Non-Physician Development of Problem Lists from Office Records

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It has been argued that conversion of office records to the problem-oriented medical record entails a prohibitive cost in money and physician time. This study reports an evaluation of the cost of preparing problem lists from existing ambulatory patient records by non-physician personnel. The problem lists constructed by non-physician personnel were judged by physicians to be accurate, and the cost was much less than that required when physicians reviewed charts and prepared problem lists themselves. The method described here is an accurate and cost-effective way to begin conversion of outpatient records to P.O.M.R.

Conversion of existing records to a problem-oriented format is frequently the obstacle which prevents practicing physicians from adopting the problem-oriented medical record. Hurst has described the problems encountered, suggested some of the "rules," and stressed the need for the physician to formulate the problem list.[1] Froom has also demonstrated an approach to record conversion by the busy practitioner which only required approximately 6.4 minutes of physician time per chart.[2] In a typical primary care practice, use of this approach would require approximately six weeks of full-time work or, as Froom indicates, about two and one half years if done during "spare time."[3] Because many physicians have indicated that they lack this time, we investigated an alternate approach involving a major role for allied health professionals in the conversion to the P.O.M.R. This paper will report our experience in terms of accuracy, cost, and time required.

Setting for Study

Two family physicians have practiced in the community for six and 12 years respectively and serve approximately 12,000 patients in rural Pennsylvania. The main office, with 8,500 patients, is staffed by a full-time physician expander,[4] four registered nurses, one LPN, an office manager, and six clerical assistants. A satellite office, located six miles away, had been acquired from a retired practitioner one and a half years prior to the study. It is staffed by a full-time physician expander, one registered nurse, and two clerical personnel. It serves approximately 3,500 patients. The main office had 13,305 patient visits in 1973, and the satellite office had 5,775.

The charts in both offices were kept in the traditional chronological form, with separate sheets for laboratory test results, consultation reports, hospital discharge summaries, and immunization reports. The medical record needs of the practice were complex. The satellite office was operated only part time. When it was closed, patients from that office could go to the main office for acute care, but in such cases physicians and physician expanders were obliged to work without a record. Approximately 38 patients whose records were at the satellite location came to the main office for care each week. The records of the retired physician were difficult for the staff to use because of their illegibility and lack of consistent organization. In order to have records available when satellite office patients came to the main office, a duplicate set of up-to-date records would have been required at the main office.

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Methods

For six months prior to the study, the physicians divided their progress notes into categories (S.O.A.P.) in anticipation of the change to P.O.M.R.'s. The physicians elected to change all records to a problem-oriented system patterned after the forms used by the Rochester Family Practice Clinic, and the system developed by Bjorn and Cross in Hampden Highlands, Maine. The problem list (including medications) of each patient was to be available in each office so that the person delivering care always had some knowledge of the patient's history. Because of time constraints, these physicians decided to delegate the task of forming problem lists for existing patient records to a non-physician "problem extractor."

The problem extractor had worked as medical secretary for the retired physician and was very interested in revising the record system. She was also familiar with the patients of that practice. The practice negotiated a contract with the Western Pennsylvania Regional Medical Program, whereby part of the salary of the problem extractor was paid in consideration of performance of an evaluation designed to appraise the quality, cost, and usefulness of the problem lists developed.

The physicians developed and tested a form for the problem list during the initial months of the project and began organizing their notes in problem-oriented form. On three occasions educational sessions were conducted by RMP consultants to acquaint the staff with the system. Working initially under the supervision of the physicians and physician expanders, the problem extractor devoted approximately one-third of her time for three months before the study to learning how to develop problem lists. The study protocol called for the physicians or one of their assistants to check every problem list prepared. All personnel maintained records of the time devoted to the project.

The utility of the cross filing of problem lists and the extent to which this assisted the providers in coordinating care in the two offices is being evaluated and will be discussed in a later report.

Results

The problem extractor spent 85

Table 1. Accuracy of Problem lists

	Number Checked	Number of Errors Found	Percent of Records Found Correct
Registered Nurse	178	6	97
Physician Expander # 1	855	63	93
Physician Expander # 2	1,493	60	96
Physician # 1	275	16	94
Physician # 2	31	1	97
Unknown	35	0	100
TOTAL	2,867	149	94.4

percent of her time (40 hours per week during seven months) on the project and prepared 2,867 problem lists. She asked for a physician or a physician expander to help on four problem lists during the first month of the study and on ten problem lists during the second month. She did not record consultations during the last five months of the study.

Eighty-two percent of the problem lists were checked by the two physician expanders, 10.5 percent by the two physicians, and five percent by a registered nurse. The checkers recorded the amount of time they spent examining each list, and noted whether the list was adequate or not specific enough and whether it included an "over-diagnosis," a medication or problem omission, or other error. The incidence of errors identified was quite similar for each checker (see Table 1).

The physicians, nurses, and physician expanders approved a total of 2,468 or 94.3 percent of the lists without encountering any errors. A total of 149 or 5.6 percent had an error. Seventy-six or 2.9 percent of the lists had a problem omitted. Specificity was the error on 15 charts (0.6 percent) with only five lists judged as too specific and ten as not specific enough. Fifty-three (two percent) of the lists had a medication missing, and on four (0.2 percent) an important element of the history was omitted. One other miscellaneous error was noted.

A comparison of the extractor's error rate for each month of the study shows an increased number of problem omissions. During the first five months of the study, the average percent of lists with a specific problem omitted was 1.5 percent; range for the months was from 1.2 percent to 2.3 percent. During the sixth month, the percent of records with a problem omitted was eight percent, and during the seventh month it increased to 16 percent. The increase in errors occurred at the time the extractor began to work with records of patients from the main office. She was not familiar with these patients.

The average time to develop a list and the cost for each list as a percent of the problem extractor's salary is shown in Table 2. This figure includes the time and cost to type each problem list after it was checked. The increase in time in later months is concurrent with starting on records unfamiliar to the extractor. The time and cost required for checking and correcting the problem lists is shown in Table 3. Adding the cost of preparation, typing and checking indicates an average total cost of as low as $1.36 if an experienced nurse practitioner is the checker. If the physician serves as checker, the cost is $1.59 per record.

Table 2. Time and Cost of Developing Problem Lists

	Minutes Per List	Cost Per List
Months 1-3	19.59	$1.01
Months 4-6*	24.21	$1.41
Month 7	22.4	$1.30
7 month-AVERAGE	21.7	$1.24

*Change in hourly rate at this time.

Table 3. Problem List Checker's Average Time and Cost Per List (Based on Employees' Actual Salaries)

	Total Time Spent Checking Lists	Average Time Per List Checked	Cost Per Record Checked
Nurse	5.3 hrs	1.8 min	13¢
Physician Expanders	63.4 hrs	1.6 min	12¢
Physicians	3.6 hrs	.7 min	35¢
Total	72.3 hrs		
AVERAGE	–	1.5 min	14.6¢

Discussion

Since Bjorn and Cross presented the P.O.M.R. as an essential component of an organized primary care setting, its acceptance has been mixed. Academic centers have promoted, and in some cases, adopted P.O.M.R. Some practitioners, notably those in family medicine, are trained in and use the P.O.M.R. exclusively. Some practicing physicians have converted, but the great majority of them remain "source oriented."

Numerous explanations are offered. One of the more common is that the cost in physician time and dollars is prohibitive. However, our data suggest that the creation of the problem list, while admittedly only a part of the P.O.M.R., can be accomplished at a reasonable cost and with only a small time contribution by the physician. Results are much better when the non-physician extractor is acquainted with the patients. When the individual was working "cold" with records, the error rate and cost both increased significantly.

Many will contend that our approach is really inappropriate and does not represent a true "problem list."[1] These same individuals have commented that there is no "right" or "wrong" problem list. It also seems apparent that a problem list is never "complete" and always must be subject to review, updating, and revision in view of newly acquired information.

This study demonstrates that problem lists can be accurately developed for existing outpatient records at a reasonable cost by non-physician personnel. This is most effective if the patients are known by the extractor, who serves as the basis for implementing the P.O.M.R. in a busy family practice.

References

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