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THE CLINICAL APPLICATION OF THE BIOPSYCHOSOCIAL MODEL*

ABSTRACT. 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.

How physicians approach patients and the problems they present is very much influenced by the conceptual models around which their knowledge and experience are organized. Commonly, however, physicians are largely unaware of the power that such models exert on their thought and behavior. This is because the dominant models are not necessarily made explicit. Rather they become part of the fabric of education that is taken for granted, the cultural background against which they learn to become physicians. Their teachers, mentors, texts, the practices they are encouraged to follow, and even the medical institutions and administrative organizations with which they associate, 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, the limitations of that model have been considered and an alternative model, the biopsychosocial model has been presented (Engel, 1960, 1977b, 1978a). 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

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The Journal of Medicine and Philosophy 6 (1981), 101–123. 0360–5310/81/0062–0101 $02.30.

may be credited chiefly to the biologists Paul Weiss and Ludwig von Bertalanffy.

In this paper we will consider how the biopsychosocial model enables the physician to extend application of the scientific method to aspects of everyday practice and patient care previously not deemed accessible to a scientific approach. The success of this application can bring closer to reality the goal of the Flexner reform to educate a truly scientific physician (Flexner, 1910; Engel, 1978a).

The most obvious fact of medicine is that it is a human 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 physician's tasks are, first; to learn *how* and *what* the patient is or has been feeling and experiencing, and to formulate explanations (hypotheses) for these states, (the 'why' and the 'what for'); second, to engage the patient's participation in further clinical and laboratory studies to test such hypotheses; and third, to elicit the patient's cooperation in activities to alleviate distress and/or correct underlying derangements that may be contributing to distress or disability. The patient's tasks and responsibilities are complementary with 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. The controversy cannot be resolved, however, as long as it is predicated, by advocate and critic alike, on the flawed premise that the biomedical model is an adequate scientific model for medical research and practice (Engel, 1977b; 1978a).

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 not only is the prime object of study a person, but much of the data necessary for hypothesis development and testing are gathered within the framework of an ongoing human relationship. Data 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 upon which the model is predicated requires that these must first be reduced to physico-chemical terms before they can have meaning (Engel, 1977b, 1978a). Hence the very essence of medical practice perforce remains 'art' and beyond the reach of science (Engel, 1977a).

Focusing on what the physician does in contradistinction to what the bench scientist does highlights the appropriateness, indeed the necessity, for a systems approach as exemplified in the proposed biopsychosocial model. For 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 neglecting, if not injuring, the object of study, the patient. This impossibility of dealing with a patient as one would an experimental animal in the laboratory is just the argument often cited by proponents of the biomedical model to support their argument that medicine can not *ever* be truly scientific. In that view only that which the physician can approach in accordance with the laboratory model warrants being called science. 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 and broadens the range of the scientific method to the study of life and living systems, including health and illness.

For the clearest and most authoritative exposition of systems theory in biology one must turn to the basic writings of Weiss and von Bertalanffy (Weiss, 1952, 1940, 1949, 1967, 1969, 1977; von Bertalanffy, 1952, 1968, 1969). Systems theory is best approached through the common sense observation that nature is a hierarchically arranged continuum, with its more complex larger units being superordinate to the less complex smaller units. This may be represented schematically by a vertical stacking to emphasize the hierarchy (Figure 1) and by a nest of squares to emphasize the continuum

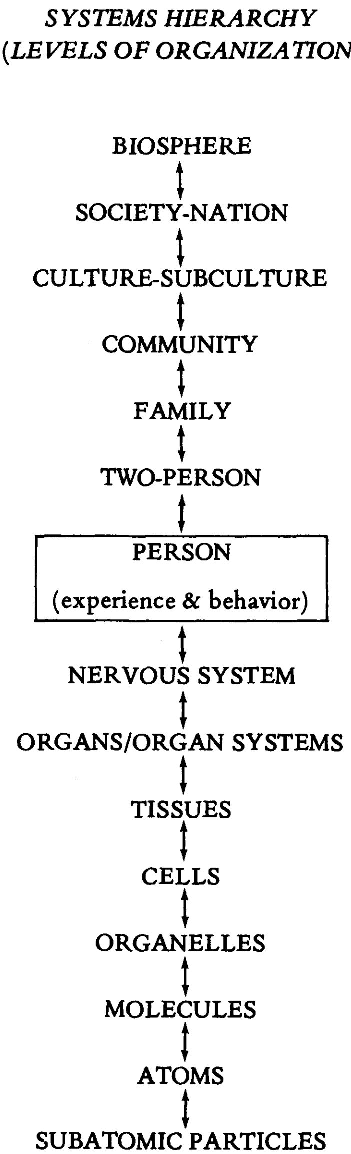

Fig. 1.

(Figure 2). Each level in the hierarchy represents an organized dynamic whole, a system of sufficient persistence and identity to justify

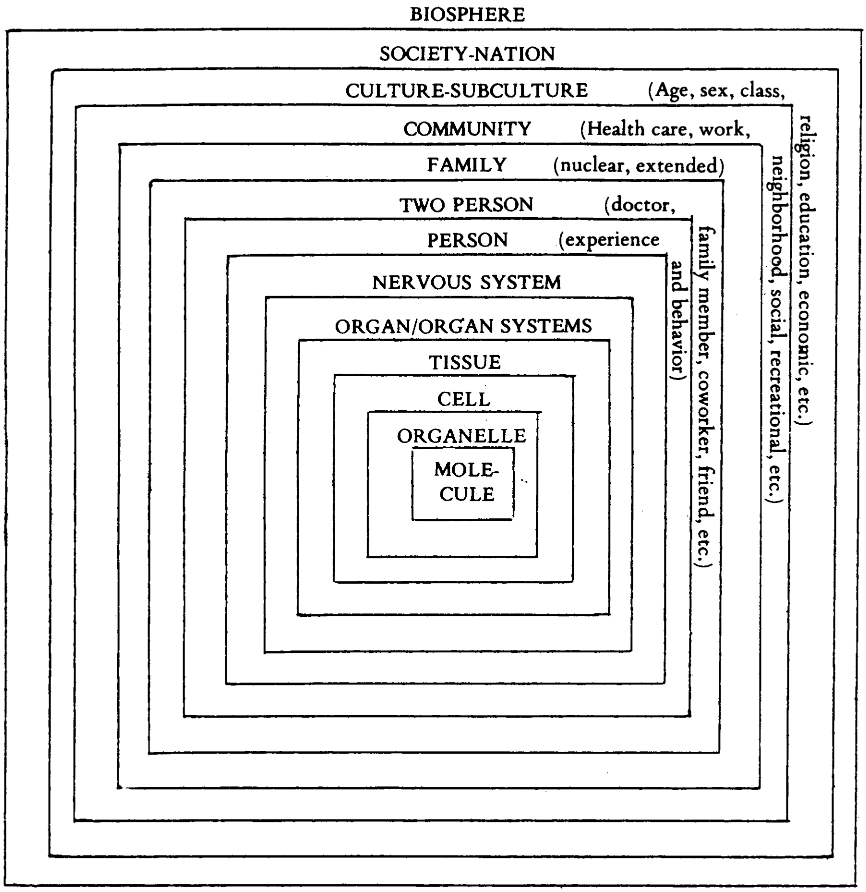

Fig. 2.

being named. The name itself reflects the system's 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 as well implies qualities and relationships distinctive for that level of organization and requires unique criteria for study and explanation. 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.

Consideration of the hierarchy as a continium 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.* As a whole it 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. This configuration 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 boundaries between organized systems across which material and information flow.

Thus no system 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. Or 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 inference the larger systems without which the red blood cell has no existence. The term, *patient*, characterizes an individual in terms of larger social systems. 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 upon which to concentrate, or at least 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 components within each 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 for study of the cell have almost endlessly extended knowledge of the constituent parts making up a cell. But the systems characteristics of each component part of any system must also be studied. (I.e., cell) is a component part of other systems 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 (Weiss, 1976).

The systems-oriented scientist, including the physician, always has in mind the distinction between the individual system and the collective order of systems 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, this neglect of the whole inherent in the reductionism of the biomedical model is largely responsible for the physician's preoccupation with the body and disease and corresponding neglect of the patient as a person. The widespread public feeling that scientific medicine is impersonal is 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.

Let us examine how this tension between science and humanism might be attenuated, if not eliminated altogether, if the physician were to approach clinical problems from the more inclusive perspective of the systems-oriented biopsychosocial model, free of the constraints imposed by the dualistic and 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 must keep in mind when undertaking the care of a patient. The practical application may be illustrated by a particular clinical example. The patient, known by the pseudonym Mr. Glover, is a 55 years old married real estate salesman with two adult sons, who was brought to the emergency department on March 1 with symptoms similar to those he had experienced six months earlier when he suffered 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, memories, etc.) and reported and observable behavior. In the instance of Mr. Glover, it was his concerned employer who had 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, from the outset the physician considers information from all 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 indicate systems characteristics useful for future judgments and decisions. The information that the patient resisted acknowledging illness and had to be persuaded to seek medical attention, especially in the face of a documented heart attack six months earlier, reveals something of this man's psychological style and conflicts. From this alone the systems-oriented physician is alterted to the possibility, if not the probability, that the course of the illness and the care of the patient may be significantly influenced by processes at the psychological and interpersonal levels of organization. And of course the similarity of Mr. Glover's presenting 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 which 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 a single disease diagnosis, 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'.

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 the 90 minute period during which symptoms of evolving myocardial ischemia were being experienced by the patient. This acute phase and subsequent critical events and their consequences for intra- and intersystemic harmony are schematized in Figures 3–9. Each diagram indicates the system

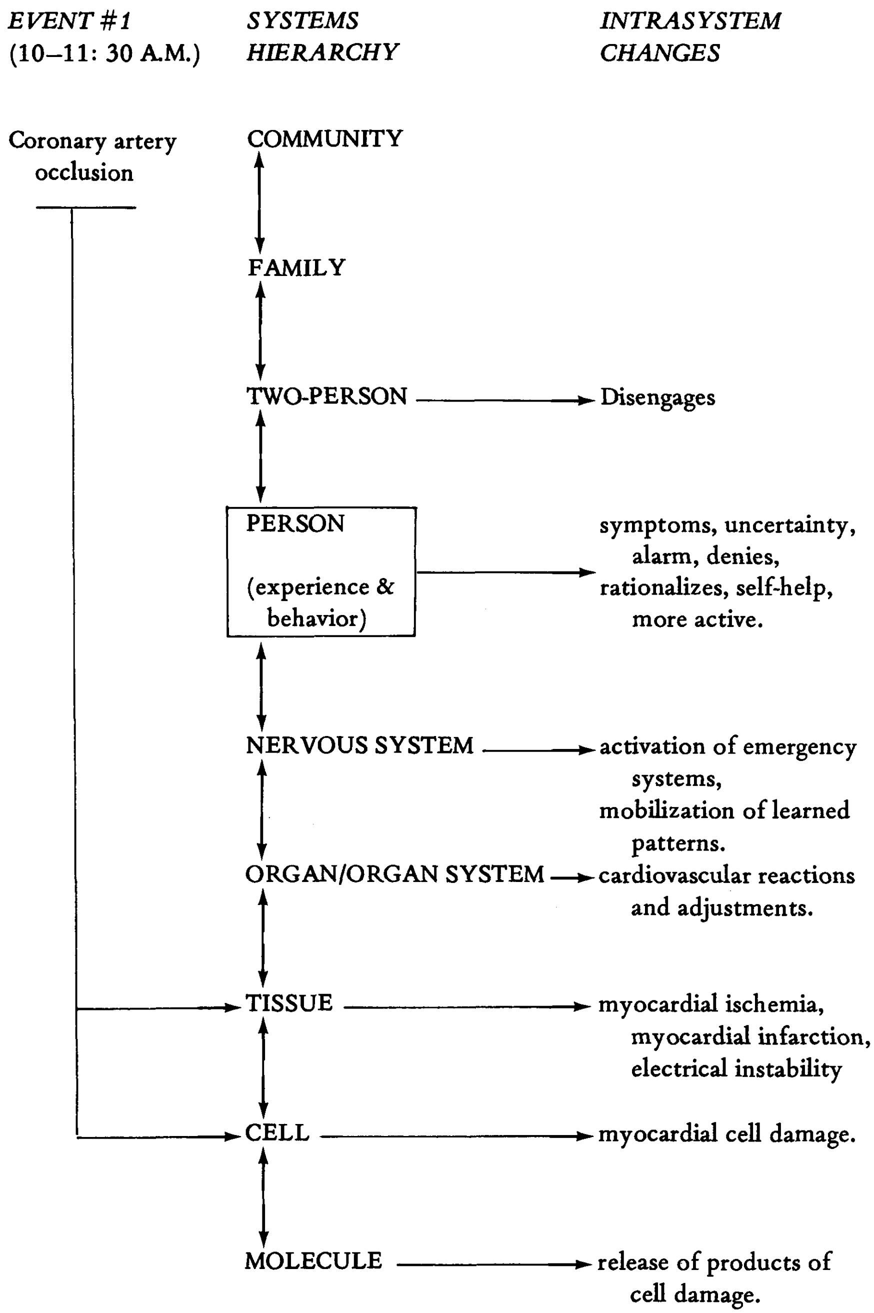
EVENT #1
(10–11: 30 A.M.)
SYSTEMS
HIERARCHY
INTRASYSTEM
CHANGES
Coronary artery
occlusion
COMMUNITY
FAMILY
TWO-PERSON
Disengages
PERSON
(experience &
behavior)
symptoms, uncertainty,
alarm, denies,
rationalizes, self-help,
more active.
NERVOUS SYSTEM
activation of emergency
systems,
mobilization of learned
patterns.
ORGAN/ORGAN SYSTEM
cardiovascular reactions
and adjustments.
TISSUE
myocardial ischemia,
myocardial infarction,
electrical instability
CELL
myocardial cell damage.
MOLECULE
release of products of
cell damage.

Fig. 3.

levels affected by the event in question as well as its reverberations up and down the systems hierarchy. Appreciation of the unity of the hierarchy, that each system is at the same time also a component of higher systems, highlights 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 to coronary artery blood flow interrupting the oxygen supply and disrupting the organization of a segment of myocardium. Note that while changes were taking place at the levels of tissue, cell, molecule, organ, organ system, and nervous system, illness and patienthood did not become issues until the *person* level was implicated, that is, not until something untoward was experienced or some behavior or appearance was interpreted as indicating illness. For Mr. Glover such changes began around 10 in the morning of March 1. 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 the 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.

Key is the role played by the central nervous system in the integration and regulation of the individual's inner experiences, behavior, and the physiological adjustments occurring in response to the processes originating in the oxygen-deprived myocardium. Such central nervous system 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 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 consequent increased physical activity (Figure 3). As he was later to report, almost from the start the possibility of a second

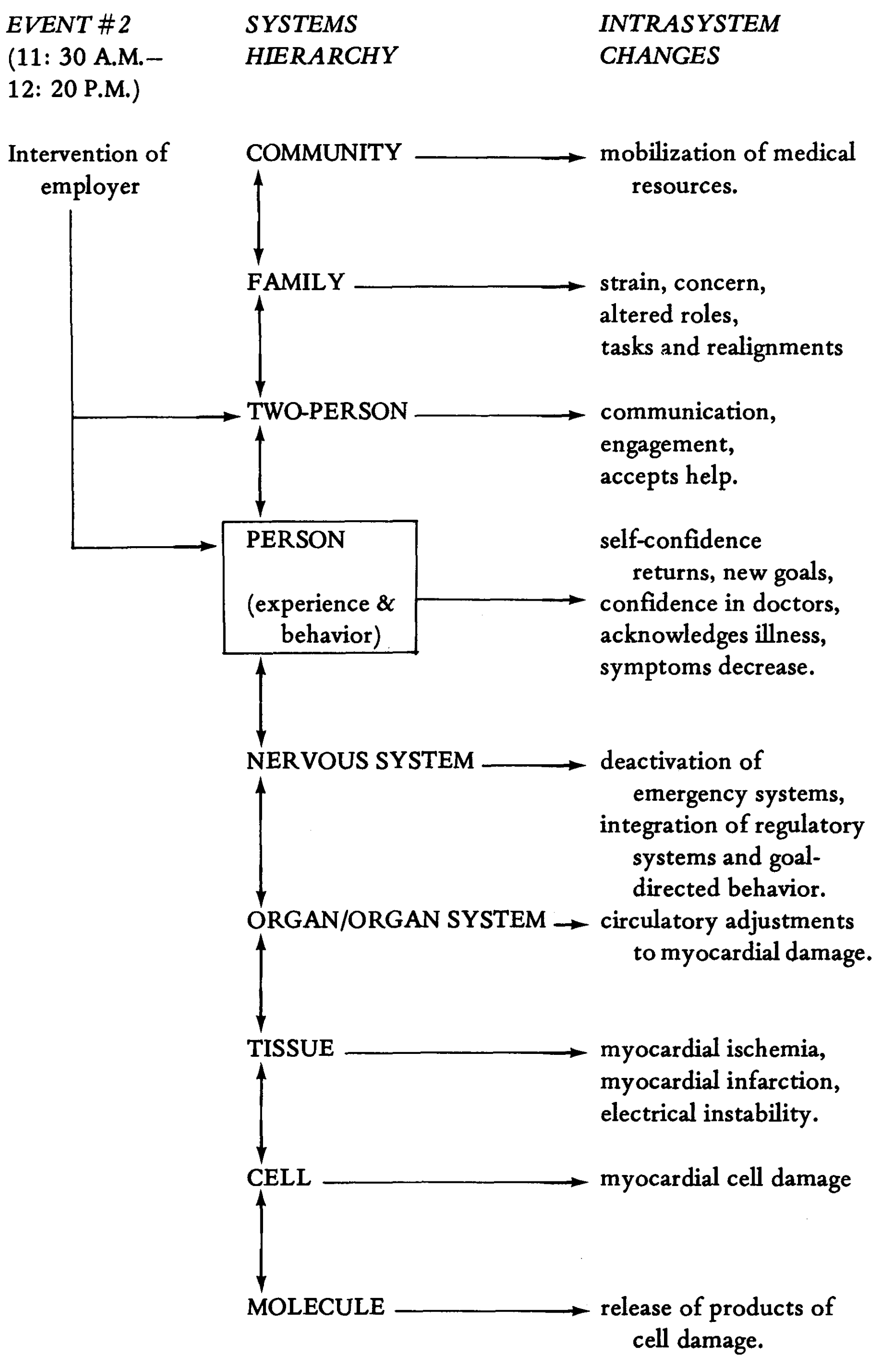
EVENT #2
(11: 30 A.M.–
12: 20 P.M.)
SYSTEMS
HIERARCHY
INTRASYSTEM
CHANGES
Intervention of
employer
COMMUNITY
mobilization of medical
resources.
FAMILY
strain, concern,
altered roles,
tasks and realignments
TWO-PERSON
communication,
engagement,
accepts help.
PERSON
(experience &
behavior)
self-confidence
returns, new goals,
confidence in doctors,
acknowledges illness,
symptoms decrease.
NERVOUS SYSTEM
deactivation of
emergency systems,
integration of regulatory
systems and goal-
directed behavior.
ORGAN/ORGAN SYSTEM
circulatory adjustments
to myocardial damage.
TISSUE
myocardial ischemia,
myocardial infarction,
electrical instability.
CELL
myocardial cell damage
MOLECULE
release of products of
cell damage.

Fig. 4.

heart attack came to mind, though 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. His behavior 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 so as not to reveal his distress.

When he could no longer deny the probability, if not the certainty of another heart attack, a different set of concerns emerged. His 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 (Engel, 1971; Lown, 1977; Engel, 1978c). 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 effecting *person* (the patient), 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 having chest discomfort, he was feeling relatively calm and confident and was coming to terms with returning to the patient role.

How had the employer brought about such a felicitous result? As was later learned from the patient, the employer's approach to Mr. Glover 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

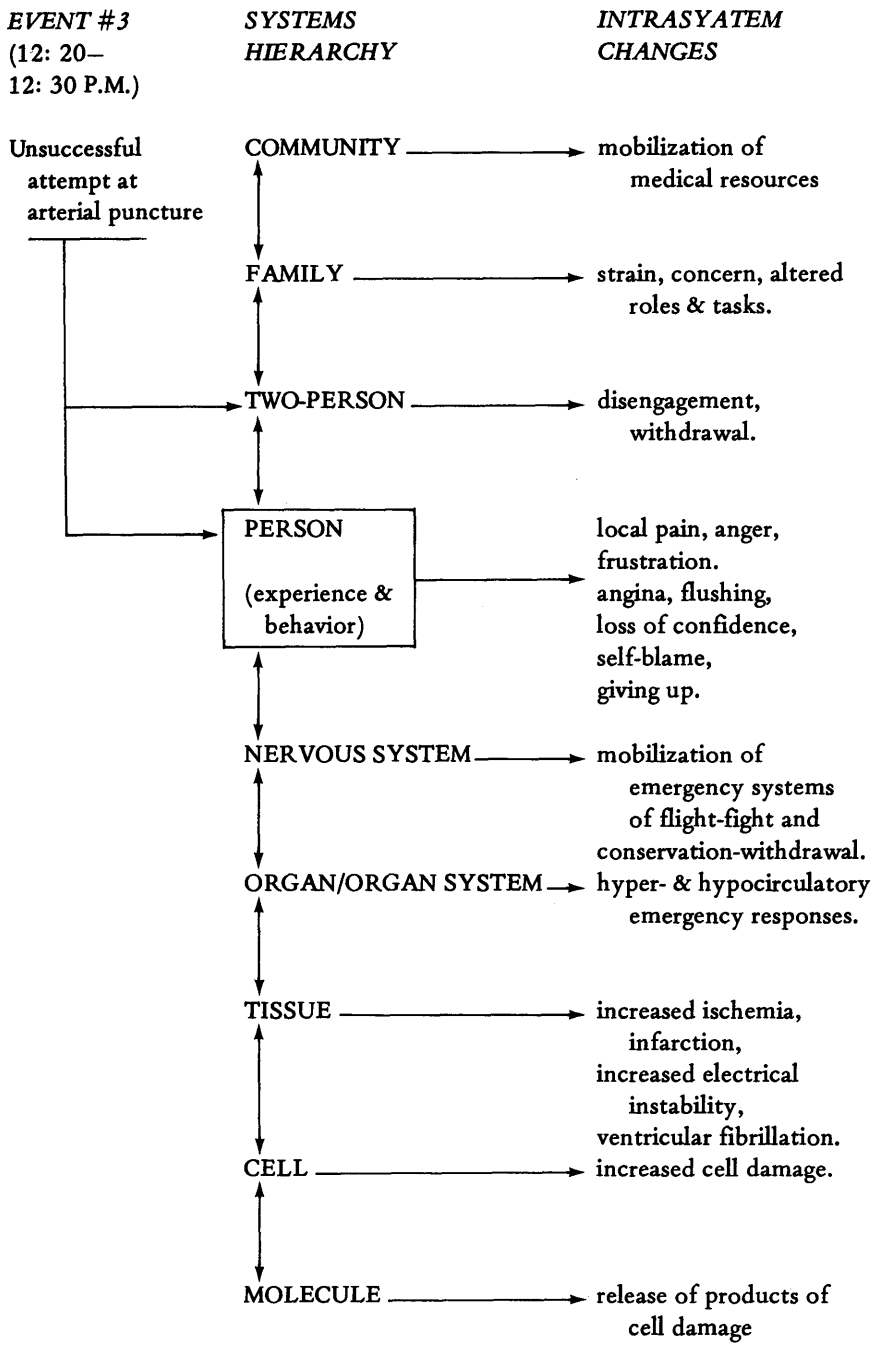
EVENT #3
(12: 20–
12: 30 P.M.)
SYSTEMS
HIERARCHY
INTRASYATEM
CHANGES
Unsuccessful
attempt at
arterial puncture
COMMUNITY
mobilization of
medical resources
FAMILY
strain, concern, altered
roles & tasks.
TWO-PERSON
disengagement,
withdrawal.
PERSON
(experience &
behavior)
local pain, anger,
frustration.
angina, flushing,
loss of confidence,
self-blame,
giving up.
NERVOUS SYSTEM
mobilization of
emergency systems
of flight-fight and
conservation-withdrawal.
ORGAN/ORGAN SYSTEM
hyper- & hypocirculatory
emergency responses.
TISSUE
increased ischemia,
infarction,
increased electrical
instability,
ventricular fibrillation.
CELL
increased cell damage.
MOLECULE
release of products of
cell damage

Fig. 5.

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 coronary care was nonetheless justified. This was in fact reassuring to the patient who had by now accepted the reality of a second heart attack. But thirty minutes later, in the midst of the continuing workup, he abruptly lost consciousness. The monitor documented ventricular fibrillation. Defibrillation was successful 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 vertricular fibrillation could be ascribed solely to processes restricted to the injured myocardium alone. Rather it suggested a major role for extracardiac (neurogenic) influences originating in 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 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 control over the situation. Rather than feeling helped by concerned and competent professionals, he began to feel victimized by beginners who themselves needed help. Yet he couldn't bring himself to protest.

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 culminated in his passing out as ventricular fibrillation supervened.

This sequence of events, diagramed in Figure 5, provides an opportunity to contrast the two models with regard to the influence of each on the physician's approach. In the case of Mr. Glover, the judgment to institute without delay an acute coronary regimen is beyond dispute. Where differences emerge is in the priorities set and the behavior displayed by adherents of each model as they go 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. This, plus the high risk attendant upon such injury, justified proceeding with the technical diagnostic and treatment procedures with 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. Had his arrival in the hospital been delayed another 30 minutes, he might well have not survived! It was assumed that the 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 measured. Translated into clinical practices it is typically reflected in the predilection to focus on one issue at a time and to pursue a sequential 'ruling out' technique for both diagnosis and treatment.

A systems approach to helping Mr. Glover would have differed in notable respects. From the outset the decision to provide immediate 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 symptoms in a life context, noting activities, reactions, feelings, and behavior as symptoms were evolving, as well as the circumstances of his life preceding the onset of symptoms. The systems oriented-physician would thus be alert to information about person-level factors which might contribute to instability of the cardiovascular system, of particular importance when considering a possible myocardial infarction. Mr. Glover's physician would have been helped by learning how the employer had gotten him accept the

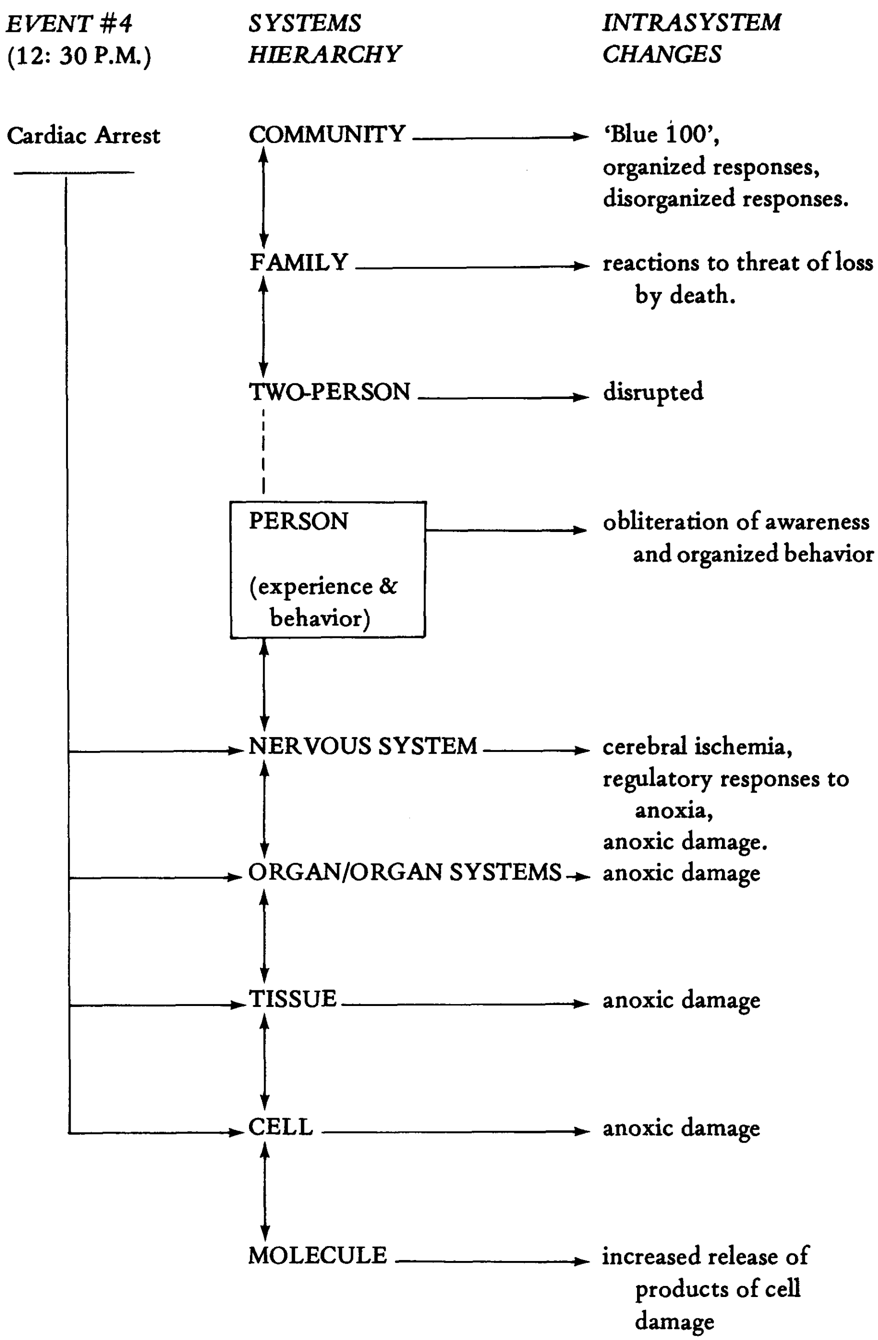
EVENT #4
(12: 30 P.M.)
SYSTEMS HIERARCHY
INTRASYSTEM CHANGES
Cardiac Arrest
COMMUNITY
'Blue 100', organized responses, disorganized responses.
FAMILY
reactions to threat of loss by death.
TWO-PERSON
disrupted
PERSON
(experience & behavior)
obliteration of awareness and organized behavior
NERVOUS SYSTEM
cerebral ischemia, regulatory responses to anoxia, anoxic damage.
ORGAN/ORGAN SYSTEMS
anoxic damage
TISSUE
anoxic damage
CELL
anoxic damage
MOLECULE
increased release of products of cell damage

Fig. 6.

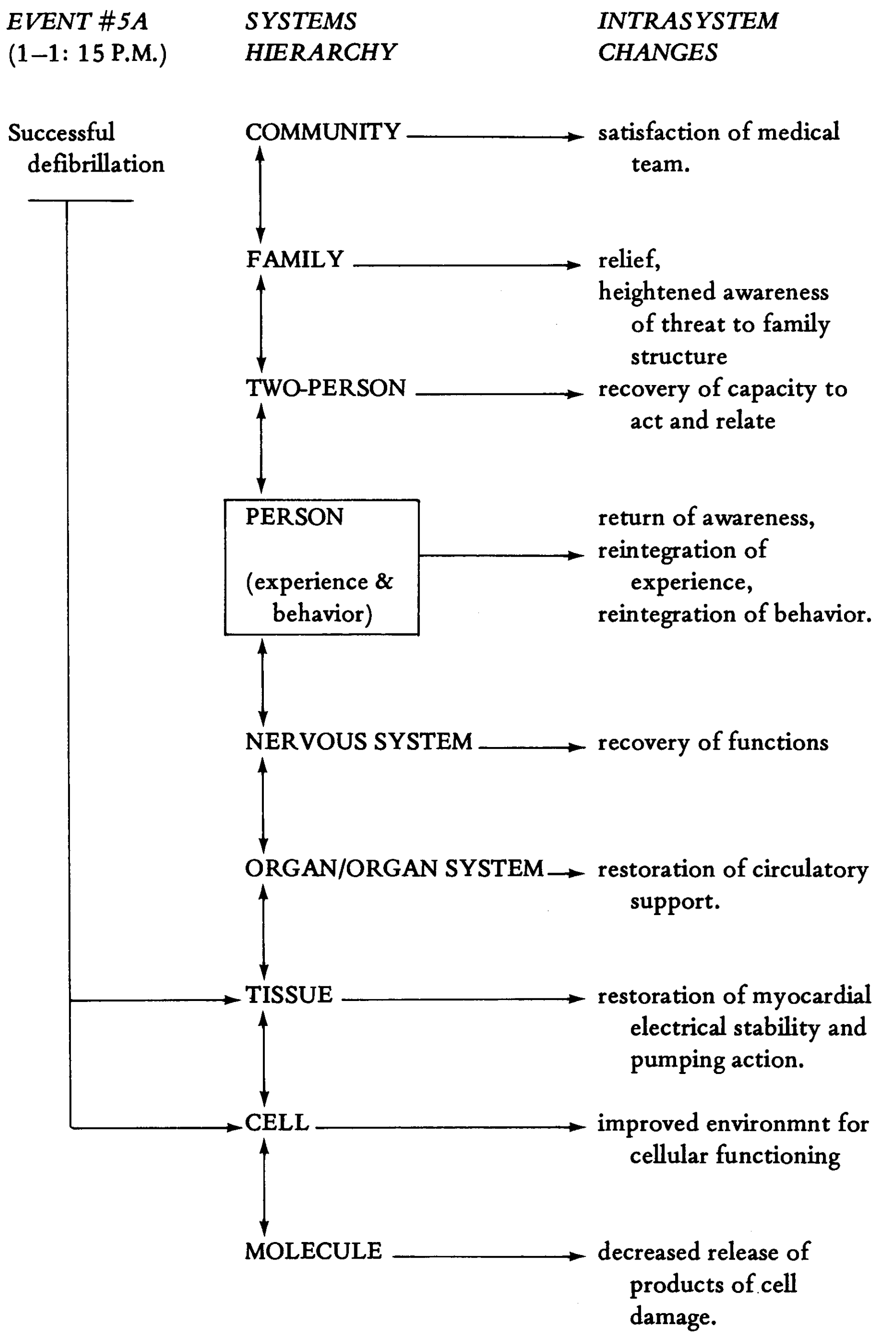
EVENT #5A
(1–1: 15 P.M.)
SYSTEMS HIERARCHY
INTRASYSTEM CHANGES
Successful defibrillation
COMMUNITY
satisfaction of medical team.
FAMILY
relief, heightened awareness of threat to family structure
TWO-PERSON
recovery of capacity to act and relate
PERSON (experience & behavior)
return of awareness, reintegration of experience, reintegration of behavior.
NERVOUS SYSTEM
recovery of functions
ORGAN/ORGAN SYSTEM
restoration of circulatory support.
TISSUE
restoration of myocardial electrical stability and pumping action.
CELL
improved environmnt for cellular functioning
MOLECULE
decreased release of products of cell damage.

Fig. 7.

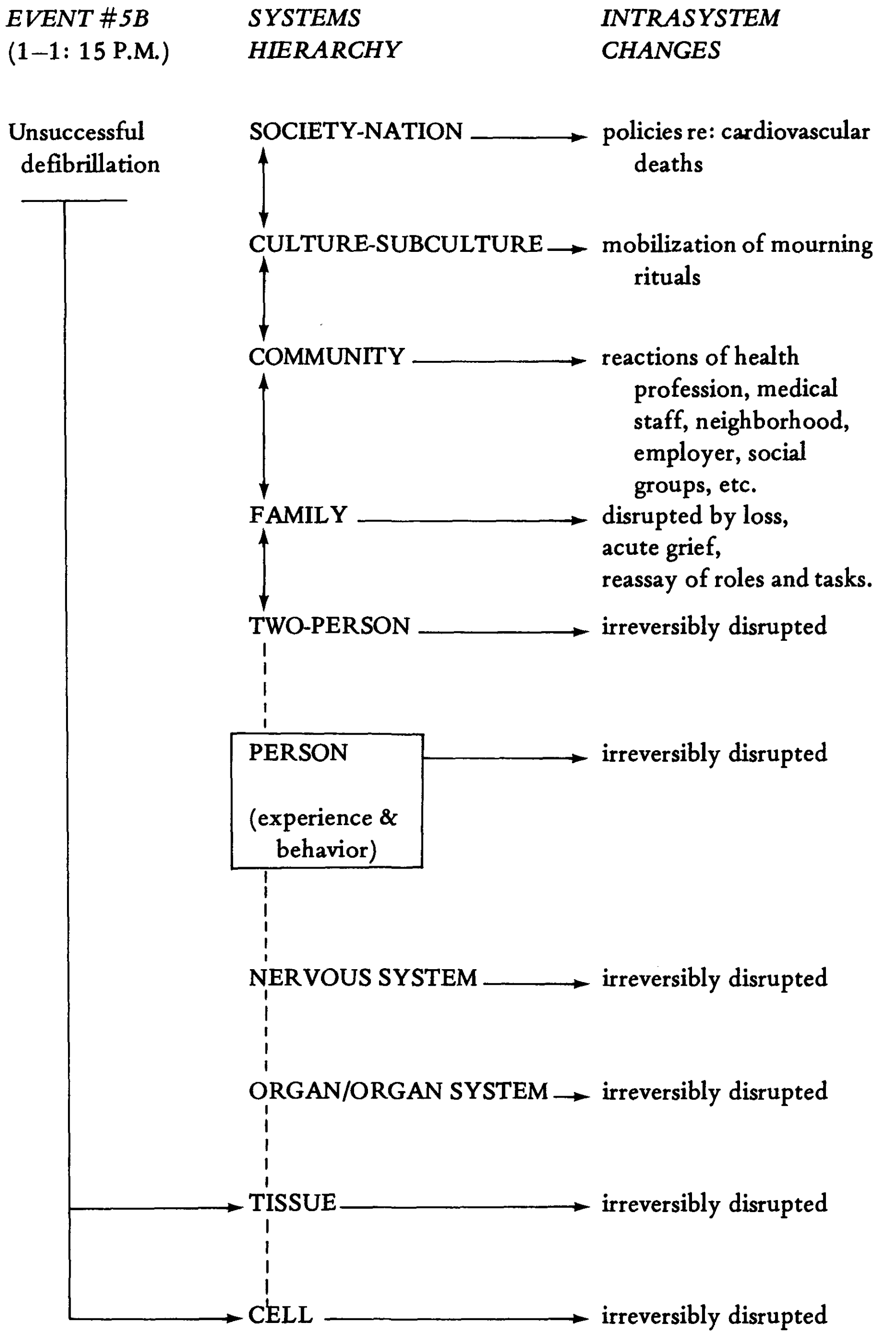
EVENT #5B
(1–1: 15 P.M.)
SYSTEMS HIERARCHY
INTRASYSTEM CHANGES
Unsuccessful defibrillation
SOCIETY-NATION
policies re: cardiovascular deaths
CULTURE-SUBCULTURE
mobilization of mourning rituals
COMMUNITY
reactions of health profession, medical staff, neighborhood, employer, social groups, etc.
FAMILY
disrupted by loss, acute grief, reassay of roles and tasks.
TWO-PERSON
irreversibly disrupted
PERSON (experience & behavior)
irreversibly disrupted
NERVOUS SYSTEM
irreversibly disrupted
ORGAN/ORGAN SYSTEM
irreversibly disrupted
TISSUE
irreversibly disrupted
CELL
irreversibly disrupted

Fig. 8.

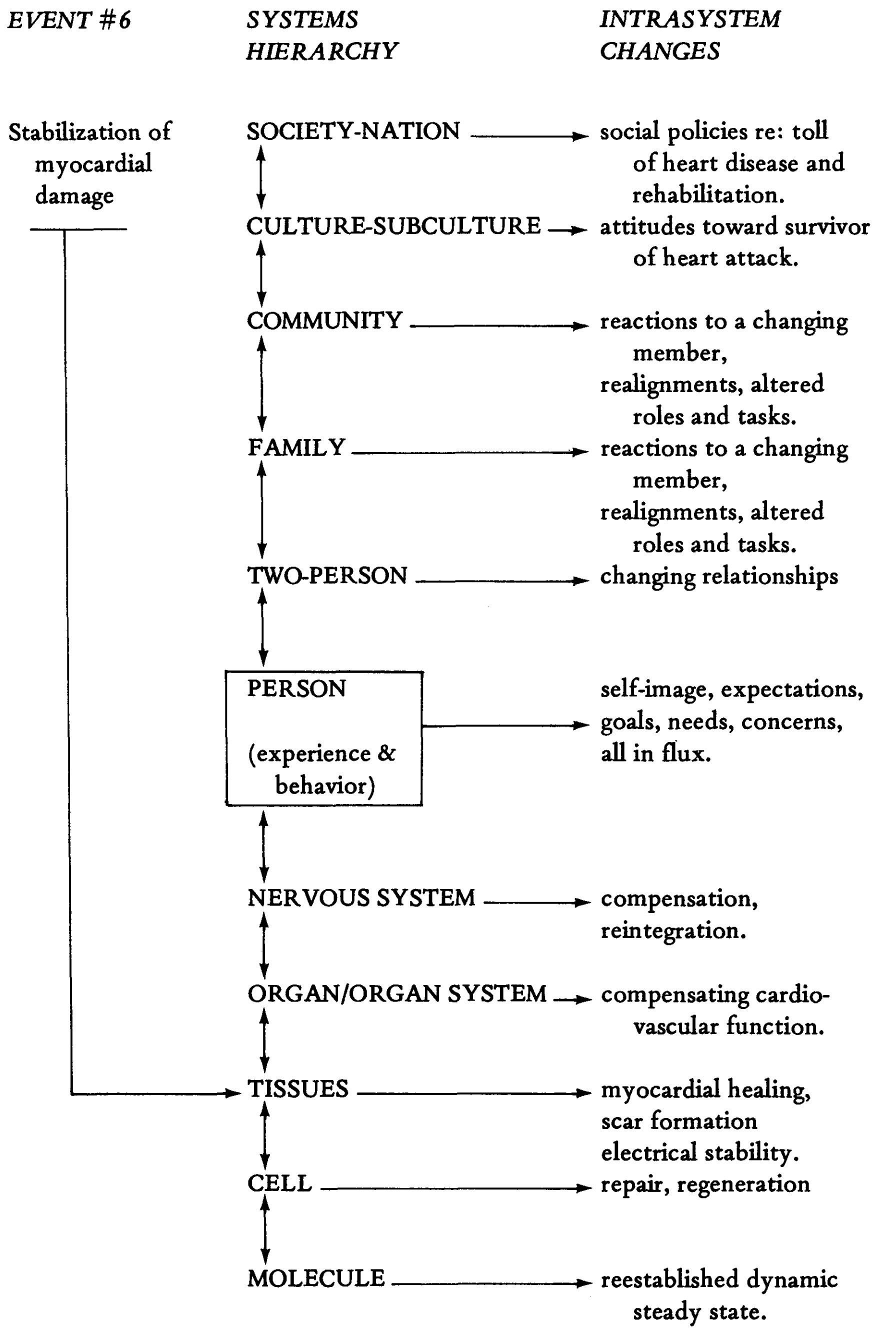
EVENT #6
SYSTEMS HIERARCHY
INTRASYSTEM CHANGES
Stabilization of myocardial damage
SOCIETY-NATION
social policies re: toll of heart disease and rehabilitation.
CULTURE-SUBCULTURE
attitudes toward survivor of heart attack.
COMMUNITY
reactions to a changing member, realignments, altered roles and tasks.
FAMILY
reactions to a changing member, realignments, altered roles and tasks.
TWO-PERSON
changing relationships
PERSON
(experience & behavior)
self-image, expectations, goals, needs, concerns, all in flux.
NERVOUS SYSTEM
compensation, reintegration.
ORGAN/ORGAN SYSTEM
compensating cardio-vascular function.
TISSUES
myocardial healing, scar formation electrical stability.
CELL
repair, regeneration
MOLECULE
reestablished dynamic steady state.

Fig. 9.

reality of his heart attack and the need for prompt medical attention. Alert to the patient's reluctance to submit to medical care, the physician would carefully monitor the patient's reactions to the coronary care procedures. The difficulty with the arterial puncture would have been recognized 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 and increased risk of lethal arrhythmias, especially with preexisting myocardial electrical instability (Engel, 1971, 1978c).

Further elaboration of the biopsychosocial model as applied to the care of Mr. Glover may be found in Figures 6–9, which are sequential diagrams of the cardiac arrest, defibrillation, and eventual stabilization of the injured myocardium. With the aid of these diagrams, the reader can 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 affect the stability of lower level systems.

The systems-oriented physician is conscious of responsibilities to the patient and to his family and significant others. At least for the duration of the illness, the *two-person* system, of doctor and patient, is interposed between the patient and the others constituting 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 herself fallen ill – or even died – under the strain of her husband's illness and almost death. Also consider how information about Mrs. Glover, readily available to the physician skilled at observation and conscious of its value, would enable him/her to recognize Mrs. Glover's vulnerabilities and hence help to 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 the rigorous application of the principles and practices of science, a human science (Mead, 1976).

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 it not already involved in patient care. Rather it provides a conceptual framework which 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 biopsychoscial 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.

I hope the example of Mr. Glover, though oversimplified, still indicates how the working conceptual model utilized 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 points out, it has become transformed into a folk model, actually the dominant folk model of the western world (Fabrega, 1975). 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 through rival dogmas. The counter dogmas being put forth these days as opposition to biomedical dogma are called 'holistic' and 'humanistic' medicine. They qualify as dogmas because they eschew the scientific method, leaning instead on faith and belief systems handed down from remote and obscure or charismatic authority figures. They 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 have been in the areas for which the model has provided a suitable framework for scientific study. The biopsychosocial model extends that framework to include previously neglected areas.

NOTE

* The Seymour Vestermark Memorial Lecture, American Psychiatric Association, May 15, 1979. Originally published in *Am. J. Psychiatry* 137 (1980), 535–544. Reprinted with permission.

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