *fee-for-service* contract may induce the physician to increase the number of services and to prefer those providing higher reimbursement. In contracts based on *capitation* the physician receives a fixed fee per patient over a fixed period of time. In this case the professional's income is positively related to the number of patients treated and inversely related to the amount of resources used. The risk here is to lower quality of care because physicians may be driven to reduce costs even when this leads to less effective therapies. Some physicians are *employees* whose income is not directly linked to the number of services provided or patients treated. In this case, the risk would be a reduced motivation to provide high quality service.

Different studies have pointed out that the use of these different compensation systems influences the physician's clinical practice. In a study on a sample of 337 HMOs[2] in the U.S.,

Hilman, Pauly and Kerstein (1989) have demonstrated that salary-based or capitation-based payments are significantly and negatively associated to rates of hospitalization, meant as rate of use of resources (Hellinger, 1996). These kinds of contracts often include bonuses linked to the use of resources (U.S. Healthcare for example, financially rewards physicians who have carried out less cesarean births) or to patient satisfaction (Appleby, 1995), and stock options. Although these studies have produced significant results, the effect of financial incentives on physicians behavior is still unclear since it is not easy to separate the impact of such measures from other control mechanisms adopted by hospitals to influence physicians' decisions.

The institutional reform of the Italian health care system has recognized to hospitals the possibility to introduce economic incentives in physician contracts. This innovation contributes to make the compensation system more flexible and is an important tool which hospitals may use to motivate physicians but cannot represent the only coordination mechanism of medical practice. Other coordination mechanisms are required to balance possible "side-effects" of physicians' decision processes and behavior.

5. Bureaucratic mechanisms

Bureaucratic coordination mechanisms are based on procedures, programs and rules which, in a more or less detailed manner, define organizational processes. They are formal mechanisms of standardization which set up models of behavior related to single positions or activities (Grandori, 1999).

Procedures may vary from general to greatly detailed. Optimal level of standardization depends on the kind of activity an organization carries out. Coordination based on rules and procedures is effective when activities are regular and routinized, that is they must face the same problems and exceptions.

With regard to medical practice, rigid standardization is ineffective since the complexity and unpredictable outcome of the clinical process require to adapt medical intervention to specific clinical circumstances. Consequently, it is likely to adopt a general and flexible system of procedures, accepted within the scientific and medical community.

Guidelines reduce uncertainty in clinical procedures and lead to an overall improvement of health practices (White and Ball, 1990); they are systematically developed statements to help physicians select the most appropriate interventions in given circumstances (Institute of Medicine, 1992), informing providers on optimal diagnostic, therapeutic and resource management strategies.

From an organizational point of view, guidelines represent a bureaucratic form of coordination since they indicate how certain processes should take place. They are, however, relatively flexible mechanisms compared to the common notions of standards and operating procedures.

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[2] HMOs (Health Maintenance Organizations) are organizations which integrate insurance with provision of health services; each person periodically pays a fixed fee in order obtain a given amount of health services from a limited number of providers. This kind of contract transfers the risks related to inappropriate use of health services to the HMO.

Guidelines must be developed through a multidisciplinary process and must involve, whenever possible and appropriate, patients' representatives. They must be constantly updated in order to help professionals choose the most appropriate treatment. Guidelines may be developed by single hospitals or group of hospitals, or at institutional level by national organizations and professional societies. To be effective, guidelines must be (Leape, 1990):

- Comprehensive (including the whole range of clinical practices);
- Specific (clearly stating under which conditions they are applicable);
- Detailed (clearly distinguishing between different indications);
- Contextual (stating all circumstances under which a given procedure is recommended).

Many studies have examined the impact of guidelines on physician behavior in the United States reporting negative results. There are many factors which complicate the use of this coordination mechanisms in health organizations. First of all, it is extremely difficult to clearly establish appropriateness of diagnostic and/or therapeutic treatments considering peculiar characteristics and preferences of each patient, although the significant progress due to evidence-based medicine (Muir Gray, 1997). Second, physicians disagree with or distrust guidelines, especially when written by national experts, preferring their own experience or their colleagues' recommendations (Greer, 1988).

Nevertheless, the very process of establishing guidelines may be useful to detect those areas in which clinical effectiveness is still uncertain, and it is also an important opportunity to assimilate and redefine experiences. Many scholars have pointed out the impact of codification on organization learning (Kogut and Zander, 1995; Winter, 1987). Guidelines development is a means to codify organizational processes, transforming tacit knowledge (Polany 1966), that is knowledge acquired through experience and part of individual memory, into explicit knowledge, that can be transferred in a formal, systematic language (Raghuram, 1996). In this perspective, guidelines contribute to an effective communication and diffusion of practices which every member of the organization should be inspired by, with the advantage that a great amount of information is transferred, thus providing a kind of "impersonal" coordination (Grant, 1998).

The contradictory empirical evidence on guidelines' effectiveness in affecting clinical behavior should not discourage their adoption as a coordination mechanism but, on the contrary, should lead to more careful assessment by health care organizations in order to identify those elements which may affect physicians' willingness to accept guidelines, such as guidelines source, contents and channel of communication (Grilli, Penna, Liberati, 1995; Ottone, 1997).

With respect to the source, guidelines written by professional societies, more widely legitimized by the medical community, are generally accepted more easily than those set up by institutional organizations or insurance companies, whose aims may be in contrast with ethical and professional values or may limit physicians' autonomy. Consequently, health care organizations should invoke cooperation with professional societies in order to make them more attentive to aspects related not only to clinical quality. Developing guidelines on the basis of a

cost/effectiveness and quality improvement evaluation may lead to an extension of their application to the relational, organizational and managerial aspects of health practice.
With respect to contents, physicians are more likely to accept guidelines if they describe less complex procedures. Assessment of guidelines contents should also take into account their impact on the organization in terms of potential improvement in performance. From this point of view, the organization should institutionalize only those guidelines which: 1) are easily adoptable by physicians; 2) are linked to organizational strategic goals.

Finally, with respect to communication channels, the implementation process should lead the physician to constantly compare his behavior with the one recommended in the guidelines. This may be achieved through the involvement of opinion leaders in the monitoring and feedback process. Periodical feedback involves giving physician information regarding the practices adopted, comparing patient outcome with those of other physicians or with external standards. Several studies have demonstrated that this may be an effective means of altering practices (Greco and Eisenberg, 1993). However, some conditions must exist to make this mechanism successful: on the one hand, physicians must recognize that some clinical practices can be improved; on the other, the organization should implement collection, management and diffusion of critical information and many hospitals are still unable to provide such a service.

Thus, standardization mechanisms such as guidelines are difficult to apply in health care organizations unless there is a deep structural and cultural change which, as we shall see in the next paragraph, may facilitate the interiorization of common values among organization members.

6. The socialization process

Cultural mechanisms of coordination refer to the influence of ethical rules and basic values on individual behavior (Grandori, 1999). When behavior and outcomes are not easy to observe, as in clinical practice, a common culture capable of addressing behavior towards organization objectives becomes a particularly important coordination mechanism.

In health care organizations, team work is frequent and thus it is especially hard to assess performance of the single. This constrains the effectiveness of coordination mechanisms based on control of outcomes (ex-post orientation), as in the case of incentive measures. At the same time, since medical practice cannot be rigidly predetermined, coordination needs cannot be completely met by process standardization through the use of programs and routinized procedures.

These considerations suggest the opportunity to extend the coordination system to the input variables by prior communication of expectations and interiorization of shared objectives. This would reduce the potential gap between organizational expectations and individual observed behavior (Fontana and Achard, 1997).

In the health care industry, cultural mechanisms of coordination are particularly relevant although the socialization process of physicians is almost totally delegated to external institutions such as universities and professional societies.

In the case of health care industry, the existence of information asymmetry in the physician-patient relationship calls for a strong control of the access to medical profession in order to reduce risks for the patient's health. The educational system is responsible for physicians training, allowing them to acquire a model of coordination of their practice based on the standardization of knowledge even before entering the organization.

In this regard, the role of professional societies is also important in transferring to physicians the fundamental values and ethics that will inform their behavior (Zuffada, 1997), creating a strong sense of belonging to the professional community. This kind of control among peers neutralizes the advantage that professionals normally have over their patients, colleagues and superiors, who do not have the specific knowledge and expertise required to evaluate their decisions. The absence of knowledge asymmetry means that it is possible to carry out effective assessment based on shared professional values, periodical feedback and informal relationships among professionals; thus, professional culture contributes to physicians coordination since, before knowing and working with each other, they already share behavioral rules based on the reciprocity. This may reduce coordination needs for the single health care organization which can rely on a process of socialization carried out by external institutions.

However, such an advantage exists only if objectives and values of the organization are consistent with those stated in professional ethics, thus avoiding the potential conflict arising between organizational and professional cultures. In Italy, this risk has increased since the task of setting down ethics was delegated to professional societies, leaving a substantial opportunity to pursue private interests and thus making relationships between organization and professional critical or even conflicting.

This argument emphasizes the importance of cultural mechanisms to encourage a sense of belonging and commitment to the organization through the process of socialization by which " an individual acquires the social knowledge and skills necessary to assume an organizational role" (Van Maanen and Schein, 1979:211). Health care organizations should recognize that, on the one hand, organizational culture emerges as the result of a spontaneous learning process; on the other hand, organizational culture is partially an organizational construct which may be shaped and transmitted to organization members by rituals and symbols. The socialization mechanism may occur through self-guided processes based on learning by trial and errors and spontaneous interaction with other members of the organization, or through a formal and detailed process by which the organization tries to influence individual participation, defining the basic values of each role.

Hospitals should take on a more active role in the socialization and training process of physicians in order to encourage the acceptance and interiorization of common values among the members of the organization. A shared culture may facilitate coordination and communication among different professionals working in the hospital and thus reduce the potential conflicts that often arise among medical, nurse and administrative staff.

For these reasons, it is first argued that success of an effective health policy partially depends on the ability to establish cooperation with professional societies and universities, and promote greater awareness of their role in the training and socialization process of physicians.

Second, the process of training and socialization can not be completely delegated to external institutions. When the system of values and standards which rule professional behavior is completely delegated to external institutions, culture becomes a source of differentiation rather than integration as well as a source of constraint to innovation processes.

This is a particularly important limit in the health industry, since the ability of health care organizations to adapt their management relies on physicians capacity to acquire new competencies through a continuous learning process.

7. Conclusions

The evolution of health care industry has brought about a radical change in the role of physicians and the need to redefine the relationship between professional and organization. Having charged the physician with managerial responsibilities and tasks, in addition to the clinical ones, the impact of their behavior and decisions on organization efficiency and effectiveness has increased. Consequently, organizational ability to address physicians behavior is now more important.

In this paper, it is argued that the introduction of coordination mechanisms can induce physicians to adopt assessment and decisional criteria consistent with the goals of the organization, allowing the organization and all its members to act as a single body.

Incentive measures, procedures, and the socialization process are three different solutions to the problem of coordinating interdependent activities. The effectiveness of each mechanism is analyzed depending on two factors: the complexity of medical practice and identification of physician with values, standards and ethics of his profession.

Coordination based on incentive measures grants large independence to the professional but application in healthcare is hindered by the difficulty in designing a system of objectives able to include the variety of criteria, sometimes conflicting, necessary to assess medical performance (therapeutic efficacy, patient satisfaction, efficient use of resources, ethical quality of treatments).

The use of incentive measures based on partial measurement of outcomes may encourage dysfunctional behavior and discourage physicians from treating particularly complex clinical cases or it may lead to an inefficient use of resources.

Standardization of processes as a mechanism of coordination is limited by the complexity and unpredictable nature of clinical processes and thus the need to guarantee a certain degree of discretionary power to the physician. This reduces the field of application of bureaucratic measures to the introduction of guidelines, that is to say to general and flexible procedures aimed at informing physicians on optimal strategies concerning diagnosis, treatment and use of resources. Guidelines must also contribute to the diffusion of knowledge.

Finally, the process of socialization has been analyzed as a mechanism able to guide individual behavior towards the organization's goals. This coordination measure is based on the

interiorization of shared objectives and values among organization members. This should stimulate a sense of belonging and commitment to the organization, and overcome potential conflicts between professional and institutional ethics. If organizational culture is partially the outcome of a spontaneous learning process, it is also a construct which may be modeled and transmitted to members of the organization through the greater participation of hospitals to the process of training and socialization of physicians.

An analysis of proposed measures shows how each one provides a substantially different solution to the issue of managing interdependences: each solution stems from different assumptions on the features of medical practice and motivation of professionals. Such an analysis, aimed at pointing out the limits of the three measures, confirms how each mechanism can only partially solve coordination needs in health care organizations.

These considerations, far from demonstrating that such measures cannot be applied to medical practice, indicate that it is necessary to implement a system - based on a mix of mechanisms - in order to balance costs and benefits linked to each form. It is argued that to guarantee adequate motivation of professionals and increase expected behavior, hospitals are called to enhance the effectiveness of economic incentives by introducing guidelines and cultural mechanisms of coordination.

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