Supporting Decision-Making related to the several levels of complexity in the system “Hospital”: Some important aspects

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Abstract: The modern hospital consists of various functional units, which adopt various methodological approaches to decision making. This wide variety of decisions, express the diverse levels of complexity, which should be encountered, in order to efficiently develop the appropriate information technology, to support the corresponding actions in the hospital.

Introduction: The purpose of this paper is to deal with the process of decision making in a specific professional and scientific context, that of the hospital. Hospital operation is impossible without the knowledge of a decision-making mechanism while this operation necessitates the awareness of the need to apply this mechanism on the basis of the uniqueness of the context and the individual case.

The methodological level: The hospital environment exhibits a variety of actions, administrative, medical, technical, etc. and there is a variety of reasons employed in the various inferences which lead to corresponding actions. These reasons fall within three categories: The first consists of reasons, which refer to biological functions, financial and administrative indicators and technical procedures. These reasons contain parameters, which are expressed in objective and quantifiable terms. Deterministic or probabilistic models can adequately express reasoning schemata, which consist solely of such reasons. The second category consists of reasons, which refer to the aspects, which are unique to the problem in question, that is, they express the specific parameters which allow for the instantiation of the specific problem. Such reasoning in its pure form constitutes the casuistic approach. The case of a real patient, however, exemplifies a form of reasoning, which exhibits both types of reasons, i.e. the deterministically or probabilistically expressed parameters and the individuating indicators. The third category of reasons that appear in inferences, which are carried out in hospitals and lead to actions, express the ethical and axiological parameters of the specific case in question. Such reasons are usually ignored in decision-making models due to the fact that the information provided therein is usually not expressed by typical quantification methods. Further, these reasons are considered to be of less importance in the decision inferences since they are regarded as subjective and depending on the individual patient’s preferences and the physician’s predisposition.

The departmental level: The main task of the outpatient department is the mode of establishing criteria, which are employed on both the diagnosis and the subsequent therapeutic intervention. Decision making in the accident emergency department requires accelerated procedures, through the adoption of standard procedures both by the personnel and by the inference-supporting equipment involved. The function of the in vitro diagnostic laboratories is to support decisions, on the basis of the information they extract out of the specimens. The main type of decision making in medical imaging concerns the discrimination of forms and the ascription of specific characteristics on to them. Decisions in the operating room and at the intensive care unit result from the evaluation of the clinical features of the patient, from the contacting of bio-signals and from the medical image evaluation during the treatment. Treatment is also provided at the inpatient wards, and decisions are also made, on the creation, the management and the evaluation of the medical records of the patients.

The managerial-technical level: There are some very crucial decisions made in hospitals, which are of non-medical nature but have a direct bearing on the operation of the whole structure. Such decisions pertain to the overall policy of the hospital and in particular to matters of allocation of human and material resources, the efficiency of its operation, and the social role of the hospital.

The educational level: The optimization of the decision-making processes in the hospital would require the development of educational tools so that the personnel involved would acquaint itself effectively and efficiently with the subject matter. Such an effort would also contribute to the promotion of interdisciplinary research, and, it would address in an effective manner the problem on intra-hospital communication between the various specialties.

Conclusions: Although decision making is an intrinsic element of each hospital unit's function, each unit, on the one hand, adopts similar methodological approaches to decision making but, on the other, it informs these approaches with the corresponding concrete content peculiar to its scope.