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The Clinical Application of the Biopsychosocial Model

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How physicians approach patients and the problems they present is much influenced by the conceptual models around which their knowledge is organized. In this paper the implications of the biopsychosocial model for the study and care of a patient with an acute myocardial infarction are presented and contrasted with approaches used by adherents of the more traditional biomedical model. A medical rather than psychiatric patient was selected to emphasize the unity of medicine and to help define the place of psychiatrists in the education of physicians of the future.

The Vestermark award acknowledges contributions to psychiatric education. For the most part awardees have taken the occasion to discuss issues pertaining to psychiatric education. This paper will do so only indirectly. In it I intend to elaborate on the biopsychosocial model by demonstrating its practical applicability to the understanding and care of a patient. For this purpose I have deliberately selected a medical rather than a psychiatric patient, a man who experienced a myocardial infarction complicated by cardiac arrest. I do so to emphasize the unity of medicine and the uniqueness of physicianhood, for psychiatry is a medical discipline and psychiatrists are physi-

cians. The biopsychosocial model is a scientific model constructed to take into account the missing dimensions of the biomedical model. To the extent that it succeeds it also serves to define the educational tasks of medicine and particularly the tasks and roles of psychiatrists in the education of physicians of the future.

How physicians approach patients and the problems they present is very much influenced by the conceptual models in relationship to which their knowledge and experience are organized. Commonly, however, physicians are largely unaware of the power such models exert on their thinking and behavior. This is because the dominant models are not necessarily made explicit. Rather, they become that part of the fabric of education which is taken for granted, the cultural background against which they learn to become physicians. Their teachers, their mentors, the texts they use, the practices they are encouraged to follow, and even the medical institutions and administrative organizations in which they work, all reflect the prevailing conceptual models of the era.

The dominant model in medicine today is called the "biomedical" model. The biomedical model represents the application to medicine of the classical factor-analytic approach that has characterized Western science for many centuries. Elsewhere (1-3), I have considered the limitations of that model and presented an alternative model, the biopsychosocial model. The new model is based on a systems approach, a development in biology hardly more than 50 years old, the origin and elaboration of which may be credited chiefly to the biologists Paul Weiss and Ludwig von Bertalanffy.

In this paper I will consider how the biopsychosocial model enables the physician to extend application of the scientific method to aspects of everyday practice and patient care heretofore not deemed accessible to a scientific approach. As a result the goal of the Flexner reform to educate a truly scientific physician will come closer to reality (4, 5).

The most obvious fact of medicine is that it is a hu-

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man discipline, one involving role- and task-defined activities of two or more people. Such roles and tasks are defined in a complementary fashion. Roles are based on the linking of the need of one party, the patient, with an expected set of responses (services) from the other party, the physician. Broadly speaking, the need of the patient is to be relieved of "distress" rightly or wrongly attributed to "illness," however conceptualized. The expectation of the patient is that the other party, the physician, has the professional competence and motivation to provide such relief. In practical terms the doctor's tasks are, first, to find out *how* and *what* the patient is or has been feeling and experiencing; then to formulate explanations (hypotheses) for the patient's feelings and experiences (the "why" and the "what for"); to engage the patient's participation in further clinical and laboratory studies to test such hypotheses; and, finally, to elicit the patient's cooperation in activities aimed to alleviate distress and/or correct underlying derangements that may be contributing to distress or disability. The patient's tasks and responsibilities complement those of the physician.

In a broad sense this characterization of the complementary roles and tasks of physician and patient applies to all healing and health care systems, whether primitive folk medicine or modern scientific medicine. The former is based largely on authority, tradition, and an appeal to magical formulae, while the latter relies on scientific knowledge and the scientific method as the best means to achieve the goals of health and well-being. Both the successes and the deficiencies of the current scientific approach, predicated as it is on the biomedical model, are currently the subject of lively controversy. Protagonists of the biomedical model claim that its achievements more than justify the expectation that in time all major problems will succumb to further refinements in biomedical research. Critics argue that such dependence on "science" in effect is at the expense of the humanity of the patient. This is a fruitless controversy which cannot be resolved because it is predicated, by advocate and critic alike, on a flawed premise, that the biomedical model is an adequate scientific model for medical research and practice (2, 3).

The crippling flaw of the model is that it does not include the patient and his attributes as a person, a human being. Yet in the everyday work of the physician the prime object of study is a person, and many of the data necessary for hypothesis development and testing are gathered within the framework of an ongoing human relationship and appear in behavioral and psychological forms, namely, how the patient behaves and what he reports about himself and his life. The biomedical model can make provision neither for the person as a whole nor for data of a psychological or social nature, for the reductionism and mind-body dualism on which the model is predicated requires that

these must first be reduced to **physico-chemical terms** before they can have meaning (2, 3). Hence, the very essence of medical practice performance remains "art" and beyond the reach of science (6).

THE BIOPSYCHOSOCIAL MODEL

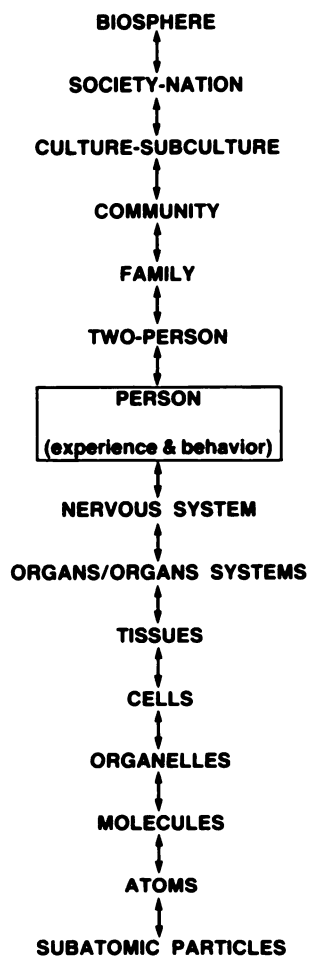
Focusing on what the physician does in contradistinction to what the bench scientist does highlights the appropriateness, indeed the necessity, of a systems approach, as exemplified in the proposed biopsychosocial model. While the bench scientist can with relative impunity single out and isolate for sequential study components of an organized whole, the physician does so at the risk of neglect of, if not injury to, the object of study, the patient. Proponents of the biomedical model often cite this impossibility of dealing with a patient as one would an experimental animal in the laboratory to support their argument that medicine cannot ever be truly scientific. But such a contention assumes that the factor-analytic approach of reductionism alone qualifies as scientific. Systems theory, by providing a conceptual framework within which both organized wholes and component parts can be studied, overcomes this centuries-old limitation.

For the clearest and most authoritative exposition of systems theory in biology one must turn to the basic writings of Weiss (7-12) and von Bertalanffy (13-15). Weiss pointed out that systems theory is best approached through the commonsense observation that nature is ordered as a hierarchically arranged continuum, with its more complex, larger units superordinate to the less complex, smaller units. This may be represented schematically by a vertical stacking to emphasize the hierarchy (see figure 1) and by a nest of squares to emphasize the continuum (see figure 2). Actually there are two hierarchies: the single individual (person) is the highest level of the organismic hierarchy and at the same time the lowest unit of the social hierarchy (16).

Each level in the hierarchy represents an organized dynamic whole, a system of sufficient persistence and identity to justify being named. Its name reflects its distinctive properties and characteristics. Cell, organ, person, family each indicate a level of complex integrated organization about the existence of which a high degree of consensus holds. Each system implies qualities and relationships distinctive for that level of organization, and each requires criteria for study and explanation unique for that level. In no way can the methods and rules appropriate for the study and understanding of the cell as cell be applied to the study of the person as person or the family as family. Similarly, the methods needed to identify and characterize the components of the cell have to be different from those required to establish what makes for the wholeness of the cell.

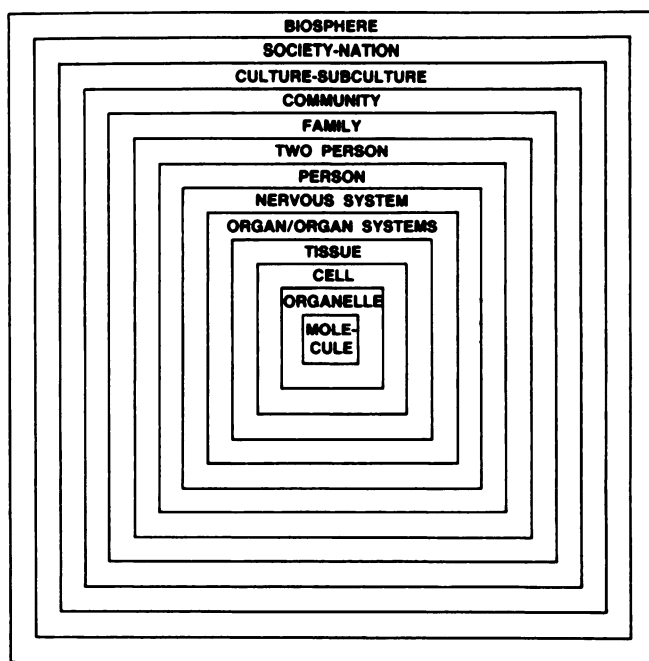
FIGURE 1
Hierarchy of Natural Systems

**SYSTEMS HIERARCHY
(LEVELS OF ORGANIZATION)**



Consideration of the hierarchy as a continuum reveals another obvious fact. *Each system is at the same time a component of higher systems* (figure 2). System cell is a component of systems tissue and organ and person. Person and two-person are components of family and community. In the continuity of natural systems every unit is at the very same time both a whole and a part. Person (or individual) represents at the same time the highest level of the organismic hierarchy and the lowest level of the social hierarchy. Each system as a whole has its own unique characteristics and dynamics; as a part it is a component of a higher-level system. The designation "system" bespeaks the existence of a stable configuration in time and space, a configuration that is maintained not only by the coordination of component parts in some kind of internal dynamic network but also by the characteristics of the larger system of which it is a component part. Stable configuration also implies the existence of

FIGURE 2
Continuum of Natural Systems



boundaries between organized systems across which material and information flow.

Nothing exists in isolation. Whether a cell or a person, every system is influenced by the configuration of the systems of which each is a part, that is, by its environment. More precisely, neither the cell nor the person can be fully characterized as a dynamic system without characterizing the larger system(s) (environment) of which it is a part. This is implicit in the labels used. The designation "red blood cell" identifies directly and by implication the larger systems without which the red blood cell has no existence. The term "patient" characterizes an individual in terms of a larger social system. Identification of the patient by name, age, sex, marital status, occupation, and residence identifies other systems of which that patient is a component and which in turn are part of his environment.

In scientific work the investigator generally is obliged to select one system level on which to concentrate, or at least at which to begin, his efforts. For the physician that system level is always *person*, i.e., a patient. The systems-oriented scientist will be aware that the task is always a dual and complementary one. On the one hand the constituent components of the system must be identified and characterized in detail and with precision. For this end the factor-analytic approach has served well. Application of increasingly diverse and refined techniques to the study of the cell have almost endlessly extended knowledge of the constituent parts (systems) making up a cell. But the systems characteristics of each component part of any

system must also be studied. Different approaches are required to gain understanding of the rules and forces responsible for the collective order of a system, whether an organelle, a cell, a person, or a community. These cannot be understood merely as an assemblage (or reassemblage) of constituent parts (10).

The systems-oriented scientist, including the physician, always has in mind this distinction and the complementarity inherent in it. This stands in contrast to the orientation of the reductionist scientist, for whom confidence in the ultimate explanatory power of the factor-analytic approach in effect inhibits attention to what characterizes the whole. For medicine in particular the neglect of the whole inherent in the reductionism of the biomedical model is largely responsible for the physician's preoccupation with the body and with disease and the corresponding neglect of the patient as a person. This has contributed importantly to the widespread public feeling that scientific medicine is impersonal, an attitude consistent with how the biomedically trained physician views the place of science in his everyday work. For him "science" and the scientific method have to do with the understanding and treatment of disease, not with the patient and patient care. The reductionist scientific culture of the day is largely responsible for the public view of science and humanism as antithetical.

APPLICATION OF THE BIOPSYCHOSOCIAL MODEL

Let us examine how this antithesis between science and humanity might be attenuated, if not eliminated altogether, were the physician to approach clinical problems from the more inclusive perspective of the systems-oriented biopsychosocial model, free of the constraints imposed by the exclusively reductionistic approach of the biomedical model. The hierarchy and continuum of natural systems, as depicted in figures 1 and 2, provide a guide to the systems that the physician keeps in mind when undertaking the care of a patient. How this works out in practice may be illustrated by a particular clinical example, the case of Mr. Glover (a pseudonym); a 55-year-old married real estate salesman with two adult sons, who was brought to the emergency department with symptoms similar to what he had experienced six months earlier, when he had had a myocardial infarction.

We begin consideration of the model by reminding ourselves that in practice the physician's first source of information is the patient himself (or some other informed person). Thus, clinical study begins at the *person* level and takes place within a *two-person* system, the doctor-patient relationship. The data consist of reported inner experience (e.g., feelings, sensations, thoughts, opinions, and memories) and reported and observable behavior. In the instance of Mr. Glover,

his employer recognized that the patient was sicker than he acknowledged himself to be, reported her observations to the doctor, and persuaded the patient to let her take him to the hospital.

How is the clinical approach of the physician influenced by the systems perspective of the biopsychosocial model? With the systems hierarchy as a guide, the physician from the outset considers all information in terms of systems levels and the possible relevance and usefulness of data from each level for the patient's further study and care.

Even such minimal screening data as Mr. Glover's age, gender, place of residence, marital and family status, occupation, and employment already indicate systems characteristics useful for future judgments and decisions. The information that the patient resisted acknowledging illness, especially in the face of a documented heart attack six months earlier, and had to be persuaded to seek medical attention, tells something of this man's psychological style and conflicts. From this alone the systems-oriented physician is alerted to the possibility, if not the probability, that the course of the illness and the care of the patient may be importantly influenced by processes at the psychological and interpersonal levels of organization. Of course, the similarity of Mr. Glover's current symptoms to those of his recent myocardial infarction prepares the physician to consider systems derangements at the cardiovascular level as well as at the symbolic level of "another heart attack."

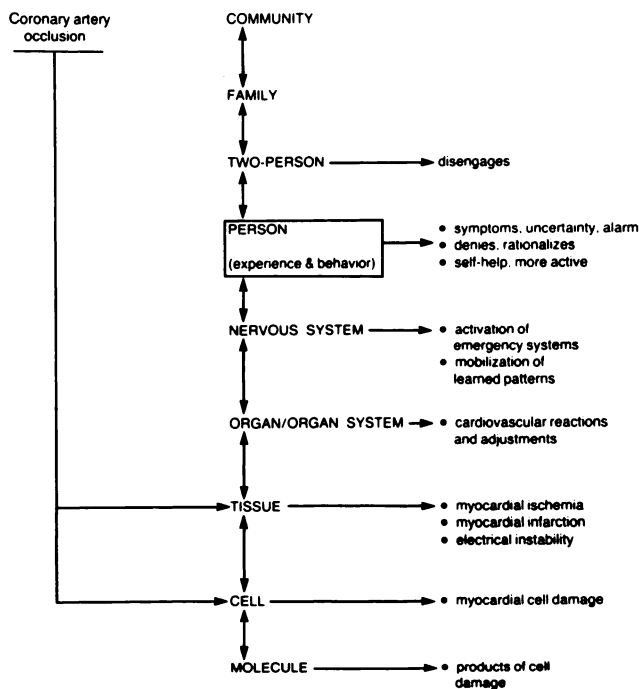
Such an inclusive approach, with consideration of all the levels of organization that might possibly be important for immediate and long-term care, may be contrasted with the parsimonious approach of the biomedical model. In that mode the ideal is to find as quickly as possible the simplest explanation, preferably the diagnosis of a single disease, and to regard all else as complications, "overlay," or just plain irrelevant to the doctor's task. For the reductionist physician a diagnosis of "acute myocardial infarction" suffices to characterize Mr. Glover's problem and to define the doctor's job. Indeed, once so categorized Mr. Glover is likely to be referred to by the staff as "an MI."

The Sequence of Events

Let us now reconstruct in systems terms the sequence of events comprising the acute phase of Mr. Glover's illness. To simplify presentation we arbitrarily take as the starting point for this analysis the 90-minute period during which the patient experienced evolving myocardial ischemia in the form of symptoms. This and subsequent critical events and their consequences for intra- and intersystemic harmony are schematized in figures 3-9. Each diagram indicates the system level that the event in question affected as well as its reverberations up and down the systems hierarchy. Appreciating the unity of the hierarchy, that each system is at the same time

FIGURE 3
Event 1: Coronary Artery Occlusion

EVENT #1 SYSTEMS HIERARCHY INTRASYSTEM CHANGES
(10-11:30 A.M.)



a component of systems higher in the hierarchy, underscores the significance of the disruption of the wholeness of any one system for the intactness of other systems, especially those most proximate. These interrelationships are indicated in the diagrams by using double arrows to connect system levels.

Figure 3 depicts the critical event of progressive obstruction of coronary artery blood flow interrupting the oxygen supply and disrupting the organization of a segment of myocardium. Note that while changes are taking place at the levels of *tissue*, *cell*, *molecule*, *organ*, *organ system*, and *nervous system*, illness and patienthood do not become issues until the *person* level is implicated, that is, not until the person experiences something untoward or exhibits some behavior or appearance that is interpreted as indicating illness. For Mr. Glover such changes began around 10 in the morning. While alone at his desk he began to experience general unease and discomfort and then during the next minutes growing "pressure" over his mid-anterior chest and an aching sensation down the left arm to the elbow. The similarity of these symptoms to those of his heart attack six months earlier immediately came to mind. Thus began the threat of disruption at the *person* level and with it still another wave of reverberations up and down the systems hierarchy.

Central here is the role played by the central nervous system in the integration and regulation of the individual's inner experiences and behavior and the

physiological adjustments occurring in response to the processes originating in the oxygen-deprived myocardium. Such CNS-mediated processes are not necessarily in harmony with one another. Physiological adjustments to myocardial ischemia may be countered by cardiovascular responses to pain and discomfort as well as by the demand for increased work by the heart resulting from inappropriate behavior.

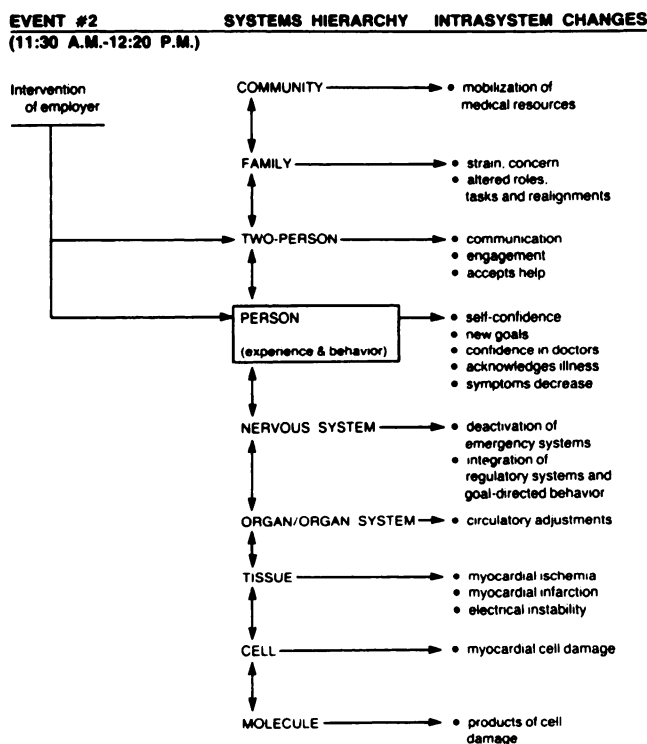
Mr. Glover well exemplified this incompatibility between psychological and physiological reactions. Whereas the infarcting of the myocardium called for reducing the demand for myocardial work and minimizing such arrhythmogenic factors as excessive catecholamine secretion, the patient's psychological response was to oscillate between alarm and increased sympathetic nervous system activity and denial and inappropriate physical activity (figure 3).

As he was later to report, almost from the start the possibility of a second heart attack came to mind, but he dismissed this in favor of "fatigue," "gas," "muscle strain," and, finally, "emotional tension." But the negation itself, "not another heart attack," leaves no doubt that the idea "heart attack" was very much in his mind despite his apparent denial. Behaviorally he alternated between sitting quietly to "let it pass," pacing about the office to "work it off," and taking Alka Seltzer. Another employee came into the office, but Mr. Glover avoided him.

When he could no longer deny the probability, if not the certainty, of another heart attack, a different set of concerns emerged as Mr. Glover's personal values of responsibility and independence and his fear of losing control over his own destiny gained ascendancy. The new formula became, "If this really is a heart attack (but maybe it will still prove not to be), I must first get my affairs in order so that no one will be left in the lurch." In this way he tried to sustain his self-image of competence, responsibility, and mastery, but at the cost of imposing an even greater burden on the already overburdened heart and cardiovascular system. In systems terms, feedback was becoming increasingly positive and a dangerous vicious cycle was in the making. Disruptive processes were gaining ascendancy over regulatory processes, increasing the risk of a lethal arrhythmia (17-20). The patient persisted in this determined, almost frenetic behavior for more than an hour until the intervention of his employer brought it to an end and enabled him to accept hospitalization and patient status.

Figure 4 diagrams the psychological stabilization that took place as a result of his employer's intervention and the stabilizing consequences for other systems. The intervention took place within the *two-person* system, immediately affecting *person*, and for the moment at least terminated the vicious cycle, thereby lessening the impact on the damaged heart of potentially deleterious extracardiac influences. By the time the patient reached the hospital he was no longer hav-

FIGURE 4
Event 2: Intervention of Employer



ing chest discomfort; he was feeling relatively calm and confident and was coming to terms with once again being a hospital patient.

How had the employer brought about such a felicitous result? We later learned from Mr. Glover that the employer's approach was to commend his diligence and sense of responsibility, even in the face of being so obviously ill, and to reassure him that he had left his work in suitable condition for others to take over. But she also challenged him to consider whether a higher responsibility to his family and his job did not require him to take care of himself and go to the hospital. Intuitively she had appreciated this man's need to see himself as responsible and in control, and she had sensed his deep fear of being weak and helpless.

By the time Mr. Glover was admitted to the emergency department shortly before noon he was no longer having any discomfort. But the staff agreed that prompt institution of a coronary care routine was nonetheless justified. This was in fact reassuring to the patient, who had by now accepted the reality of a second heart attack. Thirty minutes later, however, in the midst of the continuing workup, he abruptly lost consciousness. The monitor documented ventricular fibrillation. Defibrillation was successfully carried out, and the patient made an uneventful recovery.

Interviewed a few days later, Mr. Glover was able to reconstruct the events in the emergency department leading up to the cardiac arrest. His account raised

doubts that the onset of ventricular fibrillation could be ascribed solely to processes originating in the injured myocardium alone. Rather, it suggested a major role for extracardiac (neurogenic) influences originating the disturbances at the *two-person* and *person* levels. According to Mr. Glover, everything had been proceeding smoothly until the house officers ran into difficulty doing an arterial puncture. They persisted in their fruitless efforts for some 10 minutes and then left, explaining only that they were going for help. For Mr. Glover the procedure was not only painful and disagreeable, but, more importantly, he felt his confidence in the competence of the medical staff being undermined and with that his sense of personal mastery and control over his situation. Rather than being helped by powerful but concerned and competent professionals he began to feel that he was being victimized by beginners who themselves needed help. Yet he couldn't bring himself to protest. His comment, tape-recorded, was,

I didn't wanna tell 'em that I didn't think, ah, that I knew, he wasn't doing it right . . . they tried here and they tried there . . . the poor fellow was having such a tough time, he just couldn't get it.

Within a short time the patient found himself getting hot and flushed. Chest pain recurred and quickly became as severe as it had been earlier that morning. When the staff left to get help he first felt relieved. But anticipating more of the same, he began to feel outrage and then to blame himself for having permitted himself to be trapped in such a predicament. A growing sense of impotence to do anything about his situation culminated in his passing out as ventricular fibrillation supervened.

This sequence of events is diagrammed in figure 5. It provides an opportunity to draw a contrast between different models and how the model adhered to influences the physician's approach. In the case of Mr. Glover the judgment to institute without delay an acute coronary regimen is beyond dispute. Differences emerge in the priorities set and the behavior displayed by adherents of each model as they went about their study and care of the patient. The emergency room approach was conventionally and narrowly biomedical. It was predicated on the reductionist premise that the cause of Mr. Glover's problem, and therefore the requirements for his care, could be localized to the myocardial injury. Because of this, plus the high risk attendant on such injury, they felt justified proceeding with the technical diagnostic and treatment procedures, giving only passing attention to how Mr. Glover was feeling and reacting. When the arrest occurred the staff congratulated each other and the patient on his good fortune, claiming that had his arrival in the hospital been delayed another 30 minutes, he might well have not survived. It was assumed that the

FIGURE 5
Event 3: Unsuccessful Attempt at Arterial Puncture

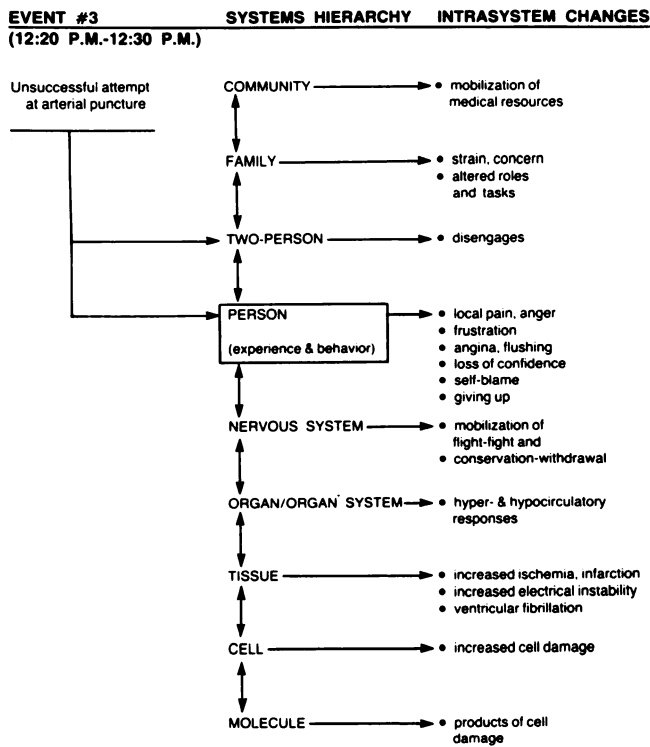
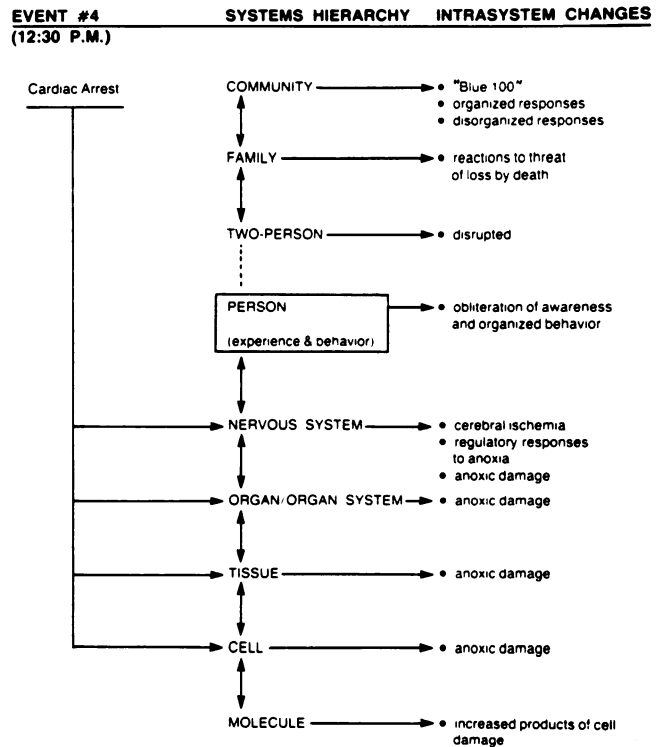


FIGURE 6
Event 4: Cardiac Arrest



onset of ventricular fibrillation at 12:30 p.m. was part of the natural progression of the myocardial injury.

The model used by the emergency staff in their handling of Mr. Glover was based on the factor-analytic design of the controlled laboratory experiment in which all factors are to be held constant except for the one under study. For the biomedically trained clinician this constitutes the standard against which the "scientific" quality of clinical work is to be measured. Translated into clinical practice it is typically reflected in the predilection to focus down on one issue at a time and pursue a sequential "ruling out" technique for both diagnosis and treatment.

A Different Approach

A systems approach to Mr. Glover would have differed in notable respects. From the outset the decision for and implementation of coronary care would have included consideration of factors other than cardiac status, notably those manifest at the *person* level. The interview of Mr. Glover would have been conducted in such a manner as to elicit simultaneously information needed to characterize him as a person and to evaluate the status of his cardiovascular system. This could have been readily and efficiently accomplished by having the patient report the symptoms in a life context, noting activities, reactions, feelings, and behavior as symptoms were evolving, as well as his life circumstances at the time of onset. Particularly when considering possible myocardial infarction is the systems-ori-

ented physician alert to information about *person*-level factors that might contribute to instability of the cardiovascular system.

Valuable as a guide for the physician's personal approach to Mr. Glover's care would have been to learn how the employer had helped him accept the reality of his heart attack and the need for prompt medical attention. As the coronary care regimen was being implemented, the physician would also be closely monitoring the patient's reactions to the procedures, especially in the light of Mr. Glover's documented reluctance to acknowledge a need for help. The difficulty with the arterial puncture would have been recognized early as a risk for the patient, not just a problem for the doctors. Mr. Glover's failure to complain would have been anticipated as consistent with his personality style and not interpreted as acquiescence to what was happening to him. Whether such an approach would in fact have averted the cardiac arrest is impossible to know. But certainly, sufficient experimental and clinical evidence exists linking psychological impasse, as displayed by Mr. Glover, and increased risk of lethal arrhythmias, especially with pre-existing myocardial electrical instability (17, 19).

Further elaboration of the biopsychosocial model as applied to the care of Mr. Glover may be found in figures 6-9, which diagram in sequence the cardiac arrest, defibrillation, and eventual stabilization of the injured myocardium, as well as what might have happened if defibrillation had been unsuccessful. With the

FIGURE 7
Event 5A: Successful Defibrillation

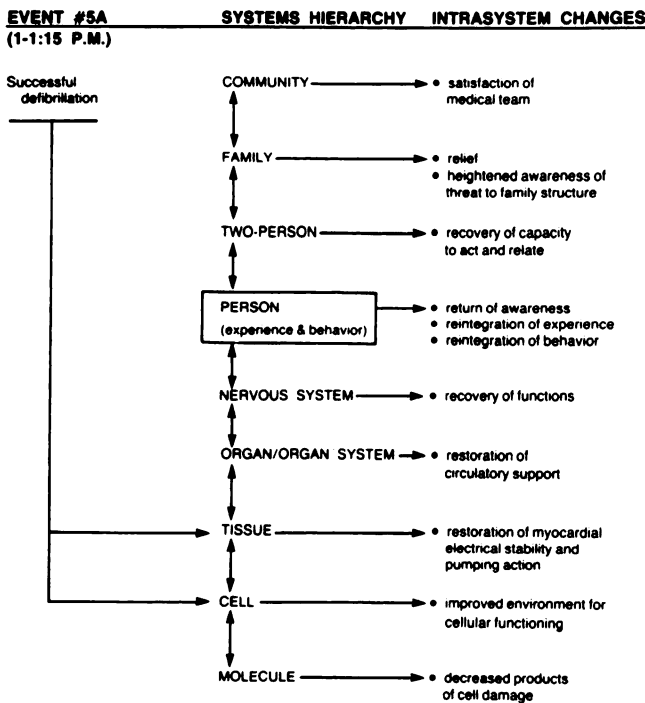


FIGURE 9
Event 6: Stabilization of Myocardial Damage

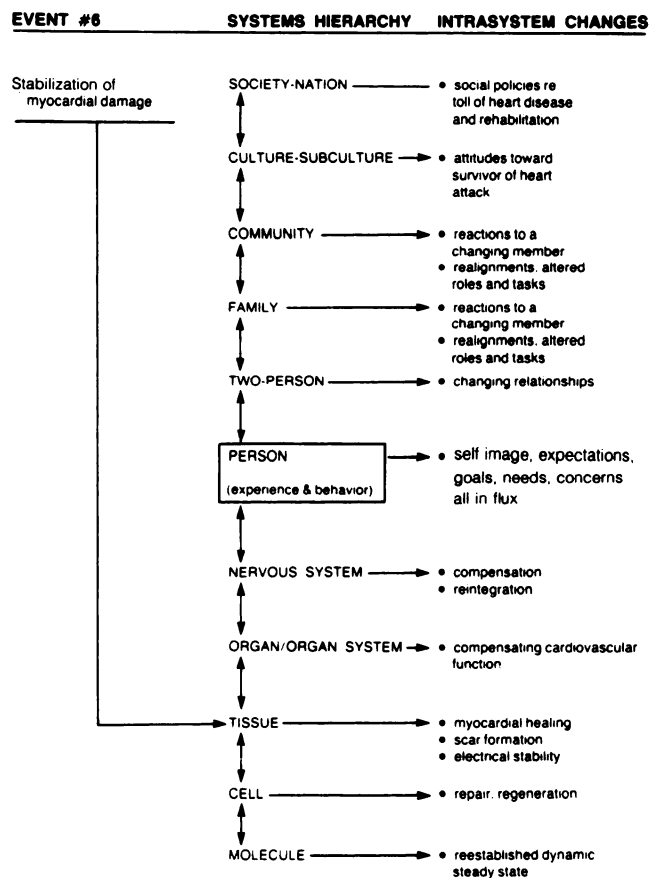
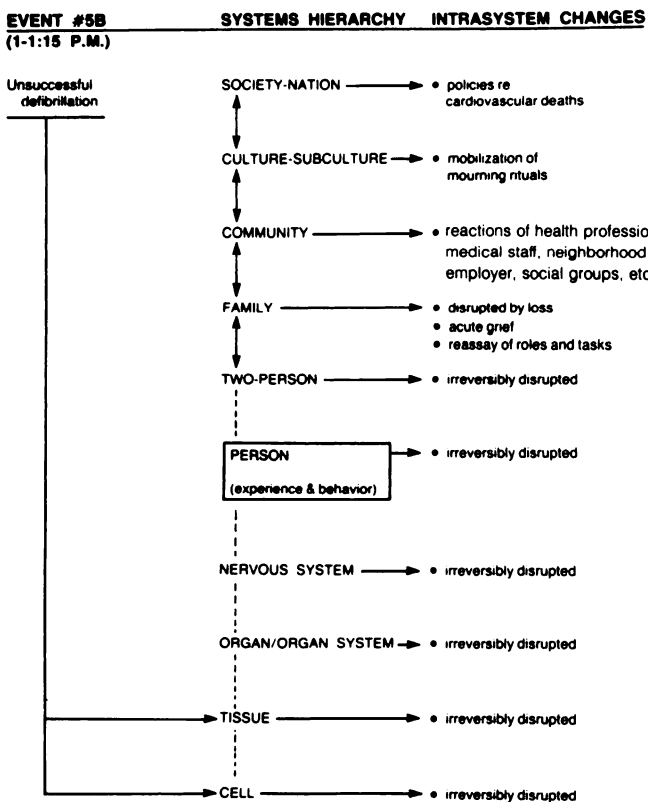


FIGURE 8
Event 5B: Unsuccessful Defibrillation



aid of these diagrams the reader can readily visualize how events or circumstances at system levels above *person*, whether originating at those levels or occurring in response to *person*-level, illness-related processes, may in turn impinge on the *person*, and the implications for the stability of lower-level systems.

The systems-oriented physician is conscious of responsibilities to the patient and to the family and significant others. At least for the duration of the illness, the *two-person* system, doctor-patient, is interposed between the patient and the others who constitute his social environment. Much business ordinarily conducted directly between the patient and others now filters through the doctor, to whom all parties look for counsel. This is true even when the doctor is not directly consulted, as when people invoke their notion of the doctor's views in his absence. It is especially with respect to these system levels that the contrast between the biomedical and biopsychosocial models is the greatest. For the biomedically trained physician, judgments and decisions bearing on interpersonal and social aspects of patients' lives commonly are made with a minimum of information about the people, relationships, and circumstances involved and with even less knowledge and understanding of basic principles

underlying interpersonal and social transactions. By and large the physician reaches decisions on the basis of tradition, custom, prescribed rules, compassion, intuition, "common sense," and sometimes highly personal self-reference. Such processes involving the *person* and supraperson levels, often of crucial importance for the patient and for the significant others, remain outside the realm of science and critical inquiry. Not so for the biopsychosocially oriented physician, who recognizes that to best serve the patient, higher-system-level occurrences must be approached with the same rigor and critical scrutiny that are applied to systems lower in the hierarchy. This means that the physician identifies and evaluates the stabilizing and destabilizing potential of events and relationships in the patient's social environment, not neglecting how the destabilizing effects of the patient's illness on others may feed back as a further destabilizing influence on the patient.

Consider the responsibilities that Mr. Glover's physician would have had to face, for example, had Mrs. Glover fallen ill—or even died—under the strain of her husband's illness and near-death. Consider, too, how information about Mrs. Glover, readily available to the physician skilled at observation and conscious of its value, would enable him or her to recognize her vulnerabilities and hence avert her breakdown and illness. The continuity of systems makes attention to Mrs. Glover's well-being a necessary element in Mr. Glover's care. For the biopsychosocially oriented physician this is not merely a matter of compassion and humanity, as some would have us believe, but one of rigorous application of the principles and practices of science, a human science (20).

Some argue that the biopsychosocial model imposes an impossible demand on the physician. This misses the point. The model does not add anything to what is not already involved in patient care. Rather, it provides a conceptual framework and a way of thinking that enables the physician to act rationally in areas now excluded from a rational approach. Further, it motivates the physician to become more informed and skillful in the psychosocial areas, disciplines now seen as alien and remote even by those who intuitively recognize their importance. And finally, the model serves to counteract the often wasteful reductionist pursuit of what often prove to be trivial rather than crucial determinants of illness. The biopsychosocial physician is expected to have a working knowledge of the principles, language, and basic facts of each relevant discipline; he is not expected to be an expert in all.

THE BIOPSYCHOSOCIAL MODEL AS A SCIENTIFIC MODEL

I hope the example of Mr. Glover, with all of its oversimplification, indicates how the working concep-

tual model used by the physician can influence the approach to patient care. The biopsychosocial model is a scientific model. So, too, was the biomedical model. But as Fabrega (21) pointed out, by now it has become transformed into a folk model, actually the dominant folk model of the Western world. As such it has come to constitute a dogma. The hallmark of a scientific model is that it provides a framework within which the scientific method may be applied. The value of a scientific model is measured not by whether it is right or wrong but by how useful it is. It is modified or discarded when it no longer helps to generate and test new knowledge. Dogmas, in contrast, maintain their influence through authority and tradition. They resist change and hence tend to promote opposition and the promulgation of rival dogmas by dissident figures. The counter dogmas being put forth these days in opposition to biomedical dogma are called "holistic" and "humanistic" medicine. They qualify as dogmas to the extent that they eschew the scientific method and lean instead on faith and belief systems handed down from remote and obscure or charismatic authority figures. They tend to place science and humanism in opposition. But as the history of the biomedical model itself has shown, progress is made only where the scientific method is applied. The triumphs of the biomedical model all have been in the areas for which the model has provided a suitable framework for scientific study. The biopsychosocial model extends that framework to heretofore neglected areas.

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Notice to Clinical Investigators

Under program support from the Foundations' Fund for Research in Psychiatry, three research laboratories have been designated as resource groups for clinical investigators doing blood level research with antianxiety, antidepressant, and antipsychotic drugs. Investigators who seek to establish the reliability of their methods or those who wish to participate in a proficiency testing protocol should contact the appropriate group listed below.

Benzodiazepine anxiolytics: Drs. Greenblatt/Shader, telephone (617) 956-6997

Tricyclic antidepressants: Dr. Perel, (412) 624-2198

Phenothiazine antipsychotics: Dr. Davis, (312) 996-1065