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—regrettfully—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].

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; and 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 inter-
change—let alone the Internet—was still
many years away, already made a strong
plea for a life-long patient record and the
support of continuity of care. “A com-
plete medical record is essential to reli-
able continuity of medical care, even
with the same physician.” Due to the
modern electronic communication tech-
nology 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 perfor-
mance through the teaching of sys-
tematic approaches, This training
should be provided in the medical cur-
riculum. “It is this capacity to formu-
late and pursue a problem that distin-
guishes a good clinician, and a teacher
of basic science has failed the physi-
cian 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 as-
essment 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 communi-
pication of patient data to remote loca-
tions.

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, hy-
opotheses are subsequently tested by
various examinations and, finally,
where the examination results are in-
tegrated and therapeutic action fol-
 lows. 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 mul-
tiple patient problems and describing
the problem-solving process. It has not
taken very long for many care provid-
ers to become convinced that the prob-
lem-oriented medical record (POMR)
system is the most ideal vehicle to
describe the care process [2]. Dr.
Weed believed that when the proce-
dure outlined in his leading article was
to be implemented, a manual method
would not work, but an automatic-based
approach would be mandatory. He
wrote: “I set forth my hopes that develop-
ment 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 compo-
nent of a larger system, allowing
expert-derived systems of rules and pro-
cedures to guide the physician in pa-

tient care. To the disappointment of
many of his colleagues, integrated in-
formation 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 de-
velop computer-based patient record
(CPR) systems and put them into op-
eration. In most countries, the early
systems conflicted with the conven-
tional practice of data entry by physi-
cians: short notes are taken during
consultation and narrative writing is
completed later on. In addition, physi-
cians 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 coun-
tries. In most other countries physi-
cians seldom enter patient data in a
computer. However, interaction by
physicians themselves is a must to
obtain reliable patient data documen-
tation 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 deci-
sion-support systems. In principle, it is

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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.

References


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