Adding Information and Intelligence to a Family Practice Data System

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A recent and quite conspicuous trend in family medicine is the establishment of data systems, ranging in comprehensiveness from manual instruments in a solo office setting to a proposed regional primary care registry.[1] In this communication a "data system" is an organized collection of a minimum set of data on family practice patients, using automated resources for storage and production of reports. Systems at the University of Rochester,[2] the University of Colorado,[3] and the Madigan Army Medical Center, Tacoma, Washington,[4] are examples.

Many articles concerning data systems use distinct terms rather loosely. The following definitions are thus essential:

Data–known entities, measurements, observations, "facts"

Information—transformation of data so that previously undisclosed knowledge results

Intelligence—information communicated and understood within prevailing beliefs, priorities, and values[5]

The clear responsibility of faculty, administrators, and researchers working with data systems, then, is to convert uniformly collected data to relevant information and communicate this so that data systems users can gain intelligence about health and health affairs.[5]

This paper describes approaches to add both information and intelligence to such systems: these will be structured within the familiar patient care, research, and education triad. Methods outlined below are presently being applied at the Medical College of Virginia (MCV) with the Virginia Family Practice Data System, a state-wide, continuous morbidity recording network discussed more completely in earlier papers.[6,7]

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Family Practice Data Systems: Current Status

A hierarchy of users can be identified, listed in order of understanding and actual application of data systems:

1. Faculty/researchers at health sciences institutions
2. Faculty and residents at teaching practices
3. Community family physicians

Reasons for these differences are intrinsic problems of most systems. For instance, the four essential tasks of administration—planning, facilitating, organizing, and controlling[8]—break down at various points in the network. Failure to communicate among all levels is an equally substantial issue. Finally, the main problem may be inability to recognize that the most important element of any data system is the *people* involved.

The end results are unfortunate. "Academic isolation" often occurs, a factor in the problem of attracting physicians to rural, underserved areas. Negative attitudes are formed toward data systems in general and research in particular. Misuse, abuse, underuse, and eventual nonuse of data systems are the ultimate outcomes.

Strategies

Frequency and format of routine reports should be instructive, responsive to user needs, and should concisely cover the family practice experience. A delineation of problems recorded by disease category and an overall frequency distribution, using the International Classification of Health Problems in Primary Care (ICHPPC),[9] comprise one report. An age/sex cross-tabulation of patients and visits is prepared as well as a listing of workload rates (visits/patient) for each physician compared with medians for residents at the practice and system levels. A final report contains

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a summary of patient characteristics, including percent of patients less than 10 years of age, percent greater than 54 years, and percent female.

Reports of this variety find many clinical uses. Physicians can immediately ascertain their most commonly coded problems as well as those which are not being recorded: information of the latter type may indicate areas in which the family physician needs additional expertise (also germane to continuing medical education). Age and sex characteristics of the patient population can be used in a similar manner, identifying cohorts of patients which appear to be under- or overrepresented. These reports can also be studied over time to reveal any changes in patient care.

Special requests are an important segment of the report-production process of data systems. A physician may want to review the immunization status of his or her patients under five years of age or compare the proportion of diabetic patients in the practice with that reported in recent publications. A more sophisticated report showing the number of office visits in the past year by patients with psychosocial problems contrasted to the visits/patient rate for the practice could be helpful in planning the future management of these patients.

Maintaining open communication channels among all persons working with the data system is critical. If feasible, regular monthly meetings attended by resident and faculty representatives of teaching practices, community physicians, and the team responsible for system operation are quite helpful. These provide an excellent forum for refinement of faculty and resident research. Related to this is the availability of experienced and interested professionals to explain the data system to users and assist in research projects. Four MCV faculty and two staff members are currently "on call" to all recorders.

The importance of *direct* dialogue between systems managers and users cannot be overstated. Positive attitudes regarding data systems in general may serve as "inducements" to research: several residents and faculty participating in the Virginia Family Practice Data System have undertaken research projects and have presented results at national and state meetings.

Resources of the medical library represent a significant enhancement to a data system. At the Medical College of Virginia, a reference librarian "specializing" in family practice aids physicians in MEDLINE literature searches (in conjunction with the National Library of Medicine's MEDLARS network). Also, a monthly listing of articles directly relevant to family practice is sent to all community physicians along with a regular newsletter; this has tremendous potential in continuing medical education.

The approaches described above should improve the quality of education in programs with data systems. Pertinent reports stimulate interest in both individual performance and comparisons with peers. For example, after studying a frequency distribution of problems recorded during the last four-month period, a resident may realize a lack of clinical exposure to a particular problem and schedule future electives to gain this experience. With reference to the MCV reports, a few female residents recently became concerned about the higher proportion of female patients they were seeing in contrast to male residents. Also, a comparison of problems coded and stored "in the computer" with those listed in the patient's chart may lead to more comprehensive recording in both areas.

Turning to faculty responses, informative reports can aid curriculum development, improve evaluation of residents, and facilitate interprogram comparisons. The concise Practice Summary Report, comparatively presenting "hard data" in the form of workload rates and patient characteristics for each resident, has proved extremely useful.

Summary

A critical test of any data system is its relevance; more simply, reports must present what users want. At MCV, the current system is a direct response to expressed user demands (corroborated by results of a survey of British general practitioners[10]). That is, residents and physicians are interested in workload rates, such as visits/patient, and a delineation of diagnoses by frequency. Applications of these reports are organizational, comparative, and educational.

The ultimate goal of data systems in family practice is the production of intelligence about health and health affairs: clearly, this is valuable in patient care, research, and education. Methods outlined above will contribute to achieving this end by adding information *and* intelligence to data systems.