The Patient's Differential Diagnosis

Unpredictable Concerns in Visits for Acute Cough

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BACKGROUND. Agreement between physician and patient on the nature of the patient's illness problem is an important goal in primary care consultations. Unfortunately, both patient and doctor are often uncertain about the cause of the problem. The patient's satisfaction with a visit may be correlated with his or her agreement with the physician's differential diagnosis.

METHODS. Patients' diagnostic concerns elicited by interview just prior to and during 17 visits to family physicians for cough were compared with the doctors' differential diagnoses expressed during and after the visits using qualitative methods.

RESULTS. Patients expressed a mean of 6.5 possibilities, of which a mean of 2.8 were also among the doctors' differential diagnoses. While many concerns were related to widely recognized popular ideas about disease, some patients had idiosyncratic, unpredictable diagnostic concerns about serious illness based on experiences in their families. Concerns were often expressed very indirectly during the visits.

CONCLUSIONS. The physician's exploration of patients' uncertainty about the nature of their illnesses may help to elicit unexpected concerns that might otherwise prevent agreement on the nature of the problems.

KEY WORDS. Physician-patient relations; primary health care; medical history taking; communication; Interviews. *(J Fam Pract 1998; 46:153-158)*

Agreement between doctor and patient on the nature of the patient's illness appears to be among the more important predictors of symptomatic recovery for many prevalent conditions.[1-6] However, reaching agreement on the nature of the problem can be complicated by uncertainty on either or both sides.

The patient or the doctor may erroneously believe that they implicitly understand each other's ideas on this matter.[1] The general public may be familiar with their doctors' views on common medical problems, while physicians may be familiar with the views prevalent in the community. It seems probable, however, that in many doctor-patient encounters, each is concerned with some possibilities of which the other is unaware. Discussion of the diagnosis is sometimes omitted from medical visits in hurried circumstances,[7] and insufficient discussion of the patient's diagnostic concerns may lead to unacknowledged disagreement, failure to clarify either the patients' or the doctors' uncertainties, and disappointment for the patient.[8]

Most primary care diagnoses are performed through iterative pattern recognition, as the doctor tries to identify the illness by considering how the problem resembles or differs from other similar problems.[9] Studies suggest that doctors may entertain four or five likely diagnostic possibilities that most closely fit the symptoms. If these possibilities can all be ruled out, the search proceeds, as the physician considers a handful of other possibilities at a time, until a reasonable hypothesis is found.[10] Yet, many common primary care symptom presentations have such broad differential diagnoses that they can only partially be resolved. Occasionally, it seems that physicians recommend a management plan, then name the illness to fit the plan.[11] Thus, the term "bronchitis" may be used to mean any cough for which the doctor has decided to prescribe antibiotics.[12]

Patients presenting with common or familiar symptoms may also face this difficulty. Patients often formulate some explanatory model of the problem, including a tentative name for it, that has led them to seek medical attention.[13-16] Often,

Submitted, revised, October 28, 1997.
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TABLE 1

Interview Questions Asked of Patients After an Office Visit to Elicit an Explanatory Model of Their Illness

What do you think caused it?
Why did it start when it did?
What happens in a person when they get this?
How severe can it be?
What is the greatest danger?
What were the problems the illness caused you?
How was it treated?
What was the result?
How do you think it should have been treated?

Adapted from Kleinman A. Patients and healers in the context of culture: an exploration of the borderland between anthropology, medicine, and psychiatry. Berkeley, Calif: University of California Press, 1980.

patients who come to a physician's office feel uncertain about their diagnosis, however. Patients may initially consider a handful of possibilities, as doctors do, but patients' diagnostic considerations have not often been described. Patients might consider fewer alternative hypotheses, since, unlike doctors, they do not specialize in the vocabulary of illness.[17]

Cassell[18] has called attention to the power of worry about serious possibilities, including "fatal hypotheses," in shaping patients' presentations of their illnesses. Some studies of primary care patients' expectations have found greater patient interest in the doctor's explanation of their problem than in obtaining treatment. Meeting these expectations was correlated with patient satisfaction.[19,20]

It seems possible that in some instances reaching agreement about the nature of primary care problems might be facilitated by elicitation and discussion of the patients' thoughts about their illness; this could be termed the "patient's differential diagnosis." Elicitation and description of the patients' uncertainties about the nature of their problems may help doctors to provide more effective patient care.

Our qualitative study explored patient and physician diagnostic ideas in a small number of family practice patients who visited their doctors for cough. This complaint is among the most common reasons people give for visiting a generalist.[21] There are considerable differences between public and professional ideas about the nature and potential causes of the colds, bronchitis, and "flu" to which they attribute most coughing.[22] Doctors and patients may expect to know, from prior experience, how each other views coughs, but it is not known how applicable this knowledge is to individual patients, or how much discussion of patients' diagnostic ideas occurs during consultations.

METHODS

Patient and physician diagnostic thinking was explored and compared using qualitative methods.[23,24] Initially, a series of patients who had recently been treated for cough were interviewed to report their explanatory model of their illness. Participants were asked about their illness using the questions in Table 1. Detailed field notes were recorded during each interview and transcribed. Seven patients were randomly selected from 126 adults whose conditions were diagnosed as bronchitis or pneumonia in a rural family practice during an outbreak of acute cough in autumn of 1986. Three more patients with cough were interviewed during the same period at an urban family practice teaching clinic. This series of interviews confirmed that patients often had considered a number of possible diagnoses for their illness. This finding raised the question of the role that

TABLE 2

Interview Questions Asked of Patients Before an Office Visit to Elicit an Explanatory Model of Their Illness

Would you tell me about your illness, please?
Have you ever had an illness like this before?
Do you know of anyone else having an illness like this?
Do you know of any other illnesses which are like this one? How are they like each other? How are they different?
How does a person know when they have this problem?
What do you think has caused your problem?
When does this sort of problem start?
What does this problem do to you?
How severe do you think your problem is?
What are the main problems your illness has caused you?
What concerns you most about your symptoms?
Has anyone else helped you with this problem?
What kind of treatment do you think you should receive?

TABLE 3

The Differential Diagnoses for Cough Considered by One Patient and Those Considered by Her Physician

Patient's Differential Diagnoses	Physician's Differential Diagnoses
*Pneumonia**	*Pneumonia*
Allergy	*Allergy*
Asthma	*Asthma*
Cancer	**Viral infection**
Hay fever	Bronchitis
Heart attack	Bronchospasm
Injured rib	Mycoplasma
Walking pneumonia	Pulmonary embolism
Breathing problem†	URI
Chest pains	

* Items that both the doctor and the patient had considered as possible diagnoses are shown in italic.
†The patient's preferred pre-visit self-diagnoses and doctor's preferred final diagnosis are shown in bold.

these diagnostic concerns play during the patient's visit with the physician.

A second series of 23 patients provided an unsystematic convenience sample of English-speaking adults with appointments for cough at University of Minnesota Department of Family Practice teaching clinics during the Spring of 1987. All patients agreed to participate and only one physician declined. In six cases, tapes were not of adequate quality for transcription, leaving 17 cases for analysis.

With both patient and physician consent, the author conducted a brief semistructured interview to elicit the patient's explanation of his illness.[14] Patients were allowed to offer multiple opinions and asked about ideas they had considered and rejected and their reaction to the ideas of others with whom they might have discussed their before the office visit (Table 2). Patient-physician interactions during the clinic visit were audiotaped (and, at one site, videotaped). After each visit the physician's perceptions of the patient's ideas about his illness and the physician's own differential diagnosis were elicited with a brief structured interview.

Transcribed computer text files were prepared from each tape. All terms for symptoms, illness labels, concerns, and expectations used by each speaker were identified in the field notes, interview tapes, and visit tapes using word-frequency analysis and keyword-in-context programs.[25,26] Each text was then coded, reviewed, and recoded to identify diagnostic categories through the contrasts and similarities expressed by the participants.

For both patients and doctors, the intent was to record all categories of illness that had been considered as possibilities during their process of thinking about the illness. Elements of each patient's differential diagnosis were distinguished from one another when the patient discussed them as separate possibilities, or contrasted one possibility with another, as in "The problem X is not like Y," or "The problem X would be like Y, except for some criterion." Where patients made distinctions between conditions (eg, "chest cold" and "bronchitis"), the conditions were treated as separate possibilities, even though to other people they might seem equivalent.

RESULTS

All ten patients in the first interview series reported that they had considered a differential diagnosis of multiple hypotheses to explain their cough before they had seen their doctors. It was unclear what role the patients' differential diagnosis had played in their visits to their physicians, since these were not recorded. The 17 patients in the office visit series reported a mean of 6.5 diagnostic possibilities (range 2 to 12), while the physicians considered a mean of 7.6 possibilities (range 2 to 11). A mean of 2.8 possibilities were common to both the patient and the doctor. Table 3 illustrates the diagnostic possibilities considered in one particular case.

Patients generally thought that they had a common, relatively mild illness, but all had thought of more than one possible explanation. Most of their ideas came from their past experiences and the past experiences of friends or family. No one reported that they felt anxiety about a particular disease because they had seen media reports about that disease. Patients reported that they included and excluded items from their differential diagnoses based on their symptoms, the suspected causes, and the course of their illness. Colds, bronchitis, pneumonia, sinusitis, mononucleosis, "flu," and "virus" were the most frequently mentioned diagnoses, but the patients also reported a surprising diversity of individually unique differential diagnostic considerations (Table 4).

Only 39% of the patients' diagnostic ideas were discussed directly during the recorded visits,

TABLE 4

All Diagnoses Considered by 17 Patients with Cough and the Number of Patients who Considered Them

Possible Diagnosis	No. of Patients Who Considered Diagnosis
Cold	13
Pneumonia	10
Flu	7
Asthma	7
Bronchitis	6
Allergy	6
Sinus	5
Chest cold	4
Mononucleosis	4
Virus	3
Throat infection	3
Heart trouble	2
Walking pneumonia	2
URI	2
Bacteria, Breathing trouble, Bronchiolitis, Cancer, Emphysema, Hay fever, Histoplasmosis, Legionnaires' disease, Pleurisy, Prebronchitis, Psittacosis, Reactive airway disease, Rib fracture, Rheumatic fever, Smoking, Wet cold	1 each

Total is >17 because all respondents included multiple possibilities in their differential diagnosis of their cough. Distinctions between apparently similar items were made by respondents.

although 54% were mentioned at least obliquely. Several might have led to changes in the diagnostic discussion had they been made explicit. A woman who noted an unusual odor when she coughed was worried she had caught psittacosis by cleaning her birdcages, as had once happened to her aunt. A nurse worried that she might have caught legionnaires' disease in the operating room because she believed a coworker might have done so. Rocky Mountain spotted fever had crossed the mind of a physician ill with atypical pneumonia after a trip through an area to which the disease is endemic. A middle-aged man reported that his mild pleuritic discomfort led him to anxiously recall the chest tubes of an uncle ill with empyema. Two anxious patients suggested concern about the possibility of HIV presenting as pneumocystis pneumonia only by indirect questions to their physicians. Others worried about rheumatic fever, cancer, heart attack, or pleurisy.

Patients indicated in the preliminary interviews that they expected their doctors to check them for the serious conditions they had considered, if only to confirm their absence, but they often expressed this expectation very indirectly during the visit itself. One woman with "chest pain and breathing problems" reported during the interview that she had "done the worst disease scenario" on herself, considering heart attack, breast cancer, asthma, walking pneumonia, and injured ribs. The only clue she gave to the doctor about her heart disease concern, however, was an oblique comment that her symptoms worsened whenever she climbed stairs, and the only indication of her breast cancer worry was when she pointed very distinctly at her breast as she told where she felt pain with her cough. This patient and her doctor did explicitly discuss three other diagnostic concerns that they shared (Table 3).

Patients' differential diagnoses appeared to alter the way they presented their symptom histories in several other cases. A man with nasal symptoms and cough for 2 weeks was most bothered by facial pain, but he emphasized his minor nausea and fatigue to his physician. He thought that common cold was an unlikely diagnosis, since he had not been chilled or overtired, but he suspected he might have flu, because he felt nauseated, or maybe mononucleosis, because his fatigue and of the long duration of the illness.

The doctors and patients viewed most of the visits as satisfactory, but several times there appeared to be misunderstandings and some dissatisfaction at least, in part, because elements of the patient's differential diagnosis remained partly or completely unexplored. For example, one younger man who believed he had a chest infection was also concerned about possible pleurisy, asthma, or emphysema. The possibility of emphysema was not discussed. The patient's tone of voice still conveyed anxiety at the close of the visit, and he returned to the clinic twice during the next month for his cough.

DISCUSSION

Our qualitative study of patients' differential diagnoses was limited to a very small convenience sample of patients interviewed once and analyzed by a single observer. Inquiring specifically about alternate explanations for their illness may have stimulated some patients to consider more possibilities than

they would have done otherwise. Direct confirmation of the coding categories or the researcher's interpretations with participants was not attempted. The behavior of the patients during the observed visits may have been contaminated by the effects of the preliminary interviews. Patients may have felt either that they had already discussed their opinions and neglected to express them to the doctor, or, alternatively, they may have felt empowered to bring up diagnostic concerns they might otherwise not have mentioned. The doctors may have been influenced to inquire into their patients' concerns more intently by the knowledge that they were being observed, or may have been inhibited by anxiety.

The study was conducted largely in a teaching clinic, but the failure of the residents observed in this study to elicit the patients' diagnostic concerns is probably not solely attributable to their inexperience. Inadequate attention to patients' views has been found in large studies of practicing physicians as well.[7,8]

This study looked at a very narrow spectrum of illness presentations. This focus strengthens the reliability of the study, but limits generalizability. Cough was selected because it is familiar, common, usually benign but potentially serious, often not diagnosed with certainty by doctors, and generally unembarrassing to discuss with acquaintances or an unknown interviewer. The findings may be much less reflective of patient concerns in more uncommon or more embarrassing conditions.

This study shows that patients coming to the doctor because of cough consider multiple possible explanations for their problem; we termed this the "patient's differential diagnosis" by analogy to the medical process. While most doctors expect people with cough to be concerned about pneumonia, no physician could ever guess some of the serious possibilities that worried some patients. The number of patients' diagnostic considerations was similar to the number considered by the doctors. Although those concerns that might stem from knowledge of popular medical culture, such as pneumonia, asthma, or bronchitis, were most frequent, about one quarter of patients had serious, idiosyncratic, unpredictable concerns based on their own beliefs and history. There was only limited overlap with the doctor's diagnostic considerations. Relatively few of a patient's unique diagnostic concerns were discussed during the visits we monitored, but in many instances, these concerns were closely linked to the patient's expectations and needs for reassurance.

Literature Review

Most of the recent work on the explanation phase of the physician-patient interaction has concentrated on the delivery of extremely bad news, such as a diagnosis of cancer, HIV infection, or dementia. Only a few have looked at interactions that take place during routine visits.

A qualitative study by Borrson and Rastam[27] in Sweden found significant, idiosyncratic patient diagnostic concerns among 30 patients seen for mild illness. For some, these concerns were linked to family experiences of threatening, overlooked, or disabling illness.

A study of Dutch primary care patients' worries by Van de Kar and associates[28] used a structured questionnaire to ask patients if they were aware of the cause of their primary complaint, and how worried they were by the possible diagnosis of the complaint. Patients recorded a mean level of 2.4 on a 5-point scale, where 1 = not worried at all and 5 = very worried; their mean level of concern about a serious disease was 2.0. The more uncertain the patients felt about their complaint, the more worried they were. Adequate discussion of these worries during the consultation was associated with reduced worry and greater patient satisfaction.

Peppiatt[29] has previously shown that in the primary care visits that focused on making a new diagnosis, eliciting patients' theories about the cause of their problems can be useful for understanding the nature of their concerns, understanding the likely cause of their problem, and making a diagnosis in some instances.

Most people find their diagnostic uncertainty troubling, even threatening, and expect that the doctor will be able to reduce their discomfort by providing a name for the problem and a prognosis.[30] If the doctor's and the patient's uncertainties and concerns differ substantially, however, and the patient's concerns are not discussed, the doctor's explanations and diagnosis may not be accepted or felt to be satisfactory. In this case, the doctor's efforts at reassurance may not work.

It is also possible that compliance may be compromised when physician-patient agreement on the nature of the problem is not reached because of residual uncertainty.[31]

Eliciting the Patient's Differential Diagnosis

Patients' differential diagnoses can be elicited more simply than through the use of the specific questions in this study. The patient's diagnostic concerns are implicit in the ideas, feelings, and contexts expressed in their description of their illness experience, if patients are allowed to describe their trouble without interruption at the beginning of the visit. The patient's views can then be more fully explored through clarifying questions, following the patient's lead. Seemingly irrelevant or contradictory parts of the patient's story often make sense when the patient's competing diagnostic hypotheses are made explicit in this fashion. [3,32] Specific ways of probing for the patient's diagnostic thoughts may be worth exploring.[33]

While asking patients to clarify their concerns is usually helpful, pressing too hard for a full accounting of their diagnostic ideas can embarrass or discomfit patients. It is essential to recognize and respect that the patient may have concerns he does not yet wish to share. When patients use denial to accommodate great fear, it may not be helpful to challenge it.[34] The search for the patient's differential diagnostic ideas must also not be substituted for the doctor's own diagnostic work.

As with all elements of the patient-centered clinical method, inquiry into patient diagnostic ideas is likely to be productive only in combination with attention to patients' feelings and their personal context.[35,36] Methods to improve discussions between the physician and the patient regarding their views on the diagnosis during the office visit require further development and evaluation.

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