An Integrated Medical Record and Data System for Primary Care

Part 6: A Decade of Problem-Oriented Medical Records: A Reassessment

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The Problem-Oriented Record (POR) has had a profound effect upon the medical community. Since its introduction not quite ten years ago, POR has gained remarkable acceptance. A short review of the relatively brief history of POR is given and various facets of its use are outlined as guidelines for more critical reappraisal of its merits. The fact, however, that POR is currently taught in a majority of medical schools and used in ever increasing numbers of hospitals is highly indicative of eventual conversion of all medical records to POR format.

In 1964, Dr. Lawrence Weed published an article expressing dissatisfaction with existing medical records and listed five major areas of suggested improvement.[1] It was not until 1968[2,3] and 1969,[4] however, that he fully elaborated and described his proposed new approach to medical record keeping. The new medical record system was called the problem-oriented medical record (POMR) or, more simply, the problem-oriented record (POR) to distinguish it from traditional records, now called source-oriented records (SOR). The designation SOR relates to the grouping of record entries by source, such as nurses' notes, physicians' notes, or laboratory reports.

The POR gained rapid recognition and, by five years following its introduction, over 250 articles, books, and letters had been published which dealt directly with the new technique.[5] Most communications described the record-keeping method and gave instructions for its implementation or for conversion from SOR to POR. Use of POR was encouraged, not only by practicing physicians but by pharmacists,[6,7] nurses,[8,9,10] and nutritionists[11] as well. In general, reports ranged from laudatory to enthusiastic with only two notable dissents.[12,13]

By 1972, a survey of medical schools revealed that 82 percent were already teaching POR.[14] Large numbers of residency programs adopted it,[15] and the Veterans Administration mandated POR use in its hospitals.[16] However, scientific validation of an advantage for POR was lacking. Only two studies compared POR with SOR,[16,17] and neither study demonstrated that POR was superior to SOR. Yet, despite the paucity of evidence favoring the new technique, there was widespread endorsement of its use. POR's acceptance by the academic community without prior, scientifically derived evidence demonstrating its superiority to SOR is extraordinary. Now, almost a decade following the emergence of POR, a reassessment of its relative utility appears warranted.

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Components of POR

There are four basic components, which will be described and discussed separately. Questions raised will be germaine to the issue of reappraisal of the system in its entirety.

1. Defined Data Base

The initial POR proposal suggested that six items be included in the data base. Briefly, these items are (a) present complaint, (b) patient profile (primarily social), (c) current illness(es), (d) medical history and systems review, (e) physical examination, and (f) laboratory findings.

Since then, the extent to which these items may most effectively be elaborated has been subject to considerable debate. Notation of all possible information on every patient is obviously impossible; rather, the problem is to define a specific data base including age, sex, and race, appropriate within the limits of time and

cost effectiveness. One suggestion is that SORs be reviewed for information concerning prevalent abnormalities in the population served and that the parameters thus determined form the foundation of an appropriately defined data base.[18] These authors evolved a 17-page (8 x 11 inch) document upon which to collect a data base for each hospitalized patient. One may question if 17 pages of initial information need be collected for each admission. Does this voluminous data base enhance quality of care or affect ultimate outcome? Will the additional pages encumber retrieval of more pertinent information?

Since inclusion of the patient profile and the requirement of a defined data base are unique to POR, answers to these and other such questions concerning specific data base items need clarification before objective reappraisal of POR can be accomplished.

Although background information may be obtained from existing SORs or large-scale studies such as the National Ambulatory Medical Care Survey,[19] the task of data base definition remains formidable.

2. Complete Problem List

A complete problem list is formulated for each patient from the data base. Weed defines a problem as "... anything that requires management or diagnostic workup; this includes social and demographic problems."* A problem is classified at the level of the provider's understanding at that time. For example, abdominal pain is an appropriate designation when duodenal ulcer may be suspected but is not yet proven. Following endoscopy and visualization of an ulcer, the entry, "abdominal pain," is resolved and duodenal ulcer is added to the problem list as illustrated in Figure 1. Suspected diagnoses should not be entered on the problem list. Instead, the symptom, sign, or abnormal laboratory finding is identified as the problem until it is replaced by a more specific diagnosis or is resolved without further insight into its etiology.

The problem list is usually displayed in front of the patient's chart. Problems are numbered, dated, and require frequent update. The problem numbers (in our practice we use the International Classification of Health Problems for Primary Care[20] code numbers) and dates act as a reference to entries within the body of the patient record.

Traditional (SOR) records also contain diagnostic formulations following analysis of initial or subsequent data; however, tentative or possible diagnoses are listed in addition to those already proven. Social or demographic problems are rarely listed. As new diagnoses are added they remain interspersed throughout the patient's chart.

The problem list is a major advantage of POR in that an organized sheet(s) contains not only all past and present problems but dates of resolution (if any) as well. By inclusion of a medication record sheet similar to the cumulative list it is possible to establish immediate linkage of medication with diagnosis.

3. Initial Plans

Initial plans are developed for each problem. Included are further diagnostic studies, therapy, and patient education. The format of SOR, on the other hand, is a list of diagnostic impressions followed by a list of plans. The plans, however, do not relate directly to each diagnosis as is required in POR. Except for such chronic problems as diabetes mellitus, provision for patient instruction is rarely recorded in the SOR plan section.

4. Progress Notes

Numbered, dated, and structured progress notes are part of the POR system. The SOR progress notes are unstructured, often have disparate bits of information, or contain such generalities as "generally better." Each POR problem within the progress note is identified by the same number with which it is designated on the problem list and contains four parts:

a. *Subjective* – includes information about symptoms, response, or reaction to therapy, and new developments.

b. *Objective* – includes physical, laboratory, and x-ray findings.

c. *Assessment* – an evaluation of progress, refinement of diagnostic formulation, and remarks on how the problem relates to others.

d. *Plans* – contains additional indicated diagnostic studies, therapy, and patient education.

For complex cases, flow sheets are used to record frequently monitored parameters.

Computerization

A computerized problem-oriented medical information system (PROMIS) is currently being developed by Weed's group under a grant from the National Center for Health Services Research.[21] The system will be interactive and will use a video screen computer terminal (CRT) with a touch-activated series of displays. Patient data will be stored on rotating discs. Preliminary studies indicate that 99 percent of data can be placed in storage by touching branched logic displays on the CRT. Additional information can be entered by typing on an attached keyboard. Confidentiality is maintained by special passwords which allow only authorized persons access to the system. In its present stage of development, the system has the capacity to accommodate between 30 and 200 CRT terminals. Although its application will initially be in the hospital milieu, extension to the ambulatory setting is anticipated. The technical problems that will derive from the larger numbers of patients in ambulatory practice are not thought to be insurmountable. Costs of computerization of outpatients' records have not, as yet, been estimated.

Total cost for inpatients has been quoted at $5 per bed day. Developers of the system believe that cost effectiveness will be established by reducing unnecessary laboratory and radiologic tests, abbreviated hospital confinement, and decreased incidence of adverse drug reactions. This thesis needs confirmation.

*See Reference 18, p 23

CUMULATIVE PROBLEM LIST

SHELDON (Last Name) JAMES (Given Name) 7 11 31 (Date of Birth) 028 (CT)

DATE	DIAGNOSTIC CODE	PROBLEM TITLE	DATE RESOLVED	INACTIVE
			1937	L. INGUINAL HERNIA
			1946	APPENDECTOMY
9/7/76	277 -	OBESITY		
9/7/76	401 -	HYPERTENSION		
10/21/76	3049	TOBACCO ABUSE		
10/21/76	791 -	HEADACHE →	11/6/77	
4/6/77	7855	ABDOMINAL PAIN (DUODENAL ULCER) →	5/3/77	
5/3/77	532 -	DUODENAL ULCER		
5/27/77	V84 -	MARITAL PROBLEM		

Figure 1. Cumulative Problem List

Acceptance of POR

As mentioned earlier, POR has been enthusiastically received in most medical quarters. Sixty-seven percent of the medical schools teaching POR in the United States and Canada introduce instruction in the first or second year.[14] Since over 80 percent of American and 50 percent of Canadian medical schools are incorporating POR into their curriculum, a vast number of tomorrow's physicians will be POR rather than SOR-oriented. Although approximately one third of schools reported some resistance to POR by faculty or attending physicians, student attitudes toward POR were found to be, for the most part, favorable.

Hospitals have been somewhat slower than medical schools to adopt POR. Delayed acceptance by institutions traditionally SOR-oriented is not unexpected; it is far simpler to instruct students in a new mode of record-keeping than to convert from a long established system. Despite the problems involved in conversion, Veterans Administration Hospitals incorporated POR approximately five years ago, and a 1973 American Hospital Association (AHA) Survey revealed that one or more departments in 15 percent of participating hospitals were entirely problem oriented, and that partial problem orientation had occurred in 26 percent of hospitals queried. Publication of the AHA Survey was deferred because the data reflected such a range of usage of POR. Some departments used POR exclusively, some used a partial modification of the Weed system, and the numbers of departments using POR in any way varied from hospital to hospital. Thus, the inability to precisely define complete or partial POR usage precludes accurate evaluation of the extent of its hospital acceptance.

A 1974 report indicated that 36 percent of psychiatric training programs surveyed used POR.[15] Although similar data are not available for family medicine training programs, the author's experience indicates wide use of POR within those settings. Extent of acceptance and use of POR in ambulatory care sites has not been studied.

Advantages and Disadvantages of POR

Weed and others have detailed sev-

eral advantages of POR when compared to SOR. The merits of POR are listed as: (1) a more logical approach to patient care; (2) a more efficient medical record; (3) enhanced communication between health-care providers of differing disciplines; (4) increased capacity for continuing education and audit; (5) improved capability to perform clinical research; (6) augmented teaching potential; and (7) improved quality of care.

Even physicians with reservations about blanket acceptance of POR cite some advantages of the system. However, they feel that benefits accrued from use of POR are less a result of improved record structure than they are an outgrowth of increased enthusiasm and superior record supervision on the part of POR proponents. They further regard as illusory claims that implementation of POR directly contributes to increased continuity of care, integration of personnel, capacity for audit, and quality of care. Improvements in these areas are, in their opinion, more related to recently increased emphasis on quality of care assessment and changes in the health-care delivery system.

Both Goldfinger[12] and Feinstein[13] listed what they considered to be the drawbacks of POR. Included are: overemphasis on style, problem consideration out of context of the total patient, redundant recording of data relevant to several patient problems, time devoted to recording data at the expense of time directly involved with patient care, and the lack of a standard taxonomy of patient problems.

One of the most profound effects of POR has been its impact on disease classification. The precise relationship of problem to disease has yet to be defined. Are "problem" and "disease" identical concepts? Is disease a more formal statement or perhaps a higher resolution of a problem? The new classification, International Classification of Health Problems for Primary Care (ICHPPC), does not directly address this issue although there is certainly an implied assumption that the two concepts are identical. The fact that ICHPPC is based upon the International Classification of Diseases (ICD-8)[22] and that the two are compatible further confirms that problem and disease are similar generic concepts. The ICHPPC accommodation to the concept of "problem" is accomplished by an expansion of section 16 of the classification (physical signs, symptoms, and ill-defined conditions not otherwise specified or not yet diagnosed), and by the addition of a section on social problems. The impact of POR will also be reflected by similar changes scheduled for the 9th Revision of the ICD and its modification, ICD-9-CM, both scheduled for publication in 1978.

Validation

Unfortunately, there are few evaluative studies of POR. Probably the best known was published in 1976 comparing the identification, therapy, diagnostic description, and care of anemia as recorded by SOR and POR in the same hospital.[16] No appreciable difference was observed in the process of care between the SOR group, (one year prior to institution of POR) and the POR group (four months following initiation of POR).

The criticism that there was inadequate implementation of POR at the time of study is probably well founded. Critics state that there was no defined data base at four months following institution of POR, and that comparative studies require full application of POR principles of supervision and control.[23] An additional problem in study design is that two separate time periods were compared.

A second study compared the time required to read and audit (answer ten factual questions on content) comparable records written in both POR and SOR formats.[17] No differences were observed either in time to complete or accuracy of the audits. One problem with this study is that audited records were derived from actual records and may not have been completely representative of these records.

Conclusion

It appears that the question is no longer if POR will be implemented, but rather when. The new generation of physicians who have had training only with POR will eventually cause SOR to disappear. The opportunities for critical evaluation of the new method within hospitals or other health-care delivery sites is rapidly disappearing.

POR remains, however, an attractive and logical schema for recording medical data. In the decade since its introduction it has received widespread application particularly within academic centers. Although proof of its superiority over traditional records is lacking, the challenge from Weed has contributed to a critical re-examination not only of medical records but of the whole medical system including education, quality of care, and efficiency of health-care delivery. This re-examination cannot help but have a salutory effect on the medical care system.

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