

The Physician's Actions and the Outcome of Illness in Family Practice

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The outcome of new episodes of common nonrespiratory tract symptoms was studied in 193 patients attending family physicians. After controlling for demographic, psychological, and social variables, the only element of the process of care that was related to resolution of the patient's symptom at one month was physician-patient agreement about the nature of the problem. Patients with unresolved symptoms were followed for an additional two months. Late resolution was associated with the physician's recording of attention to psychosocial problems. These results have implications both for the provision and audit of primary care.

In setting standards for the quality of health care, it is important to know which elements of the process of care are related to the outcome of illness. When process criteria have been studied in relation to outcome, the correlations have been weak at best.¹⁻⁴ Yet there is a growing movement toward the application of such criteria to the audit of physicians' records. Brook^{5,6} has emphasized the potential for cost escalation and for iatrogenic disease if the use of unvalidated process criteria becomes widespread. Donabedian⁷ has observed that once process criteria have been formulated, they seem to acquire a life force of their own.

The study of outcome in relation to process is particularly challenging in primary care. The symptom presented by the patient does not always lead to a definite diagnosis. Recovery sometimes occurs for reasons seemingly unrelated to care, while at other times the symptom persists in spite of all the physician's efforts. At both of these extremes, it is likely that psychological and social characteristics of the patient make a major contribution to outcome. Thus the objective of the present study was to determine which actions of the family physician have an influence upon outcome after allowing for other factors of potential prognostic importance.

METHODS

Thirteen family practices associated with the Department of Family Medicine of the University of Western Ontario participated in the study. These practices are located in London, Ontario, a city of 260,000 population. A previous study has shown that the patients attending these practices are representative of the local community.⁸

During three selected months in 1981, patients aged 18 to 70 years with a new episode of one of the following symptoms were entered into the study: abdominal symptoms, back or neck pain, chest pain, fatigue, headache, eye symptoms, and rectal bleeding.

These symptoms were chosen because they occur frequently in family practice and reflect a range of underlying causes with varying potential for resolution.

Eligibility was determined by the practice nurse when the patient told her the reason for the visit. Of the 232 eligible patients enrolled, 193 (83 percent) were successfully followed.

Outcome was assessed at two stages. Early recovery was defined as symptom resolution one month after the index visit to the physician. For patients not recovered at one month, late recovery was defined as resolution three months after the visit. The choice of one and three months was arbitrary, as there are meager empirical data on which to base definitions of optimal outcomes.

A standardized telephone interview with the patient was used to determine the outcome one month after the index visit. If the symptom had not resolved at one

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TABLE 1. SYMPTOM RESOLUTION BY CATEGORY OF SYMPTOM

Category	Resolved At One Month No. (%)	Resolved At Three Months* No. (%)
Abdominal symptoms	36 (50.0)	16 (50.0)
Back or neck pain	66 (43.9)	37 (35.1)
Chest pain	17 (58.8)	7 (57.1)
Fatigue	7 (42.9)	4 (25.0)
Headache	25 (36.0)	15 (53.0)
Headache and other symptoms	13 (30.8)	9 (0.0)
Eye symptoms	22 (63.6)	8 (25.0)
Rectal bleeding	7 (71.4)	2 (50.0)
All symptoms	193 (47.7)	98 (37.8)

*For those not resolved at one month. Of these, three patients were not located; hence, some numbers for three months differ from those expected on the basis of the one-month results

month, a second standardized interview was carried out two months later. All interviews were conducted by one of the authors (L.T.), who did not refer to the patient's chart before or during the interview with the patient.

During the interview information was obtained about demographic variables, compliance with treatment, and various aspects of communication between patient and physician. The patient was also asked about life problems and was designated as stressed if at least two of the following were reported: severe problems with work, money, or family; feelings of anxiety or tension; and insufficient help from others in coping with the symptom.

To gather the medical care data, a copy of the patient's chart was made for the period from one year prior to the index visit to the end of the third month following the visit. The names of all physicians and all items identifying the patient were deleted from the copy so that the chart reviewers could identify neither the provider nor the recipient of care.

Each chart was reviewed independently by one author (M.B.), and by one of three other authors (G.D., G.P., and H.R.). Although these physicians were members of the participating practices, in no instance did they review charts from their own practices. A further precaution against bias was to allot the same proportion of charts for patients with resolved and unresolved symptoms to each of the three physicians.

Although the symptoms under study were not publicized among the participating physicians, they were known to the investigators, and thus more effort may have been expended by these physicians in the care of patients with the selected symptoms. Therefore, physician category (physician investigator, other faculty physician, and resident) was included as an independent variable in the statistical analysis.

The chart review form required that the adequacy of

TABLE 2. TECHNICAL ASPECTS OF CARE AND RESOLUTION AT ONE MONTH

	No.	Percentage Resolved	P value
History			
Adequate	127	46.5	
Less than adequate	66	50.0	.75
Problem list			
Yes	148	47.3	
No	45	48.9	.89
Examination			
Appropriate	147	49.7	
Less than appropriate	46	41.3	.41
Investigations			
Yes	96	47.9	
No	97	47.4	.99
Assessment			
Initial correct	122	50.0	
Initial incorrect	61	44.3	.68
Therapy			
Non drugs	63	46.0	
Nonprescription drug	49	45.8	
Prescription drug	82	50.0	.96
Therapy			
Appropriate	141	48.2	
Not appropriate	50	48.0	.98
Follow-up			
Appropriate	164	48.8	
Not appropriate	29	41.4	.59

the following aspects of care be rated: maintenance and use of a patient problem list, history taking, physical examination, diagnostic investigations, referral, final assessment, therapy, follow-up arrangements, and consideration of psychosocial factors in assessment and in management. Provision was also made for a global rating, using a 5-point scale (1 = poor, 5 = excellent). As there are few established criteria for the psychosocial aspects of care, psychosocial factors were considered to be important and deserving of notation on the chart if (1) their presence was evident from earlier visits, or (2) the history suggested that psychosocial factors could be of etiological importance, or (3) the presenting symptom was likely to have an adverse effect on the patient's family, social, or occupational relationships.

When psychosocial factors appeared important, the physician was expected to have recorded on the chart that counseling, psychotherapy, or appropriate referral had taken place.

The method of consensus was used in making the final judgment of the process of care for all measures except the global rating. The reviewers generally agreed in their assessment of the various aspects of care. When disagreement over minor points arose, it was resolved by brief discussion in all but three instances. In these three cases, the majority decision of the four reviewers was accepted. For the global rating, the average score of the two raters was used.

To allow for the influence of diagnosis upon outcome, two members of the Department of Family

TABLE 3. FACTORS ASSOCIATED* WITH EARLY RESOLUTION (ONE MONTH) (N = 168)

	Percentage Resolved
Patient reports stress**	
Yes	17.1
No	54.9
Presence of other health problems	
Present	32.4
Absent	51.1
Time before seeing physician	
2 weeks or less	60.0
> 2 weeks	30.1
Likelihood of resolution given diagnosis	
Likely	59.7
Unlikely	37.5
Patient's agreement with physician's opinion of problem	
Partial or none	23.1
Complete	54.3
Index physician seen during past year	
Yes	32.1
No	54.5
Dissatisfaction with index visit	
Yes	35.4
No	51.7
Physician recorded psychosocial factors	
Yes	36.0
No	36.1
Factors not important	68.4
Counseling or psychotherapy for psychosocial factors	
Recorded	32.4
Not recorded	42.0
Not necessary	56.0

*P value for chi-square or t test < .10

**Stress defined as two or more of the following: (1) family, money, or work problems; (2) anxiety; (3) need more help with problems

TABLE 4. FACTORS ASSOCIATED* WITH LATE RESOLUTION (AT THREE MONTHS) (N = 89)**

	Percentage Resolved
Patient likes to discuss problem with others	
Yes	27.3
No	58.8
Health problems in other family members	
Yes	23.1
No	46.0
Presenting symptom	
Back, eye, fatigue, headache plus other symptom	28.8
Chest, rectal bleeding, abdominal, or headache alone	54.1
Physician recorded psychosocial factors	
Yes	58.3
No	26.7
Factors not important	37.1
Counseling or psychotherapy for psychosocial factors	
Recorded	54.5
Not recorded	25.0
Not necessary	43.8

*P value for chi-square or t test < .10

**For those not resolved at one month

end of the first month, 38 percent reported resolution by the end of the third month following the index visit.

In Table 2 are presented many of the technical aspects of care that are frequently audited. None of these had an important association with resolution at one month. The two largest associations were for examination and follow-up, and even for these the advantage of the appropriate action was an improvement in symptom resolution of less than ten percentage points.

The variables more strongly associated with early resolution are displayed in Table 3. These variables include factors relating to the problem, the patient, and the patient's perception of the interaction with the physician. The sample sizes for Tables 3 and 4 are the same as those used in the final multivariate analyses and are less than the total sample size because of missing values for some of the independent variables.

For patients whose symptom had not resolved by one month, the factors associated with late resolution are shown in Table 4. These factors differ from those associated with resolution at one month. Resolution at three months was more likely if the patient did not report a desire to discuss problems with other people and did not report health problems in the family. The nature of the symptom also influenced the likelihood of late resolution. Both the physician's recording of important psychosocial factors and counseling for such factors were associated with late resolution of the symptom. In addition to the presented data, age, sex, occupational status, and global ratings were not associated with either early or late resolution.

The results of the step-up multiple logistic regres-

Medicine independently rated each final diagnosis according to the likelihood that its presenting symptom would resolve in one month. Their consensus rating of the likelihood of resolution was treated as an independent variable in the statistical analysis of the relationship between process and outcome.

Univariate statistical analyses (t tests and chi-square tests) were carried out first to identify all variables having an association with symptom resolution. A variable was accepted as a potential contributor to outcome if the P value was less than or equal to .10. The variables meeting this criterion were entered into the final multivariate analysis. A step-up multiple logistic regression analysis was used with the stopping point set at P = .05.

RESULTS

Taking all symptoms together, approximately one half the patients reported that the symptom had resolved by the end of the first month after the index visit (Table 1). For patients whose symptom was still present at the

TABLE 5. STEP-UP MULTIPLE LOGISTIC REGRESSION ANALYSIS OF VARIABLES ASSOCIATED WITH EARLY RESOLUTION OF SYMPTOM (N = 168)

Step	Variable	Adjusted Relative Odds	P value
1	Patient's complete agreement with physician's opinion of problem vs partial agreement or non-agreement	5.58	< .001
2	Patient reports no stress vs some stress	4.35	< .01
3	Psychosocial factors recorded or not recorded vs psychosocial factors not important	4.61	< .01
4	Symptoms present less than 2 weeks prior to visit vs present more than 2 weeks	2.91	< .01
5	Index physician seen during past year vs not seen	2.91	< .01

TABLE 6. STEP-UP MULTIPLE LOGISTIC REGRESSION ANALYSIS OF VARIABLES ASSOCIATED WITH LATE RESOLUTION OF SYMPTOM (N = 89)

Step	Variable	Adjusted Relative Odds	P value
1	Presenting symptom (as in Table 4)	4.48	< .01
2	Patient does not like vs likes to discuss problems with others	3.78	< .02
3	Physician recorded counseling or counseling not necessary vs no recording of counseling	3.00	< .05

sion analysis for symptom resolution at one and at three months are shown in Tables 5 and 6. Each variable describing the physician's consideration of psychosocial factors was dichotomized according to the pattern of its univariate relationship with early and late resolution.

The variable showing the strongest association with early resolution was agreement between patient and physician about the nature of the problem underlying the symptom (Table 5). Stress, as reported by the patient, and the importance of psychosocial factors, as perceived by the chart reviewers, each made an independent contribution to outcome. Time before seeing the physician and a prior visit to the physician within the year were significant but with lower relative odds.

For symptom resolution at three months (Table 6),

the symptom category (dichotomized as in Table 4) was the first variable to enter the regression. The patient's self-reported reluctance to discuss problems with others was the second to enter, which presumably reflects aspects of personality that are related to outcome. The only other variable to enter the multiple regression was the physician's provision of counseling for psychosocial factors. Controlling for symptom category and patient's reluctance to discuss problems, patients who received appropriate attention to psychosocial factors were three times as likely to report their symptom resolved as were patients in which these aspects were overlooked.

As it was surprising that no technical aspect of care was independently related to outcome, the results were checked by using the method of the critical incident.⁴ Charts were reviewed for the 18 patients whose symptom had not resolved by three months but whose initial diagnosis had indicated a high likelihood of resolution. A search was made for any flaw in care that might have accounted for the discrepancy between the expected and observed outcomes. For three patients, a fault in clinical management was identified. For six patients, no fault in care could be identified. For the remaining nine patients, the only flaw was in communication or recognition of psychosocial factors.

DISCUSSION

The most striking result of this study was the absence of any relationship between the resolution of the patient's symptom and the adequacy of history taking, physical examination, use of diagnostic tests, prescription of drugs, or maintenance of a problem list. This finding is consistent with Thomas's study⁹ in which prescription of medication for nonspecific problems had no effect on resolution. The possibility was examined that variations in these aspects of care were too small among the participating physicians to reveal relationships with outcome. Although the distribution of their scores on the overall rating of the process of care was positively skewed, a full range of scores was covered. Therefore, it is unlikely that the results of this study can be explained by the unduly homogeneous behavior of the physicians under observation.

There was concern that the chart might have been an imperfect record of the diagnostic and therapeutic actions of the physician. But Romm and Putnam¹⁰ have shown that the chart is a more accurate record of diagnostic investigations and drug therapy than of psychosocial investigation and counseling. The intent was to gather patient and medical care data in a way to minimize interference with the process of care.

The question of statistical power must be considered. The associations between outcome and the technical aspects of care shown in Table 2 are too small to be of clinical importance even if a larger sample size would have allowed them to reach statistical significance.

Highly important to outcome was agreement between patient and physician about the nature of the patient's problem. Because agreement was based upon information obtained one month after the index visit, it is possible that symptom resolution led to the perception of agreement rather than the other way around. However, Starfield et al¹¹ and Stewart et al¹² found a similar relationship with outcome when agreement was based on the patient's statement at the conclusion of the index visit.

For agreement to exist, communication between physician and patient must be fully reciprocal. McWhinney's review¹³ of the skills of family medicine identified communication as essential to maximizing the effectiveness of all aspects of therapy. Byrne and Long¹⁴ found that dysfunctional consultations were those in which the physician did not discover the reason for the patient's visit.

It is interesting to speculate by what mechanisms might agreement between patient and physician lead to relief of the symptom. Perhaps the peace of mind that follows agreement about the basis for the symptom has in itself a healing effect. But in some instances, disagreement between physician and patient might be due to a patient's reluctance to accept a psychological explanation of the symptom. Under these circumstances the patient might prefer having the symptom to undergoing an examination of emotional or social problems.

Several factors found to be significantly associated with resolution deserve further reflection. Symptoms present for more than two weeks were less likely to resolve. A similar association between prior duration of the symptom and likelihood of resolution has been found in studies of headache¹⁵ and back pain.¹⁶ One interpretation is that the longer the body has time to adapt to discomfort, the more entrenched and resistant to treatment the symptom becomes. An alternative explanation is that a patient who delays in consulting a physician has personality characteristics that impede recovery.

Contact during the past year with the physician seen at the index visit was associated with a lower probability of symptom resolution. This finding could reflect the effect upon outcome of multiple health problems, as a patient with several problems would be more likely to have encountered the same physician on a previous visit to the practice. Another interpretation is that when the patient is a frequent visitor, the physician may take shortcuts in investigating the symptom.¹² Were this the explanation, one would expect that the process variables of history taking, physical examination, and diagnostic tests would have been significantly associated with outcome, but they were not.

The element in the process of care that was found to be significantly associated with late resolution was the physician's attention to relevant psychosocial problems, either through the provision of counseling, psychotherapy, or appropriate referral. While early

resolution of the symptom was significantly associated with patient-physician agreement rather than with counseling, the reverse was the case for late resolution. This pattern would be consistent with the hypothesis that agreement, as such, promotes recovery, but that if the symptom persists, the provision of counseling becomes beneficial.

Audits should not be confined to the technical aspects of primary care. At least equal attention should be paid to what McDermott called the "Samaritan function" of the physician.¹⁷ Evidence that this function can be evaluated from charts has been provided by Berg and Kelly.¹⁸ The results of this study indicate that it should also be evaluated from patients' reports of their care.

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