Evaluating Family Practice Residents with a Problem Category Index

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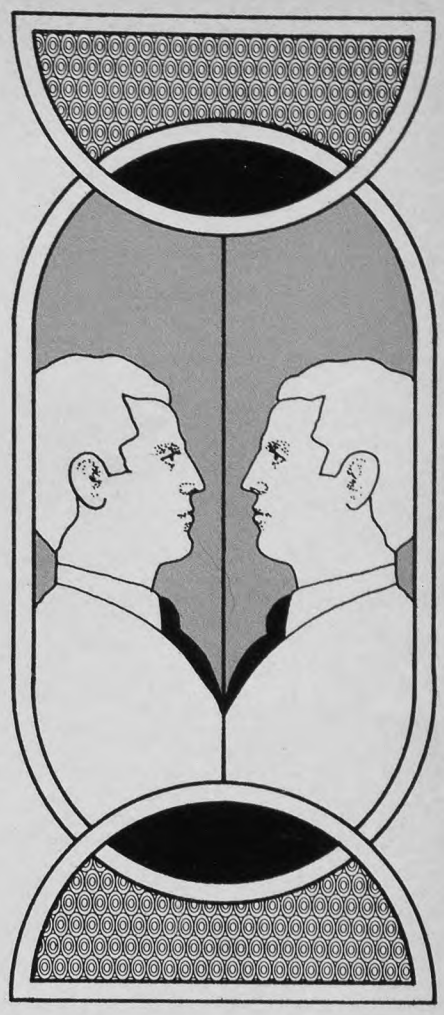

Using a standard ambulatory coding system as a base, an index of 42 problem clusters encountered in family practice was developed by two Pennsylvania family practice residency programs. Comparisons of frequencies with which these index problems were encountered by physicians in the Family Practice Centers were used to identify the practice patterns of family practice residents and faculty. Analyses of these displays, while largely subjective, produced some interesting general and specific results. The initial study indicates that many problems known to be common in family practice are not identified as such by the physician. When this type of information can be simplified, it is welcomed and found useful by residents and faculty in family practice training programs. A simplified index can be developed and used by any physician without any special equipment.

For several years the Family Practice Residency Programs at Lancaster General Hospital and the Milton S. Hershey Medical Center have been collecting data from their family practice ambulatory care units, using the problem coding system of the Royal College of General Practitioners (RCGP) as adapted for use in this country by Metcalfe and others.[1] We felt it would be desirable to use this information to evaluate the practice content of family practice residents as a guide to evaluation and educational planning. There are over 500 rubrics in the RCGP code, and individual listing of each problem makes a formidable list which scares off residents and faculty members alike. Therefore, we envisioned some type of index which would serve our purposes, but which would be easy to examine and use by people not intimately involved with the inner workings of the data system. This paper will describe the development, application, and initial results of such a simplified problem category index system.

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Methods

At the time we developed this index, three Pennsylvania family practice residency programs were involved with the data system: Lancaster General Hospital, Hershey Medical Center, and York Hospital. Although York Hospital later decided not to participate, the staff there was involved in the planning and design phase.

A representative from each program was charged with the responsibility of developing his own list, with the help of those people from his institution he deemed appropriate. No further restrictions were put on developing the list at that time, and the three programs had somewhat different ideas of how it should be done.

In a subsequent meeting, the three lists were compared, philosophies and methodology examined, and agreement was reached. In the final list, all important clinical categories of the RCGP code were represented, some by definitive diagnoses, some by symptoms only, some by synthesis of several RCGP rubrics, and some by inclusion of a subcategory or entire category in the coding system. Included was one preventive medicine category, the well-child examination. The pregnancy section was excluded, inasmuch as obstetrics was not practiced by all of the units involved.

Table 1 lists the final categories chosen, and the sections of the RCGP code from which they were derived.

Table 1. Construction of the 42-Problem Category Index

SECTION	ITEM	TYPE	NUMBER OF RCGP RUBRICS
1	Gonorrhea	Disease	1
	Infectious intestinal diseases	Disease	1
2	Malignant neoplasms	Disease	19
3	Diabetes mellitus	Disease	1
	Bronchial asthma	Disease	1
	Allergic and vasomotor rhinitis and sinusitis, hay fever	Disease	4
	Obesity	Symptom complex	1
	Serum lipid abnormalities	Disease (?)	1
4	Iron deficiency anemia	Disease	1
5	Anxiety state without somatic symptoms	Symptom complex	3
	Anxiety state with somatic symptoms	Symptom complex	1
	Situational reactions	Psychosocial	8
	Tension headaches	Disease	1
6	Otitis media, acute	Disease	1
	Conjunctivitis-ophthalmia	Disease	1
	Syncope	Symptom	1
	Vascular lesion of C.N.S.	Disease	1
7	Hypertension, benign	Disease	1
	Ischemic heart disease and myocardial infarction	Disease	2
	Cardiac failure	Symptom complex	2
	Varicose veins	Disease	1
8	Chronic pulmonary disease	Disease	4
	Pharyngitis	Disease	4
	Cough	Symptom	1
9	Peptic ulcer	Disease	3
	Diverticulitis/diverticulosis	Disease	1
	Liver, gallbladder, and pancreatic disorders	Disease + Symptoms	4
	Abdominal pain	Symptom	3
10	Cystitis, acute and chronic	Disease	2
	Menopausal symptoms	Symptoms	2
	Disorders of menstruation	Disease + Symptom complex	6
12	Infections of skin and cellular tissue	Disease	6
	Acne	Disease	1
13	Osteoarthritis	Disease	1
	Back pain	Symptoms	4
15	Feeding problems and failure to thrive	Symptoms	2
16	Senility	Symptom complex	1
17	Fractures and dislocations	Disease	15
	Iatrogenic drug reactions	Disease	1
18	Well-child examination	Preventive	1
20	Psychosocial and family problems	Psychosocial	34
5, 17 & 20	Alcoholism	Disease, Psychosocial, + Symptom complex	3

These section numbers are also identical with those used in the ICDA-7 classification system. Actual RCGP code numbers are not shown, inasmuch as they vary slightly among users, and this ambulatory coding system will shortly be replaced by the International Classification of Health Problems in Primary Care.[2]

The final listing chosen contained 42 categories, synthesized from 149 RCGP rubrics. This represents 26 percent of the 584 rubrics in the modification of the RCGP code in use in our units.

Table 2 is an example of how two of these categories were synthesized from the more specific RCGP problem coding rubrics.

These 42 categories were printed out for each hospital on a standard computer green bar sheet for each physician serving in the family practice units. The printouts were made available monthly, and they were immediately greeted by both faculty and residents with a complete lack of enthusiasm. They were difficult to read. There was not enough information to be of much value. There was no way to make comparisons either with averages or with other physicians without lengthy computations, which, of course, no one took the time to do.

However, when the data in this form were compiled for a longer period of time, it was then reasonable to examine the information to see if any significant trends appeared or if any conclusions could be drawn. We chose a six-month interval as a trial, as this would furnish enough information to be valid, and would provide residents and faculty with information on each resident six times during his three-year stay with us.

Table 3 shows the information which was reported for each physician for each of the 42 categories.

The information which we received was in computer printout form. Both residency programs, independently, examined the data and decided how to process the information to make it useful for the physician. At Lancaster, the problem frequency listing on the printout was compared with the total number of patient visits during the same time period, as shown in Table 4. It was found that the problems tabulated in the index occurred in about 50 percent of the patient visits, and that this ratio was nearly constant for

Table 5. 42-Problem Category Index for 6-Month Period Ending December 31, 1974, Lancaster Facility

Physician's Number & Name

48 Dr. M. Dee

Disease Problems	New Cases	Total Patients	Patient Encounters	% of ALL PATIENT ENCOUNTERS: Your %	% of ALL PATIENT ENCOUNTERS: Average of all 2nd-year Residents	Dispositions: Rescheduled	Resolved	Hospitalized	Doctor Consultation	Other
++ Anxiety state without somatic symptoms	4	4	4	0.5	1.0	4				
++ Anxiety state with somatic symptoms	19	27	57	7.4	3.0	55	3		2	
Hypertension, benign	9	25	37	4.8	4.1	33	3	1		
Obesity	8	14	20	2.6	2.1	18	2			
** Diabetes mellitus	2	8	14	1.8	2.7	12	2			
** Ischemic heart + myocardial infarction				0	0.4					
** Cardiac failure		2	3	0.4	1.2	3				
** Serum lipid abnormalities				0	0.1					
Pharyngitis	22	22	24	3.1	3.2	22	2			
Otitis media, acute	13	18	21	2.7	2.9	19			2	
Bronchial asthma	1	4	10	1.3	1.1	6	3	1		
All-vas rhinitis, sinusitis, hay fever	8	9	9	1.2	1.0	6	2		1	
** Chronic pulmonary disease	1	1	1	0.1	1.3	1				
Conjunctivitis — ophthalmia	4	4	4	0.5	0.6	2	1		1	
** Gonorrhea				0	0.1					
** Liver, gallbladder and pancreas disorders				0	0.2					
Intestinal infectious diseases	11	11	11	1.4	1.3	8	2	1		
++ Peptic ulcer	2	2	2	0.3	0.1	2				
** Diverticulitis and diverticulosis				0	0.1					
++ Abdominal pain	20	21	29	3.7	2.1	27	1			1
** Cystitis, acute and chronic	6	6	7	0.9	1.6	6	1			
++ Menopausal symptoms	2	2	3	0.4	0.1	2	1			
** Disorders of menstruation	5	5	5	0.6	1.1	4	1			
** Varicose veins				0	0.1					
** Vascular lesions of central nervous system				0	0.2					
Syncope	1	1	1	0.1	0.2	1				
++ Iron deficiency anemia	3	4	4	0.5	0.3	3	1			
** Osteoarthritis	1	1	1	0.1	0.3	1				
** Cough				0	0.3					
** Malignant neoplasms				0	0.5					
Fractures and dislocations	3	4	6	0.8	0.8	5			1	
++ Iatrogenic drug reactions	2	2	2	0.3	0.1	2				
** Alcoholism	1	2	2	0.3	0.6	2				
** Situational reactions				0	0.1					
Tension headache	4	4	4	0.5	0.4	4				
++ Infection of skin + cellular tissue	11	13	14	1.8	3.5	14				
Acne	1	2	2	0.3	0.3	2				
Back pain	7	8	9	1.2	0.9	7	2			
++ Well-child examination	71	44	86	11.1	7.7	78	10			
++ Feeding problems + failure to thrive	2	2	3	0.4	0.1	2		1		
** Senility				0	<0.1					
++ Psychosocial and family problems	4	5	5	0.6	0.3	3	2			
Total for 42 index problems	248*	277*	400*	53.8	47.9	354	39	4	7	1

Total for all problems, SLCFHC	408	469
Total for all problems, FHS	203	305
Combined total for all problems	611	774

Your percent	88.5	9.8	1.0	1.8	0.2
Overall % of all residents	88.9	8.1	0.9	1.5	0.6

If your disposition average varies by more than 50 % from the overall average of all residents, it is circled.

Problem percentages more than 30% below average are preceded by a double asterisk (**)
Problem percentages more than 30% above average are preceded by a double plus sign (++)

Table 2. Synthesis of Two Categories of the Problem Index

PROBLEM INDEX	RCGP NUMBERS	RCGP DESCRIPTION
Disorders of Menstruation	325	Dysmenorrhea
	326	Amenorrhea and hypomenorrhea
	327	Irregular menstruation
	328	Menorrhagia and metrorrhagia
	330	Disorders of menarche
	334	Other disorders of menstruation
Back pain	407	Lumbago not attributed to disc lesion
	423	Backache with sciatica
	424	Backache with other neuritis
	425	Back pain alone

This table shows the type of synthesis used to produce two rubrics of the 42-problem category index.

Table 3. Information Supplied on 42-Problem Category Index Printout

1. Date and time period covered by report
2. Physician's identifying number and name
3. The 42 problems
   For each problem:
   1. New cases
   2. Total patients
   3. Number of patient encounters
   4. Disposition of patient
      a. Rescheduled
      b. Resolved
      c. Hospitalized
      d. Consultation (MD)
      e. Agency consultation
      f. Death
      g. Other

Table 4. Information Calculated from Printout and Other Sources (Lancaster)

1. Total patient visits for *all* problems
   A. Southern Lancaster County Family Health Center (Rural)
   B. Family Health Service (City, Hospital-Based)
2. Frequency of each problem/ Total patient visits
   A. For individual physician
   B. Average of all physicians at same educational level
3. Frequency of each disposition, %
   A. For individual physician
   B. Average for all second and third-year residents
4. Variations from averages
   A. Problem frequencies varying by more than 30% over or under
   B. Dispositions varying by more than 50% over or under

all physicians. Using the total number of patient visits as a denominator, the percentage of occurrence for each of the 42 categories was calculated for each second or third-year resident, as well as the average for all residents at his educational level. First-year residents were provided with their printouts, but the percentage calculations were not made, as there were not enough patient encounters to be helpful. The frequency of occurrence of each of the categories was then identified on the printout as to whether it varied by more than 30 percent above or 30 percent below the average for that group. Those whose frequency occurrence was more than 30 percent under average were underlined in red; those more than 30 percent over average were underlined in green.

Results

The disease problems seen by one resident in the Lancaster program over a six-month period are shown in Table 5. Categories with frequency occurrence greater than 30 percent above average are identified by ++; those more than 30 percent below average by **. The red and green underlining, as used on the actual display, is better, as it provides instant identification of the variations by a striking visual display.

The right side of the display shows consultation rates and hospitalization rates. Because of the smaller numbers involved, second and third-year residents were consolidated in calculating the averages, and only those rates varying by 50 percent or more from the averages were identified and called to the resident's attention.

The resident's results were then examined by a family practice faculty member who made a brief analysis of some of the salient points. The analysis was intended to be an example to the resident of how he might use the printout information. An explanatory letter was given to each resident, along with his printout and his individual analysis. The letter explained the purpose, construction, and content of the display, with suggestions for its use, and cautions against rigid interpretation of the results. It pointed out certain generalizations resulting from the study, such as the infrequent identification of some problems known to be commonly encountered in family medicine. Examples of problems which were consistently unidentified were psychosocial problems, iron deficiency anemia, and lipoprotein abnormalities. It also stressed that the comparisons made in the report were in no sense meant to be judgmental or even critical. The individual analysis provided to each resident was intended as a springboard for his own analysis and interpretation.

Feedback from the residents, which was requested in the letter of explanation, has been both valuable and favorable. A resident who entered the Family Practice Center one month later than his peers found that the incidence of chronic diseases which need close supervision was much lower in his practice than the average. There was also a low incidence of well-baby checkups. He concluded that most of these patients, who had formerly been under the care of departing third-year residents, had probably been assigned before he started work at the Center. Another resident whose consultation rate was lower than average felt that he referred more patients than appeared on the listing, and decided that he may not have documented his consultations properly. This sent him scurrying back to his charts to see what was going on. Another resident who had a high consultation rate asked for a printout of all patients whom he had sent to consultants, and then checked each chart to see if the patient had actually seen the consultant (patient compliance), whether or not the consultant had sent him a report, and finally, whether the consultation had produced the expected

results, or any useful results at all. His conclusion was that, for the most part, the consultations were worthwhile. The results of the study bolstered his confidence in his referral patterns.

Residents whose incidence was low in certain categories are attempting to gain more experience in those areas. Almost all residents felt remiss in identifying and documenting psychosocial problems, and some resolved to "think psychosocial" more often in the near future. We are anxious for serial studies to see what changes, if any, might become apparent.

At Hershey, the same type of analysis was performed, with similar results and reactions.

At Lancaster, for the most part, the faculty is involved in direct patient care only for teaching purposes; at Hershey, most of the teaching faculty also spend a considerable portion of their time caring for their own patients. This allows the possibility of using studies of this sort for comparisons between residents and faculty. One such study is shown in Figure 1, which demonstrates that the faculty sees a larger percentage of the chronic patients, while the resident encounters more of the acute problems. There was no overall difference in the identification of psychosocial problems.

At least one other interesting observation came out of the Hershey study. Two faculty members and one resident at Hershey have a body habitus which might be called "portly." Underdiagnosis of obesity was noted by all three of these physicians. This brings up the interesting question of personal bias affecting physicians' identification of problems. Similar studies could be made with alcohol drinkers versus abstainers, smokers versus non-smokers, etc.

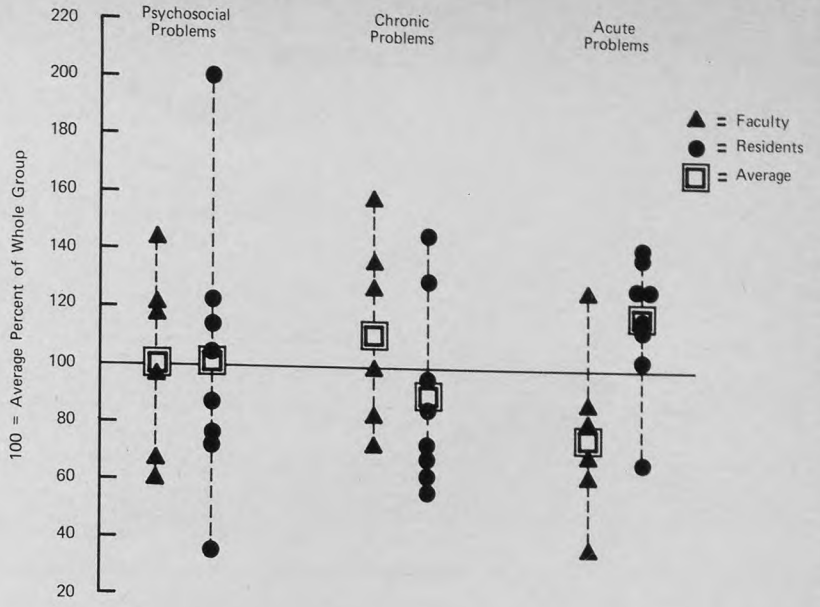

Figure 1. Comparison of Certain Problem Groups by Faculty and Residents (Hershey)

Practice Application and Discussion

How might the practicing physician apply such methodology to his practice? He can, of course, write his own analysis, if he has the figures. If he keeps an E-Book, it becomes very simple.[3] If he does not, all is not lost. He can simply list the problems he wishes to monitor, making up his own list or borrowing one. If possible, he should include some problem areas with which he may feel uncomfortable. It might be a good idea to have a partner or other close colleague help him make up the list. A colleague may suspect weaknesses in some areas of which the physician is not aware due to psychological blocking. This method requires no equipment except a pencil and paper. Keep track of the problems on the list for long enough to develop an adequate base, and look for trends.

Such an index is shown in Figure 2. In this example, the doctor has not seen any peptic ulcers. Why not? How is his index of suspicion? Does he investigate gastrointestinal symptoms? He seems to have a high rate of dermatologic consultations. Does he need additional education and training in dermatology? His psychosocial problem identification is low, a trait shared by almost all family doctors at this time. He identifies anxiety as a frequent problem, but he does not refer much in this area. What does he do with this problem? Does he attempt to arrive at an etiological solution, or does he just treat it symptomatically with ataractic drugs? One can ask many more questions from a simple index such as this. By this inquiring process, the physician can write his own analysis. Better yet, he can have a close colleague write the analysis, and see if he agrees with it.

At the end of the next six-month period, the faculty of the two residency programs are planning to write individual analyses as they did this time, but they are going to give the printout to the resident without analysis and have him write his own. Then the two analyses will be compared to see how individual bias affects the interpretations.

It should be recognized that these profiles are more a reflection of what is charted than what is actually done. This realization is useful in gently pointing out inadequacies and idiosyncrasies of chart writing. We intend to alter and refine the index as seems suitable and to further explore its use.

The index is intended for identification of frequency rates only, and one must be careful about drawing any hard and firm conclusions from a study of this sort. Any further interpretation is largely subjective, but we feel that the exercise may be of value. If it calls a physician's attention to his practice content and pattern, and encourages him to think about what he is doing, it will have served its purpose well.

References

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Problem	Visits	Ref.	Hosp.
Anxiety	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸		
Hypertension	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸	II	II
Obesity	II (2) ?		
Coronary disease	𝍸 III	II	III
Asthma	𝍸 𝍸 I	I	I
Abdominal pain	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 II	𝍸 𝍸 I	III
Cystitis	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸		
Menstrual disorders	𝍸 𝍸 𝍸 𝍸 I	I	
Back pain	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 III	𝍸 IIII	
Peptic ulcers	(0) ?		
Cough	III		
Acne	II		
Other skin conditions	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸	𝍸 𝍸 I	?
Osteoarthritis	𝍸 𝍸 𝍸 I		
Iron deficiency anemia	II (2) ?		
Chronic pulmonary disease	𝍸 𝍸 II		
Acute otitis media	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 I	II	
Serum lipid abnormalities	II (2) ?		
Psychosocial problems	III (3) ?		

Figure 2. A simple type of problem index requiring only pencil and paper to construct.