Assessment of Quality of Care by Profiles of Physicians' Morbidity Data

Jack Froom, MD Rochester, New York

A process model for the assessment of quality of care in the ambulatory setting by diagnostic profiles of participating physicians is presented. This model allows comparison of the individual physician's morbidity profile with those of his peers in family practice and other primary care disciplines. Deviations from peer group profiles set the stage for education focused on accepted criteria for diagnosis and management of specific clinical problems. Initial experience indicates that physicians will participate in the project and can benefit from the experience. It is anticipated that further experience with the method described will demonstrate that it is a valid technique to evaluate quality of care and that changes in physician behavior can be demonstrated following educational experiences based on deviant morbidity profiles.

In recent years, there has been increasing interest in peer review and the assessment of quality of care in the United States. In 1972, the United States Congress enacted Public Law 92-603 which mandated the creation of physician groups called Professional Standard Review Organizations (PSRO). The function of these organizations is to provide peer review concerning the suitability and quality of care rendered to patients insured under Medicare, Medicaid, and Title V of the Social Security Amendments. Although the law relates primarily to hospitalized patients, it is likely that ambulatory care will come under scrutiny in the near future.

Donabedian¹ has described three parameters by which quality of care may be assessed:

Structure – which includes a measurement of health facilities available;
Process – which includes manage-

From the Family Medicine Group, University of Rochester-Highland Hospital, Rochester, New York. This paper was presented at the Sixth World Conference on General Practice-Family Medicine held by the World Organization of National Colleges, Academics and Academic Associations of General Practitioners-Family Physicians (WONCA) in Mexico City, Mexico, November 6, 1975. Requests for reprints should be addressed to Dr. Jack Froom, Director of Research, the Family Medicine Group, University of Rochester-Highland Hospital, 335 Mt. Vernon Avenue, Rochester, NY 14620. ment of health and illness; and 3. Outcome – which includes what eventually happens to the patient.

Although evaluations of outcome are the most desirable, they are the most difficult to perform. Outcome measurements often require extended periods of observation. In addition, there is a lack of precise information about the natural history of diseases. This makes it difficult to relate medical interventions to health outcomes.

There have been a number of attempts to assess quality of care by process management. Assessment by chart review in offices of internists led Kroeger and coworkers to conclude that only 67 percent of physicians kept records which were adequate for review purposes based on legibility and completeness.² Other measurements of the medical record^{3,4} show similar problems of incomplete data recording. Some groups have defined specific criteria for the diagnosis and management of a group of health conditions^{3,5} and suggest that quality assessment may be made by comparison of actual performance with these selected criteria. The use of preselected specific criteria may be a poor method because the selected criteria tend to become unduly rigid.

This paper presents an attempt to assess quality of care in the ambulatory setting. *Process* is measured rather than outcome, although the potential

	Table 1. Age-Sex	Analysis of Patient I	Population	
Age in Years	All Family Doctors		Dr. S.	
	No.	% of Total	No.	% of Total
Males				
0-4	2,957	4.9	19	0.4
5-9	3,533	5.9	63	1.3
10-14	3,341	5.6	139	3.0
15-24	5,244	8.8	617	13.4
25-34	3,810	6.4	338	7.3
35-44	2,777	4.6	188	4.1
45-54	2,356	3.9	354	7.7
55-64	1,790	3.0	306	6.7
65+	1,629	2.7	192	4.2
Total	27,437	46.2	2,216	48.1
Females				
0-4	2.824	4.7	17	0.4
5-9	3,311	5.6	49	1.1
10-14	2,981	5.0	152	3.3
15-24	6,789	11.4	650	14.1
25-34	5,445	9.2	314	6.8
35-44	3,433	5.8	223	4.8
45-54	2,928	4.9	441	9.6
55-64	1,986	3.3	299	6.5
65+	2,285	3.8	243	5.3
Total	31,982	53.8	2,388	51.9
Total	59,419		4,604	

for outcome measurement is created. This study was undertaken with acceptance of the following assumptions:

1. Process measurements can produce evidence of quality of care.

2. The diagnoses that a physician makes are an important parameter of process measurement.

3. Individual physicians' performance in diagnoses should be compared to that of peer groups rather than against idealized standards.

4. Participation should be voluntary. 5. Feedback to participating physicians should have no adverse consequences, such as loss of income or prestige. Reviews of insurance claims often carry such penalties.

The project had the following goals:

 To define local standards of medical care within three groups of primary care physicians, (a) family physicians,
(b) internists, and (c) pediatricians, by analysis of morbidity data.

2. To identify deviations from the standards among participating physicians by comparison of their morbidity profiles with those of their peer groups.

3. To educate physicians about currently accepted diagnostic criteria and therapy for those conditions identified in which they were deviant from their peer groups.

4. To document changes in physician behavior by continuous monitoring of morbidity data and comparison with data generated prior to the educational experience.

Table	2. Comparative Morbidity Report fo	or Common Problems by	Category
RCGP	Description	Frequency of Diagnoses	Cases/1.00
	Eamily Physi	cians	Cases/1,00
	(Practice populatio	on 63,933)	
025	Warts, viral	674	10.5
005	Intestinal infectious	447	6.9
021	Dermatophytosis	286	4.4
017	Infectious mononucleosis	165	2.6
027	Other virus infection	163	2.5
	Doctor N.L. Practice No. 7 (Practice population)	' Family Physician on 3,275)	
021	Dermatophytosis	38	11.6
025	Warts, viral	36	11.0
023	Epidemic winter vomiting	12	3.7
006	Scarlet fever	11	3.4
017	Infectious mononucleosis	11	3.4
	Total Popula (Practice populatio	tion n 89 353)	
005	Intentingl infectious	1 250	14.0
005	Mosto visol	1,250	14.0
025	Other virus infection	1,023	11.5
021	Dermetenbutesis	032	7.1
031	Pyrexia without rash	353	4.2
	Podiatricia		
	(Practice populatio	in 13,380)	
005	Intestinal infectious	747	55.8
027	Other virus infection	457	34.2
025	Warts, viral	343	25.6
015	Mumps	202	15.1
031	Pyrexia without rash	201	15.0
	Internists (Practice populatio	n 12,040)	
005	Intestinal infectious	56	47
016	Infectious hepatitis	39	3.2
014	Herpes zoster	33	2.7
017	Infectious mononucleosis	19	1.6
027	Other virus infection	12	1.0

This is a preliminary report which describes the method and some of the early results. All of the goals described above have not yet been implemented

Method

Enrollment of participating physicians began in January 1972. Currently there are 56 family physicians and general practitioners (including family medicine residents) in 11 prac. tices recording data on 60,000 patients. In addition, there are ten internists in seven practices with 25,000 patients and five pediatricians in two practices with 15,000 patients. The diagnostic and demographic data are recorded both manually and on computer tape allowing retrieval of diagnostic data by either method Each participating practice has the following systems installed:

1. Age/Sex Register – The Age/Sex Register has been described elsewhere,⁶ but briefly it is a file of 3×5 cards which are color-coded for sex and contain the following information: name, age, date of birth, area of residence by census tract, marital status, and physician. Cards are filed by color and by date of birth. Active patients are defined as those patients who have had a physician encounter within the preceding two years.

2. A Classification of Diseases - An ideal classification of health problems for use in primary care has not been available and the hospital classifications currently in use have not been found suitable for recording health problems in the ambulatory setting.⁷ In 1972, the best available classification appeared to be the Metcalfe modification of the Royal College of General Practitioners Classification of Diseases. This classification was adopted and used in all practices. In November 1974, the International Classification of Health Problems for Primary Care (ICHPPC) was approved by the World Organization of National Colleges and Academies of Family Medicine-General Practice. This classification had been tested for one year in multiple sites in nine countries and will be introduced into our participating practices at a later date.

3. The Diagnostic Index – E-Book – The Diagnostic Index – E-Book was devised by Eimerl and also has been described elsewhere.^{8,9} This index is a manual method for recording morbidity data by diagnostic groupings.

Table	3. Comparative Morbidity	Report for Depression		
Category 5. Mental Illness		Diagnosis 134. Depression		
Physicians	Patient Population	No. Cases this Diagnosis	Cases/1,000	
All physicians	89,353	1,762	19.7	
Family physicians	63,933	1,311	20.1	
Internists	12,040	449	37.3	
Pediatricians	13,380	2	0	
Family Physicians				
10	2,804	191	68.1	
5.U.	547	13	23.7	
GG	501	11	22.0	
T.G.	3,420	67	19.7	
D.N.	573	11	19.2	
17.	2,359	39	16.5	
N.L.	3,032	44	14.5	
TK.	3,340	46	13.8	
T.Ke.	3,739	42	11.2	
G.L.	1,684	14	8.3	
J.A.	790	6	7.6	
L.S.	4,624	17	3.6	
R.P.	1,422	5	3.5	
V.G.	2,776	7	2.5	
J.W.	3,029	1	0.3	

Diagnostic data are also recorded on daily work sheets, keypunched, and stored on magnetic tape. The diagnostic data are linked to the patient's master file already on computer tape.

Periodic computer printouts which describe individual physicians' morbidity experience compared with that of their peer groups are distributed to participating physicians. These physicians are also encouraged to use data recorded in their manual systems for self-audit and for outreach to their patient population.¹⁰

Results

It was first necessary to analyze the age-sex composition of each practice and to compare these figures with the total of the peer group practices. Table 1 compares the age-sex distribution of Dr. S.' practice (a family physician) with all family medicine patients in the study. It illustrates that corrections for frequency of those health problems that are age related will be necessary because Dr. S.' patient population is somewhat older than that of his peer group.

Table 2 illustrates the type of report that was periodically sent to all participating physicians. This table compares the frequency of diagnoses of the most common communicable disease problems diagnosed by that physician (N.L.) with the peer group (family physicians), with the total population, and with the other primary care specialties. Similar tables are prepared for each of the 22 sections of the modified RCGP classification used in the study. These reports permit each physician to compare his practice with those of his peers and with other specialty groups.

Another goal was to identify those physicians whose diagnostic frequencies deviated most from those of the peer group. We were more interested in examining the most frequent health problems rather than the rare ones. For example, Table 3 illustrates the marked variation in the frequency of the diagnosis of depression among some of the family physicians and family medicine residents in our group.

Discussion

Our initial experience demonstrates that many physicians will participate in a morbidity recording project for an extended period of time. Some of our group have been recording diagnostic data for almost three years. There has been only one physician who dropped out of this study for reasons other than moving from the area. The demonstration of diagnostic frequency deviance from the peer group has, in general, been of interest to the physicians rather than threatening to them. Visits to the offices of the physicians for audit of charts of cohorts of those patients with diagnoses in which these physicians had deviant frequencies is planned as the next step. Continued monitoring of diagnostic frequencies will demonstrate whether this educational experience has had any effect on the physicians' subsequent diagnostic behavior.

We believe that some of the recent antagonism demonstrated by physicians to peer review and to the assessment of quality of care can be reduced if physicians are compared with their peer group's performance rather than to a set of arbitrarily defined standards. Assessment of quality of care will have the greatest chance of improving care if physicians voluntarily participate in the project and if they can be educated about their actual performance with their own patient populations.

References

1. Donabedian A: Evaluating the quality of medical care. Milbank Memorial Fund Quarterly 44(pt 2):166-206, 1966

2. Kroeger HH, Altman I, Clark DA, et al: The office practice of internists: 1. The feasibility of evaluating quality of care. JAMA 193:371-376, 1965 3. Brook RH: Quality of Care Assessment. A Comparison of Five Methods of

3. Brook RH: Quality of Care Assessment. A Comparison of Five Methods of Peer Review. Rockville, Maryland, National Center for Health Services Research and Development. DHEW Pub HRA-74-3100, 1973

4. Fitzpatrick TB, Riedel DC, and Payne BC: Character and effectiveness of hospital use. In McNervey WJ (ed): Hospital and Medical Economics. Chicago, Chicago Hospital Research and Educational Trust, 1962, pp 361-592

5. Taylor FC, Payne BC, Mann FC, et al: The Use of Hospital Utilization Review Manual. Criteria and Record Abstracts for Medical Review in a Hospital Committee Setting. Ann Arbor, Michigan, Center for Research in Utilization of Scientific Knowledge, Institute for Social Research, University of Michigan, 1970

6. Farley ES Jr, Treat DF, Baker CF, et al: An integrated system for the recording and retrieval of medical data in a primary care setting: Part I. The age-sex register. J Fam Pract 1(1):45-46, 1974 7. Westbury RC, Tarrant M: Classification of discoster in general meretice: A

7. Westbury RC, Tarrant M: Classification of diseases in general practice: A comparative study. Can Med Assoc J 101:603-608, 1969 8. Eimerl TS, Laidlow AJ: A Hand-

8. Eimerl TS, Laidlow AJ: A Handbook for Research in General Practice. Edinburgh and London, E & S Livingstone Ltd, 1969

Ltd, 1969 9. Froom J: An integrated system for the recording and retrieval of medical data in a primary care setting. Part 3. The diagnostic index-E-book. J Fam Pract 1(2):45-48, 1974

10. Henk M, Froom J: Outreach by primary care physicians. JAMA 233:256-259, 1975