2

Folk Flu and Viral Syndrome: An Anthropological Perspective

SUSAN C. McCOMBIE

In the United States, a majority of the research on lay perceptions of illness has focused on ethnic minorities and recent immigrants. With the development of clinically applied anthropology in the 1970s and 1980s, a growing number of anthropologists turned their attention to health culture in mainstream America. They reasoned that understanding popular views of health and illness had the potential to enhance physician–patient communication, facilitate health education, and increase patient compliance.

The need for an understanding of American illness perceptions has been recognized by the medical profession. Interest was triggered partly by the growth of medical malpractice litigation. There has been increasing recognition that middle-class Americans may see illness differently from the physicians' biomedical model, and that patient dissatisfaction with biomedicine may be related to this incongruity. In 1985, an article in the *New England Journal of Medicine* recommended that physicians attempt to elicit their patients' disease beliefs (Gillick, 1985).

While some analysts have emphasized understanding patients' perceptions of illness, others have suggested that since clinicians do not always employ a single coherent explanatory model, their models and medical decision making also need to be studied. Eisenberg described the distinction between medical models of disease and popular models of illness and noted that phy-

sicians combined both in their actual practice (Eisenberg, 1977). Kleinman distinguished "scientific explanatory models" from the "clinical explanatory models" evident in practice and stated that the latter may diverge greatly from the former (Kleinman, 1980).

These distinctions are apparent when studying the treatment of common illness in general medical practice. Between 1973 and 1977, while working as a general practitioner, physician-anthropologist C. G. Helman investigated folk beliefs about "colds" and "fevers" in a London suburb. He characterized the folk belief system as a fluid one that easily incorporated biomedical treatment and concepts. Helman noted that the "operational model" used by general practitioners in Britain was in some respects closer to the folk model than to the biomedical model; moreover, the diagnoses given to patients reinforced the folk model (Helman, 1978). In a subsequent study, Helman described the experiences of a patient with presumed angina to illustrate that the biomedical model is actually a cluster of many explanatory models, the use of which is moderated by a number of factors, including audience, type of condition, and characteristics of the physician (Helman, 1985).

There are also important differences between biomedical practice and public health practice (O'Reilly, 1985). In medical practice the focus is on the treatment of illness in individual patients. In contrast, public health practice involves the application of preventive medicine to populations. The major focus is on prevention of diseases, rather than cure. Prevention requires an understanding of the factors that spread disease, which is the province of epidemiology.

The discipline of epidemiology is concerned with the distribution and determinants of disease in human populations. Application of epidemiological methods provides the data to design and evaluate public health measures. Epidemiologists search for associations between disease patterns and other phenomena. They seek to minimize bias and avoid misclassification that might hide true relationships or create false ones (Hahn, 1995).

Epidemiologists working in communicable disease control attempt to stop the spread of infection by identifying its source. They construct "case definitions," which are sets of criteria for counting cases of a disease. These criteria do not always match physician diagnoses, and one of the first rules of epidemiology is to *confirm the diagnosis*. Epidemiologists tend to approach a disease outbreak with skepticism, and they find some satisfaction when they can demonstrate that a presumed outbreak is due to an unanticipated factor. If an outbreak is "real," the highest achievement is being able to apply control measures to stop further transmission. This accomplishment is sometimes described in metaphorical terms. An example of this is "removing the pump handle," a phrase which summarizes the achievement of John Snow during a cholera epidemic in nineteenth-century London, where a pump handle provided access to cholera-infected water. This chapter illustrates how inattention to the cultural understandings of lay and medical participants in disease outbreaks may hinder the search for the "pump handle."

Methods

Ethnographic and epidemiological data were collected between 1983 and 1988 in a county in the southwestern United States. The county has both rural and urban areas, with the majority of its 600,000 residents clustered in one major city. According to the county's office of vital statistics, the county population was 83.0% white, 2.9% black, 2.8% Native American, 0.9% Asian and Pacific Islander, and 10.4% "other" races. Twenty-one percent of the population is of Spanish origin, any race (1981 estimates). Tourism, mining, agriculture, and industry form the basis of the economy. According to 1980 census data, in 1979 the median family income in the county was $15,796. Nine percent of households had incomes below the federal poverty level ($8,414 for a family of four in 1980).

The Communicable Disease Division of the County Health Department consisted of four units. The Venereal Disease Section (with a staff of seven), Tuberculosis Control Section (staff of eight), and Immunization Section (staff of two) were supported by federal block grants and funds from the state health department in addition to county funds. The Epidemiology Section initially consisted of one county-funded epidemiologist who was responsible for surveillance and investigation of all other diseases. In October 1983, I offered my services to the epidemiologist as a volunteer. I was interested in studying the relationship between popular beliefs and the transmission of infectious disease. I was a graduate student in anthropology, in search of data for a dissertation. Ultimately I became a paid employee, finished my dissertation, and remained on staff in the role of epidemiologist until 1988.

During the course of this study, my role evolved from that of observer to active participant. I became a public health worker and carried out official duties as a disease investigator. Interaction with physicians, nurses, administrators, and the public occurred daily. In the process of investigating outbreaks and reports of communicable diseases, I interviewed patients and physicians and reviewed patients' charts. I attended meetings such as the local infection control association and pediatric society as well as grand rounds presentations at the university hospital.

After my initial training in the health department, I spent a considerable amount of time providing public education in schools, in medical settings, and on the telephone. Telephone inquiries were frequent, and much time was spent

responding to inquiries from the public and medical practitioners. This gave me firsthand experience in various situations involving infectious disease control.

For the first 18 months of fieldwork, I kept a daily log, recording the events of the day. Initially I attempted to record everything that transpired, with a focus on situations that related to disease beliefs and behaviors. When possible, I made notes during the day, for example, when responding to telephone inquiries or conducting investigations by telephone. Both nonelicited statements from individuals and responses to informal interviews were noted. Later I reviewed my notes, collating items that dealt with specific diseases or concepts, such as "flu."

I also interviewed colleagues at the health department about various issues, using a tape recorder both for these interviews and for discussions in the latter stages of fieldwork. However, with respect to the public and the private medical community, I asked only those questions that were related to fulfilling my official role and simply listened to the responses. I learned more from the questions people asked of me than I did from questioning them.

After a period of several months, I decided to focus on all forms of viral hepatitis as a dissertation topic and began systematically to record information on situations that involved hepatitis. Later I received funding to conduct a special research project on shigellosis, which ultimately involved the use of a standardized questionnaire with some open-ended questions. "Flu" and "viral syndrome" were not central research topics. However, they emerged repeatedly in situations I recorded involving hepatitis, shigellosis, and many other reportable communicable diseases and outbreaks, that is, those diseases that must, by law, be reported for purposes of public health.

With respect to the analysis presented here, I acted as a participant observer, using neither a standardized questionnaire nor other data collection instruments. The method of participant observation involves making observations while engaging in the same daily activities as the people under study (Fetterman, 1989; Spradley, 1980). The approach had pros and cons. Because I was a participant, I was not an intruder. Like Helman, who did research while working as a physician, I had an official role to carry out and was much more than an observer. I benefited from an insider's view that would not have been possible had I begun with a specific research question and proceeded to conduct focused interviews. I discovered that hypothetical questions and attempts to elicit abstract disease beliefs revealed little of interest. Yet a single outbreak or situation in which an infection was involved yielded a wealth of information about people's beliefs and attitudes about specific diseases and the nature of their fears of contagion. While this approach had the limitations of being an informal, rather than a formal, study, it was invaluable in gaining insight into many of the social factors affecting the spread of disease.

"Influenza": The Epidemiologist's Perspective

To an epidemiologist, "flu" or "influenza" refers to an infection of the respiratory tract caused by several closely related viruses of the orthomyxoviridae family (Douglas and Betts, 1985). The characteristic symptoms are fever, headache, sore throat, runny nose, and muscle aches (Benenson, 1985). Influenza is defined by an epidemiologist as infection with a single-stranded RNA virus. Influenza has a marked seasonal pattern. In temperate climates, influenza activity is restricted to late fall and early winter months. Surveillance during this time is important to evaluate the efficacy of influenza vaccine and to monitor antigenic changes in virus strains so that appropriate vaccines can be developed. Waldman states:

> The term influenza should be reserved for that illness caused by influenza virus. This is unfortunately not the case with respect to most of the lay public and many in the health industry. Such terms as "intestinal flu" are particularly misleading and inaccurate because one of the characteristics of influenza epidemics is the very small percentage of patients who have intestinal symptoms. (Waldman, 1984:485)

"Folk Flu": The Layperson's Perspective

"Flu" emerged as a common American illness category in the initial stages of fieldwork. It quickly became apparent that "flu" does not mean the same thing to the epidemiologist that it does to the public, who include illnesses with a number of clinical presentations. Lay diagnoses of flu are often made during outbreaks of gastrointestinal disease. For some informants, nausea, vomiting, and diarrhea are the defining features of the flu, whereas an illness whose symptoms are compatible with influenza is classified as a bad cold. Others lump illnesses with gastrointestinal and respiratory symptoms together under flu, and sometimes make distinctions by using terms such as "stomach flu." Confusion surrounding the definition of flu is increased by articles in the popular press and medical literature that describe the symptoms of diseases such as malaria, encephalitis, and AIDS as "flu-like."

Individuals frequently contacted the health department seeking advice about an episode of illness. Usually their questions were directed at finding out "what's going around" and whether or not they should see a doctor. One of the first calls I took after my initial orientation proved to be a typical example:

> CALLER (a young male): I just wanted to ask a question. Is there anything going around right now that I should know about?
>
> HEALTH DEPT: We receive reports of several different types of diseases every week. Are you ill right now, or is someone you know feeling sick?

CALLER: Well, I think I might have it.

HD: What do you think you have?

CALLER: I guess it's the flu.

HD: What kind of symptoms do you have?

CALLER: You know, just regular flu symptoms.

HD: What kind of symptoms exactly?

CALLER: I've been sick to my stomach a lot.

HD: Do you have a fever? Or diarrhea?

CALLER: I don't know, I haven't taken it. I don't really have the diarrhea yet. Maybe it's just too much partying. Should I go to the doctor? Do they give you a shot for this flu?

This type of interaction occurs frequently, as individuals seek a diagnosis for their illness over the telephone, perhaps to avoid unnecessary visits to the doctor. The symptoms that are reported as characteristic of flu in this context vary, but gastrointestinal complaints are common. Between October 1983 and February 1985, the symptoms of 26 callers who attributed their illness to "flu" were recorded. Twenty-three percent reported symptoms of diarrhea alone, while 19% reported vomiting alone. Overall 81% reported vomiting or diarrhea, along with other symptoms, while only 15% reported any respiratory symptoms that would characterize influenza.

Effect of Differences in Perspective on Outbreak Investigation

The discrepancy between the lay and epidemiological definitions of flu is more than a matter of semantics. Or, rather, semantics is an epidemiological issue. For the epidemiologist whose task is to investigate and control outbreaks of communicable disease, this discrepancy in categorization and the associated health behaviors is a major obstacle and may become a source of frustration. The words of an epidemiologist who worked for the County Health Department for nine years illustrate this:

> For years, I would talk to people on the phone, ask them what they had, or go out to try to do an investigation of diarrheal disease in a day care center, knowing that there were cases of *Giardia* in the center, and they would say no, nobody's sick, we just have the flu. And I would ask them what have you had, and they all had diarrhea. And it got to be so damn repetitive that I just got so angry every time somebody said flu. I'd give a lecture, and try and talk about disease, and the first question would be ah, it's the flu, stomach flu. It drove me crazy.

I encountered the same problem at a day care center, when the director attributed diarrhea to "the flu," not as a symptom of giardiasis. "Folk flu" therefore becomes a problem for epidemiologists because people say they have the flu when they have something else. In addition to giardiasis, viral hepatitis and bacterial infections caused by *Shigella*, *Salmonella*, and *Campylobacter* are often attributed to flu. These infections are not uncommon in the United States.

Also complicating epidemiological investigation is the failure of the lay population to recognize identical symptoms in different people. Folk diagnoses of "teething" and "milk allergy" are common in the presence of infectious diarrhea in infants and young children and often accompany "flu" diagnoses in the folk explanation of outbreaks. In the summer of 1984, an outbreak of shigellosis (bacterial dysentery) occurred in a day care center in the county. Investigation revealed explanations for the illness which tended to be individualized for each child. The staff had failed to recognize that an outbreak was occurring in spite of the fact that more than half the children had diarrhea in a three-week period.

In this outbreak, several distinct explanations were given for cases of diarrhea. Those without individual explanations were attributed to flu. One female staff member who also had an infant in the center attributed her own diarrhea to flu and that of her infant to teething. Another woman consulted a physician when her infant experienced an episode of bloody diarrhea. She was told that the diarrhea was probably due to breastfeeding and was advised to discontinue nursing. Because gastrointestinal illness is so often attributed to "flu" or to noninfectious processes, outbreaks of bacterial and parasitic diarrheal diseases can go undetected for weeks.

Folk flu not only obstructs epidemiologic control of diarrheal outbreaks, but it is also an obstacle to surveillance for influenza virus itself. Epidemiologists often spend considerable time following false leads. Between October 1983 and October 1984, medical staff from three nursing homes reported outbreaks of flu. Two of the outbreaks turned out to be gastroenteritis (vomiting and diarrhea), while only one was influenza. The health department typically received more calls about flu outbreaks when influenza was absent from the community than when it was present.

In addition, the public health importance of influenza is not recognized. During one outbreak of influenza A, the health department was called to investigate a claim of disease caused by pigeon droppings in the ventilation system of a public school. On arriving to begin the investigation, I was told that the fears were based on the fact that a large number of students were absent with complaints of respiratory disease. When I suggested that the influenza outbreak might be responsible for this, the teacher became somewhat annoyed. She replied, "We have a lot more than just flu here!"

The investigation of foodborne outbreaks is also hampered by folk beliefs about "flu." In one instance, 17 of the 50 members (34%) of a minor league baseball

team became ill after a common meal in a restaurant. The health department was contacted after 13 of the players visited an emergency room. Cooperation from the restaurant owner in identifying the probable source was limited. Quick to defend the quality of his food, he maintained that the players were simply "suffering from the flu."

Such explanations are often used even when lay diagnosticians have no vested interest in denying the possibility of foodborne illness. In September 1984, I attempted to investigate an outbreak of campylobacter gastroenteritis[1] in a fraternity house. Three laboratory-confirmed cases were reported to the health department by a physician in the Student Health Service, who reported that there were others with diarrhea at the house. The students found my presence amusing, since it was obvious to them that the outbreak was "just the flu" or "just something contagious." One of the fraternity members pointed out that it couldn't be "food poisoning" since they all had fevers. The students shared a popular misconception: that food poisoning comes on quickly after a meal and can be distinguished from flu by the absence of a fever. Because of these beliefs, very few of the residents responded to the food history questionnaire, and the investigation could not be completed.

In the epidemiological investigation of an outbreak of an infectious disease, the first step is to locate individuals who may be ill and obtain symptom histories. This "case finding" activity allows the epidemiologist to characterize the outbreak and construct hypotheses about the source of the infection. If case finding is incomplete, the epidemiologist's ability to determine the source of infection is weakened. In many cases, attempts to identify additional persons who are ill fail because the illness has already been classified by lay diagnosticians as flu.

An example of obstacles to case finding involved a small outbreak of hepatitis A that occurred among the members of a college athletic team. Three cases with onset in a one-week period were reported. Initial interviews with the first patients and their teammates did not uncover any more infected team members. However, on further questioning, it was discovered that another teammate had been ill, but it was stated that "she really just had the flu." As it turned out, her illness was characterized by vomiting and fever, symptoms that are compatible with hepatitis A infection.

The frequency with which flu diagnoses are made by laypersons indicates that the category has important functions in American society. It acts as a ready label that can be applied to many kinds of illness. The anxiety of an ill person is reduced when a diagnosis is made, and the diagnosis of flu carries several important messages. Since everyone is susceptible to the disease, individuals do not feel responsible for contracting the disease as they might, for example, for contracting a sexually transmitted disease. As Helman observed regarding "colds" and "fevers":

> The patients were relieved to find that there is a "Bug going round" and that they are blameless and not socially deviant in their behavior; they also no longer feel uneasy or unsure of their condition, particularly as their illness is now a disease within the biomedical world—and by definition capable of being cured, or at least palliated. (Helman, 1978:126)

The diagnosis of flu is also reassuring because it is believed that the condition is temporary and full recovery will be prompt. This is evident in the frequent use of the term "just" to describe flu. It is "just the flu"—not something worse. While the illness may be severe, it is not considered serious.

"Flu" allows people to explain illness in a reassuring and socially acceptable manner. When an individual feels the need to exclude himself from professional or social responsibilities, a complaint of flu can legitimize absence without generating embarrassment or undue concern. Perhaps because of its greater social acceptability, "flu" often replaces excuses that involve admissions of diarrhea, menses, hangovers, or more serious symptoms. However, from the perspective of epidemiologists who are responsible for the investigation and control of communicable diseases, this popular illness category hinders communication and creates obstacles to appropriate intervention.

"Viral Syndrome": The Perspective of Practicing Physicians

The category "viral syndrome" as used by physicians and medical personnel also engenders problems for epidemiological investigation and disease control. Like folk flu, it does not correspond to any single disease recognized by epidemiologists. During routine investigation, viral syndrome was the initial diagnosis by medical personnel in a number of bacterial infections, notably typhoid fever, shigellosis, campylobacter enteritis, and neurosyphilis.

"Viral syndrome" is to the practitioner what "flu" is to the layperson. Like the folk diagnosis of flu, the medical diagnosis of viral syndrome labels many types of illness. Usually when a physician diagnoses a virus, the message is "it's just a virus, you'll get over it." Although ignorant of the exact cause of the illness, the physician expects recovery without intervention.

Viral syndrome first came to my attention in October 1983. Active surveillance was initiated following extensive flooding that carried the potential for fecal contamination of the water supply. To determine if any increase in gastrointestinal disease had occurred, surveillance systems were set up in nine locations: four emergency rooms, one hospital clinic specializing in digestive disorders, one pediatric clinic in a community hospital, one rural primary health care clinic, and two laboratories. In reviewing medical records in these facilities for an 11-week period, I discovered that the diagnosis of viral syndrome was a frequent one in physician office visits and emergency rooms, and it was often made in

the absence of any laboratory testing to rule out bacterial disease or identify specific viruses.

Viruses are the causal agents of a large number of diseases which have widely varied clinical manifestations. The diagnosis of viral syndrome is not linked to any particular set of symptoms; it is made on the basis of many different patient complaints including fever, headache, dizziness, abdominal pain, sore throat, shortness of breath, vomiting, and diarrhea. This diagnosis does not correspond to a specific viral disease or to any particular syndrome and cannot be used as an epidemiological datum. The only diagnoses that could be counted in our surveillance were gastroenteritis, viral gastroenteritis, and viral enteritis, with the assumption that all three of these would correspond to complaints of vomiting and/or diarrhea. Although the results of the flood surveillance did not indicate any increase in gastrointestinal illness subsequent to the flooding, it is impossible to know how many cases of gastrointestinal illness were diagnosed as viral syndrome.

Daily summaries of physician diagnoses in a community hospital's outpatient pediatric clinic illustrate the potential magnitude of this effect (Table 2.1). Viral syndrome was the most common communicable disease diagnosis, accounting for more than a third of diagnoses. Prior to the flooding, 94 cases of gastroenteritis (14.6% of total communicable disease diagnoses) were recorded in one month. The month after the flooding, 58 cases of gastroenteritis (9.3%) were recorded. This suggests a decrease in gastrointestinal illness after the flooding. However,

Table 2.1 Number of Communicable Disease Diagnoses in a Pediatric Clinic

	SEPTEMBER 1983		OCTOBER 1983	
DIAGNOSIS	*N*	%	*N*	%
Viral syndrome	220	34.2	250	40.1
Otitis media	208	32.3	196	31.5
Gastroenteritis	94	14.6	58	9.3
Upper respiratory infection	45	7.0	37	5.9
Conjunctivitis	31	4.8	13	2.1
Beta Streptococcus	17	2.6	28	4.5
Croup	12	1.9	17	2.7
Flu-like illness	5	0.8	0	—
Bronchiolitis	4	0.6	8	1.3
Pneumonia	3	0.5	11	1.8
Scarlet fever	2	0.3	1	0.2
Viral meningitis	1	0.2	2	0.3
Campylobacter	1	0.2	0	—
Giardiasis	0	—	1	0.2
Total	643	100.0	622	100.0

the number of cases of viral syndrome increased over the same time period, from 220 (34.2%) to 250 (40.1%). If the label "viral syndrome" was applied to gastrointestinal illness seen in children in the clinic, the apparent decrease in gastroenteritis and increase in viral syndrome might represent differences in reporting rather than changes in disease patterns. I questioned two nurses at the clinic about the diagnosis of viral syndrome. One stated that "sometimes it means runny nose and a sore throat." The other nurse found the question amusing and said, "That's what they [the doctors] put when they aren't sure!"

In addition to interfering with epidemiological investigation and disease control, a diagnosis of viral syndrome may endanger a patient's health when a serious bacterial infection is the true cause of the illness. In one case that occurred in the county, a handicapped child with fever and diarrhea was diagnosed by her physician as having "viral syndrome." After the symptoms persisted for several days, the child was again brought for medical care. After being transferred to a second hospital, the child died. An autopsy established a diagnosis of shigellosis (bacterial dysentery). Leopold (1986) describes a similar case in which a 14-month-old child was brought to a pediatric clinic with a fever of 104°F. The initial diagnosis was viral syndrome, with a recommendation of treatment with acetaminophen. Three days later, the child died, and the postmortem exam established a diagnosis of septicemic plague (*Yersinia pestis*). In both these cases, appropriate antibiotic therapy might have prevented death, but the specimen cultures that would have established the diagnosis and indicated the need for specific antibiotic therapy were not performed, possibly because a diagnosis of viral syndrome had obscured the problem.

Because much illness is self-limited, extensive laboratory testing to establish an exact etiology is often of little value to the patient, since recovery often occurs before laboratory reports are received. Only when patients return with continued symptoms are diagnostic procedures implemented. A 13-year-old girl was brought to the emergency room three times. On the first visit, the mother was told that her child had "intestinal flu." On the second, pancreatitis was the diagnosis. Only on the third visit was a stool culture performed, which established the diagnosis of typhoid fever, after which appropriate antibiotic treatment was initiated. Even when they are the cause of an infection, viruses may be difficult to isolate and are expensive to test. This explains why laboratory tests are not often ordered.

There is considerable semantic overlap in the diagnoses of folk flu and viral syndrome. This is apparent when a doctor tells a patient he has the flu but writes viral syndrome or viral infection in the medical record.

Thus far I have described "flu" as part of a lay model and "viral syndrome" as part of a medical model. However, this dichotomy is an oversimplification. Laypersons frequently talk about viruses and often diagnose themselves as having a

evident in statements such as, "I don't know whether I have the flu or just a virus." Others appear to use an explanatory model that is closer to the medical model, in which flu is a subset of a larger category of viruses. In this model all types of flu ("stomach flu" included) are seen as being caused by viruses, but viruses are also recognized to be the cause of illnesses that would not be called flu, such as warts and cold sores.

The details of laypersons' and practitioners' definitions of flu and virus vary considerably. There has been no systematic study to investigate patterns of these beliefs. Colleagues have suggested that there are geographic differences in the extent to which flu is associated with diarrhea. It is also likely that there are differences in the frequency of diagnosis of viral syndrome by medical specialty. These are important and virtually untouched research questions.

Effects of Differences in Perspective on Spread of Infection

From the standpoint of an epidemiologist, the effects of lay and practitioner beliefs on disease investigation and control are generally equivalent, regardless of the specific features of the explanatory models. For example, it doesn't matter whether an individual who is suffering from fever and diarrhea classifies his illness as the "flu," a "virus," or, possibly, a "flu virus." If the patient doesn't seek medical care, the specific type of infection will not be identified. Even if a medical evaluation is sought, the information important to an epidemiologist may not be obtained.

There is also a great deal of variability in the extent to which diagnoses of folk flu and viral syndrome affect the spread of communicable disease. Transmission may be limited or facilitated, depending on the mode of transmission of a particular disease and subsequent individual behaviors of the physician, the patient, and his or her contacts.

Consider antibiotic therapy in the case of bacterial infections that spread by the fecal-oral route. In the absence of treatment, a person with *Shigella* or *Campylobacter* infection who is diagnosed as having viral syndrome can continue to transmit the disease. This does not always happen, however, as physicians sometimes prescribe antibiotics even when diagnosing viral disease. In this case two wrongs may make a right, and the physician prescribes an effective treatment despite misdiagnosis and treatment inappropriate for that diagnosis.

There is sometimes no direct relationship between diagnosis and treatment, as illustrated by information obtained during the investigation of a large outbreak of shigellosis that occurred in the county in August 1986. The outbreak occurred among individuals who had eaten at a local restaurant. Fifty individuals who ate the contaminated food and had symptoms of diarrhea and fever were interviewed. Of the 28 who sought medical care, 8 (29%) were diagnosed as having shigellosis, but 2 of these did not receive appropriate antibiotic therapy; 7 (25%) of the patients were diagnosed with the "flu" or a "virus" ("virus"—4, "flu"—2, "summer flu"—1). Of these, 2 received no treatment, 2 received antibiotics, 1 received Lomotil and 1 received Imodium (both contraindicated in the treatment of *Shigella*), and 1 received an unknown type of suppository.[2] Of the remaining 13 individuals, 11 were not informed of any diagnosis. One was told simply that he had "diarrhea," and one was told he had "gastroenteritis," which is simply a term that describes the symptoms of diarrhea and/or vomiting. Two of these 13 received antibiotics, 2 received Compazine, and 2 received Imodium. The rest were not treated. Overall, only 36% of patients seen by a physician received appropriate antibiotic therapy, while 21% received antidiarrheals, which can be harmful in cases of bacterial dysentery.

Treatment with antibiotics in the absence of a specific diagnosis is extremely common (Hamm et al., 1996; Mainous et al., 1996; Nicole et al., 1996). The medical rationale for such treatment is that even if it is a virus, antibiotics won't do any harm. Prescribing antibiotics also reduces the anxiety experienced by physicians when uncertain about a diagnosis (McCombie, 1989). In an article about how physicians talk about patients, Hardison gives an example of this:

> I think the patient has the flu, but I am going to give him broad spectrum antibiotics until his blood cultures come back negative. It is better to be safe, and after all, it won't hurt to give him antibiotics, and besides I won't have to worry about gram-negative septicemia. (Hardison, 1986)

However, in the case of bacterial gastroenteritis, the choice of antibiotic is important and tied specifically to the etiologic agent. In addition, antibiotic therapy may not be necessary, or may even be contraindicated. For instance, treatment with antibiotics usually prolongs the carrier state for infections caused by *Salmonella* and is related to relapses (Hook, 1985).

When individuals with the bacterial infections mentioned above are interviewed as part of a health department investigation, lack of knowledge regarding the disease they suffer from is a common finding. Many do not know the name of the disease they have and state that the doctor told them that they had "a bug," "an infection," "the flu," or "a virus." Those individuals who have been told the scientific name of their infection are often anxious to find out more about it. During the course of these investigations, it is rare to find patients who understand that they have an infection which is transmitted by the fecal-oral route, although some have a vague idea that they have something contagious.

In the initial stages of the shigellosis research project, in which detailed patient interviews were conducted by health department staff, we asked 53 patients whose infections had been reported by physicians what instructions the physician had given them. Only six (11.3%) reported that they were told to be sure to wash their hands after going to the bathroom. Some of the more com-

mon responses were, "He told me to take Tylenol," "He told me to give the baby clear fluids," "He told me to take the medicine," and, "He didn't tell me anything."

Another common infection in which patient and practitioner behaviors are important determinants of disease spread is viral hepatitis A. Physicians frequently diagnose "flu" as well as "viruses" in the presence of hepatitis symptoms. In reviewing the medical records of hepatitis patients, assessments such as "Intestinal flu" and "Probably influenza—Rule out hepatitis" were observed. The early symptoms of viral hepatitis are characterized by fever, anorexia, nausea, vomiting, and abdominal pain. These symptoms are also typical of flu. Visible jaundice occurs in only a small proportion of cases, and only late in the course of illness. When there are delays in seeking medical care and in diagnosis, it is often too late to prevent illness in household members and other close contacts by giving immune serum globulin injections. If delay occurs in diagnosing a food preparer who has hepatitis A, transmission to the public can be considerable.

Individuals diagnosed as having hepatitis often report that they initially thought they had a bad case of flu. When physicians are consulted they often concur with this diagnosis. In one case, a male cook employed at a local restaurant contacted me at the health department requesting prophylactic injections because a close friend had been diagnosed as having hepatitis A. The individual stated that he had the "flu" now, and didn't want "to get hepatitis on top of that!" He reported symptoms of vomiting, fever, and headache. He was advised to see a physician for evaluation of this condition. When he visited an emergency room, he was told he had "stomach flu" and no diagnostic tests were performed. Subsequent testing by the health department revealed that he had hepatitis A.

In addition to problems caused by failure to diagnose hepatitis, problems were also common when physicians actually did diagnose hepatitis and then made recommendations. Often these recommendations reflected the view that all forms of hepatitis were as contagious as the "flu." Frequently, persons who were not capable of transmitting hepatitis were excluded from schools and workplaces. Health department staff spent a considerable amount of time responding to crisis situations that arose from misconceptions about viral hepatitis and misdiagnoses of the diseases, despite the availability of diagnostic tests for several forms of hepatitis. Time spent in these investigations meant that other investigations were neglected. In many cases, members of the public acted on the basis of information received from physicians, which was considered incorrect by the county health department disease control staff. People frequently became hostile, insisting, "But my doctor said. . . . " Responding to these situations was difficult because of the unwritten rule that prohibits questioning a physician's diagnosis or telling a patient "your doctor is wrong." These situations were a constant source of frustration for the health department staff.

Discussion

The need for an understanding of popular health culture is as real for modern industrial societies as it is for developing countries. Infectious disease control in public health is dependent on successful epidemiological investigation, which is ethnographic in nature. What individuals report is filtered through their own perception of what is relevant. When people believe that they have the flu, an epidemiologist finds that it is even more difficult to obtain the information needed to determine the cause of outbreaks. Complete and accurate case reporting, which is crucial for disease control, is never reached, even under the best conditions. Many cases of food poisoning and reportable infectious diseases never come to the attention of disease control specialists because laypersons categorize the symptoms as "flu" and/or "virus."

There is increasing awareness among public health practitioners of the need to design culturally appropriate health care interventions and understand cultural conceptions of illness. However, the major focus is on "different" cultures that might be found among immigrants and minorities. Mainstream and middle-class Americans are sometimes viewed as "culture-less," or as homogeneous carriers of the biomedical model. The apparent congruity between the disease models of middle-class Americans and the biomedical model, however, is a fiction created by the use of an apparently similar vocabulary. Terms like "flu," "virus," and "infectious" have different meanings for laypersons, epidemiologists, and physicians.

Differences in the language and behavior of laypersons and those of clinical practitioners are often noted. Less recognized is the difference between clinical practitioners and epidemiologists. In clinical practice, physicians use explanatory models that differ from scientific explanatory models and are closely related to popular models of illness. In addition, there is a wide range of variability in theory and practice among biomedical practitioners in the United States. This variability often acts as an obstacle to epidemiological investigation and disease control. The nature of the clinical models used by physicians in actual practice and the extent to which these diverge from scientific explanatory models are important areas for future medical anthropological research.

In spite of the fact that the clinical explanatory model of disease in the United States is closely related to the epidemiological model, some important discrepancies regarding specific disease entities may contribute to the spread of infectious diseases. Although vague diagnoses and failure to order laboratory tests are sources of annoyance for epidemiologists, physicians may simply be practicing culturally appropriate health care when they tell patients they have the "flu." Their working models of disease are based on healing individuals, and their daily activities have goals and objectives that differ from those of epidemiologists

concerned with preventing the spread of disease in populations. Recognition of the different goals of public health and medical practice can place these behavior patterns in perspective.

Anthropological research can do more for public health than simply elucidating patterns of beliefs and behaviors among laypersons. Medical practitioners are another important target population for public health officials. In many instances, they are considered "difficult to reach." Attempts to elicit their cooperation and change their behavior also need to be based on an understanding of their belief systems and rationales. Anthropologists can contribute to improving public health by studying the relationship among illness categories, beliefs, and health behavior and by elucidating the variety of common disease terms used by laypersons and professionals.

Notes

1. Like *Salmonella* infections, *Campylobacter* infections are often traced to foods such as chicken.
2. The antidiarrheal agents Lomotil and Imodium are contraindicated in the treatment of diarrhea caused by toxigenic bacteria such as *Shigella*.

Acknowledgment

An earlier version of this paper, "Folk Flu and Viral Syndrome: An Epidemiological Perspective," was published in *Social Science and Medicine* (1987) 25, no. 9: 987–993.

References

Benenson AS (1985) Control of Communicable Diseases in Man. Washington, DC: American Public Health Association.

Douglas RG, Betts RF (1985) "Influenza Virus." In: Principles and Practice of Infectious Diseases. GL Mandell, RG Douglas Jr, JE Bennett, eds. New York: Wiley, pp. 846–866.

Eisenberg L (1977) Disease and illness: distinctions between professional and popular ideas of sickness. *Culture Medicine and Psychiatry* 1:9–23.

Fetterman DM (1998) Ethnography: Step by Step, 2nd ed.. Newbury Park, Calif: Sage Publications.

Gillick MR (1985) Common sense models of health and disease. *New England Journal of Medicine* 313:700–703.

Hahn RA (1995) Sickness and Healing. An Anthropological Perspective. New Haven: Yale University Press.

Hamm RM, Hicks RJ, Bemben DA (1996) Antibiotics and respiratory infections: are patients more satisfied when expectations are met? *Journal of Family Practice* 43:56–62.

Helman CG (1978) "Feed a cold, starve a fever": folk models of infection in an English suburban community, and their relation to medical treatment. *Culture Medicine and Psychiatry* 2:107–137.

Helman CG (1985) "Disease and Pseudo-Disease: A Case History of Pseudo Angina." In: Physicians of Western Medicine. RA Hahn, AD Gaines, eds. Dordrecht: Reidel, pp. 293–331.

Hook EW (1985) "Salmonella Species Including Typhoid Fever." In: Principles and Practice of Infectious Diseases. GL Mandell, RG Douglas Jr, JE Bennett, eds. New York: Wiley, pp. 1256–1265.

Kleinman A (1980) Patients and Healers in the Context of Culture. Berkeley: University of California Press.

Leopold JC (1986) Septicemic plague in a 14 month old child. *Pediatric Infectious Disease* 5:108–110.

Mainous AG, Huestion WJ, Clark JR (1996) Antibiotics and upper respiratory infection: do some folks think there is a cure for the common cold? *Journal of Family Practice* 42:357–361.

McCombie SC (1989) The politics of immunization in public health. *Social Science and Medicine* 28:843–849.

Nicole LE, Bentley D, Garibaldi R, Neuhaus E, Smith P (1996) Antibiotic use in long-term-care facilities. *Infection Control and Hospital Epidemiology* 17:119–128.

O'Reilly KR (1985) "Applied Anthropology and Public Health." In: Training Manual in Medical Anthropology. CE Hill, ed. Washington, DC: American Anthropological Association, pp. 8–20.

Spradley JP (1980) Participant Observation. Fort Worth, Tex: Harcourt Brace Jovanovich.

Waldman RH (1984) "Influenza Virus." In: Infectious Diseases. RH Waldman, RM Kluge, eds. New Hyde Park, NY: Medical Examination Publishing Company, pp. 485–500.