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Commentary

What has Changed after Dr. Lawrence Weed's paper in 1968?

Reflections on L.L. Weed's paper:
Medical Records that Guide and Teach

Thirty years ago, Dr. Lawrence Weed pointed out, in a special article [1], the necessity to adopt new techniques to overcome the growing frustrations of medical staff concerning paper-based patient records. In the article he addressed several issues that have remained of interest until the present day. All his publications on the proper documentation of patient data – of which this one is only a representative example – were not only visionary at that time, but – regretfully – most of his remarks are still valid today.

His major concerns were a better acceptance and use of paramedical personnel, a more positive attitude toward computers in health care and, foremost, the creation of a more organized approach to the patient record. He had the hope that by better structuring the patient record, supported by computers, the patient data contained in such records could be used for a wide variety of purposes, and primarily for better and more efficient patient care. Therefore, all patient problems should be listed separately, including demographic problems, while being integrated into one life-long record. The use of the patient record should then not be restricted to individual patient care, but should also open up many other possibilities, such as use for preventive procedures and research. Dr. Weed: "When large amounts of demographic data are developed, by means of the computer, a system could be developed whereby input of certain vital statistics on any patient would automatically result in an immediate print-out of his main demographic problems, along with the current approaches to their management" [1].

Since the appearance of the article, important changes have certainly taken place. Paramedical staff has been better integrated in patient care, and information technology has been deployed in hospitals and health-care organizations. Most of the health-care providers don't even notice that many of these changes have been gradually introduced. However, several key issues still have to be accepted by the medical community and to be made operational. Dr. Weed is certainly one of the pioneers in re-engineering clinical medicine and he also made changes happen. We summarize some of the thoughts expressed in his early publications of which the roots were already visible in the article re-published in this Yearbook [1].

Problems out of Context

"It is no wonder", as Dr. Weed stated, "that controversies in medicine abound; the present lack of technic for the recording and presentation of data on multiple problems almost guaranteed chaos". We should realize that this statement was made long before there was even the slightest thought expressed that personal computers would be abundant everywhere, including health care. The situation, however, has not drastically altered. The patient is confronted with too many specialists who often provide care without knowing about each other, and this demands a health-care organization where an integrated view on the patient can be given. Dr Weed: "A patient's intuitive demand for a 'whole doctor' is completely consistent with the demands that good science and knowledge of all factors impose upon the specialist, independent of general discussions of 'primary' physicians, total care and humanitarian causes".

Choice of Problems and Time for Problems

Dr. Weed compares the way scientists solve problems, in an orderly manner, and the way physicians tackle patient problems. It is unacceptable, as he remarked in the article, that patient problems are solved without the use of a problem list, in an unsystematic manner; that random progress notes are dashed off by the physician; that only acute problems are taken care of and others are neglected. Even when the clinician's time is limited, priorities

should be selected. "The rule should be: when under pressure, do what you do very well; select the problem wisely; never do all superficially just to get them done"... "Lack of time is never a legitimate argument against keeping data in order".

Lack of Continuity of Care

It is astonishing to see that Dr. Weed, in a time when electronic data interchange – let alone the Internet – was still many years away, already made a strong case for a life-long patient record and the support of continuity of care. "A complete medical record is essential to reliable continuity of medical care, even with the same physician." Due to the modern electronic communication technology available today, Dr. Weed's early ideas can finally be materialized.

Basic-Science Training, the Physician and the Medical Record

Changes as defended in the article will not arrive automatically. Dr. Weed, therefore, makes a strong plea for basic-science training, which should contribute to proper clinical performance through the teaching of systematic approaches. This training should be provided in the medical curriculum. "It is this capacity to formulate and pursue a problem that distinguishes a good clinician, and a teacher of basic science has failed the physician if he does not teach this discipline but merely dispenses facts through lectures and 'cookbook' experiments".

Medical Rounds and Conferences

Medical data are of great relevance for discussions among peers, for assessment of care, and for grand rounds. Typed summaries of selected patient data are then not sufficient for rigorous analysis. In his early article Dr. Weed postulated that the computer would offer great help for data retrieval, graphic representation, and communication of patient data to remote locations.

As said, not everything has been realized yet, and important issues still lie ahead of us. As known, the task of patient care is to solve multiple patient problems and it is a kind of cyclic process where problems are defined, a working hypothesis is formulated, hypotheses are subsequently tested by various examinations and, finally, where the examination results are integrated and therapeutic action follows. In retrospect, the patient care process is then also assessed. The whole process should be documented in the medical or patient record.

The article by Dr. Weed [1] was perhaps the first one that analyzed in a scientific way the different goals of the medical record, and that proposed an organizational approach for discerning and at the same time integrating multiple patient problems and describing the problem-solving process. It has not taken very long for many care providers to become convinced that the problem-oriented medical record (POMR) system is the most ideal vehicle to describe the care process [2]. Dr. Weed believed that when the procedure outlined in his leading article was to be implemented, a manual method would not work, but a computer-based approach would be mandatory. He wrote: "I set forth my hopes that development of the computerized problem-oriented medical information system (PROMIS) would help to coordinate the many providers of care" [3]. The concept was that physician-recorded information would become a component of a larger system, allowing expert-derived systems of rules and procedures to guide the physician in patient care. To the disappointment of many of his colleagues, integrated information systems based on PROMIS were not widely accepted and have not survived its concept [4].

The obstacles to the acceptance of PROMIS by care providers should be a warning for those who want to develop computer-based patient record (CPR) systems and put them into operation. In most countries, the early systems conflicted with the conventional practice of data entry by physicians: short notes are taken during consultation and narrative writing is completed later on. In addition, physicians do not like to structure the patient data into a problem-oriented format. PROMIS intended to offer physicians detailed advice concerning patient care. Some clinicians regarded the system as too authoritarian.

We should take the lesson offered by PROMIS to heart when developing future CPR systems. One of the key points is data entry. Dr. Weed was right to pursue structured data entry but this was not well accepted due to the idea that time would be wasted. Data entry by physicians is common usage in clinical care in Japan, and in primary care in the Netherlands, the U.K. and a few other western countries. In most other countries physicians seldom enter patient data in a computer. However, interaction by physicians themselves is a must to obtain reliable patient data documentation and to protect patient privacy. If physicians directly enter patient data into the records, a template-driven data-entry system [5,6] may assist to realize structured data entry. The other key point is to help physicians in making decisions and to support evidence-based care. This can, for instance, be realized by retrieving the patient data [7] and to integrate the data with decision-support systems. In principle, it is

also possible to extract knowledge from accumulated patient data in CPR systems.

Networking is certainly the direction to go in health care. In general, successful networked applications will be constructed from three components: devices, communication tools, and information as documented in databases. In the advancement of information technology, devices and communication tools will be taken care of by industry. The medical informatics community should try harder to provide methods for the structured documentation of patient data in the manner that Dr. Weed proposed 30 years ago. The past was an era of trial and error. Recent research reveals that medical informatics researchers have changed the health-care environment in many ways through practicing, educating, and research. Nowadays, we are able to reconfirm that medical informatics could alter health care and affect the provision of patient databases, containing information stored in patient records, accessible via health-care networks. For sure, the early ideas of Dr. Weed will be made operational in the next century.

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