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# When nurses double as interpreters: a study of Spanish-speaking patients in a US primary care setting

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## Abstract

The United States is experiencing one of its largest migratory waves, so health providers are caring for many patients who do not speak English. Bilingual nurses who have not been trained as medical interpreters frequently translate for these patients. To examine the accuracy of medical interpretations provided by nurses untrained in medical interpreting, we conducted a qualitative, cross-sectional study at a multi-ethnic, university-affiliated primary care clinic in southern California. Medical encounters of 21 Spanish-speaking patients who required a nurse-interpreter to communicate with their physicians were videorecorded. Encounters were transcribed by blinded research assistants. Transcriptions were translated and analyzed for types of interpretive errors and processes that promoted the occurrence of errors. In successful interpretations where misunderstandings did not develop, nurse-interpreters translated the patient's comments as completely as could be remembered and allowed the physician to extract the clinically-relevant information. In such cases, the physician periodically summarized his/her perception of the problem for back-translation and verification or correction by the patient. On the other hand, approximately one-half of the encounters had serious miscommunication problems that affected either the physician's understanding of the symptoms or the credibility of the patient's concerns. Interpretations that contained errors that led to misunderstandings occurred in the presence of one or more of the following processes: (1) physicians resisted reconceptualizing the problem when contradictory information was mentioned; (2) nurses provided information congruent with clinical expectations but not congruent with patients' comments; (3) nurses slanted the interpretations, reflecting unfavorably on patients and undermining patients' credibility; and (4) patients explained the symptoms using a cultural metaphor that was not compatible with Western clinical nosology. We conclude that errors occur frequently in interpretations provided by untrained nurse-interpreters during cross-language encounters, so complaints of many non-English-speaking patients may be misunderstood by their physicians. © 2001 Elsevier Science Ltd. All rights reserved.

**Keywords:** Interpretation; Bilingual communication; Spanish; Cross-cultural encounters; Patient–doctor relationship; California (USA)

## Introduction

Immigration now accounts for 37 percent of the national population growth in the United States (Horner, 1995). Many of these immigrants have suffered

malnutrition, poverty, torture and disease during their migration with resulting physical and mental consequences (Castillo, Waitzkin, Ramirez & Escobar, 1995). Additionally, immigrants come from every continent as opposed to the primarily European emigration at the turn of the century, so they represent diverse languages and cultures. According to the last census, more than 150 languages are spoken in the United States within almost 300 racial and ethnic groups (Horner, 1995).

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Because of the size of the surge in immigration, many of the newcomers are able to move into established ethnic communities, which delays their acculturation and acquisition of English (Szapocznik, 1994). The largest group of immigrants comes from Mexico, and this group accounts for 10 percent of the total US population. Frequently, many Mexican immigrants maintain homes and family ties in Mexico while they pursue economic advantages by working in the US (Haffner, 1987). Consequently, they may avoid acculturation, and family members, anticipating a temporary stay in the US, may choose not to learn English.

When immigrants need medical services, they usually must visit caregivers of different cultural backgrounds. The caregivers may not understand the implications that particular symptoms hold for patients because the perception and interpretation of somatic sensations are frequently defined by cultural idioms (Eisenberg, 1977; Kleinman, Eisenberg & Good, 1978; Kleinman, 1980; Pachter, 1994). Furthermore, the burden of a lack of a common language hinders patients' ability to explain their concerns or perceptions of illness to the physicians because the emphasis moves toward trying to convey the clinical symptoms. Almost all communication between physicians and non-English-speaking patients is concerned with symptomatology to the exclusion of feelings, causes, or patient questions (Rivadeneira, Elderkin-Thompson, Silver & Waitzkin, 2000). The clinical focus probably explains, in part, why non-English-speaking patients who use an interpreter, or feel that they need one, rate their providers as less friendly and less respectful than do patients without a language or cultural barrier (Baker, Hayes & Fortier, 1998; Cooper-Patrick et al., 1999). As a result of the impersonal interaction, non-English-speaking patients are at risk for not developing the trust in their physicians that facilitates cooperation with suggested treatment regimens (Marcos, Urcoyo, Kesselman & Alpert, 1973; Quesada, 1976; Marcos, 1979; Triandis, Marin, Lisansky & Betancourt, 1984; Perez-Stable, 1987; Bertha, 1992).

Immigrants rate language and cultural differences as their biggest barriers to receiving health care. Parents with little or no English skill, who tried to secure care for their children at a Latino clinic, cited the difference in language as the cause of misdiagnoses, poor medical care, and inappropriate medications and/or hospitalizations of their children (Flores, Abreu, Olivar & Kastner, 1998). The expected problems of poverty, lack of insurance, transportation, and long waiting times were rated after language. The health care system increasingly depends on patients to make critical informed decisions regarding their health care, e.g., the use of life support systems or the choice of therapeutic approaches for cancer or diabetes (Kent, 1996). However, distinct differences in therapeutic choices have been reported

even across racial and ethnic groups that use the same language (Blackhall et al., 1999). When language and cultural barriers are present, the probability is further increased that patients might misunderstand or miscommunicate their perceptions of risks and benefits of treatment options.

Other factors affect patients' ability to implement therapeutic recommendations from cross-language encounters. Patients receive less information about the therapeutic regimen, understand less of the medication instructions (Shapiro & Saltzer, 1981), are less likely to keep subsequent appointments, and are more likely to make emergency room visits than are patients in same-language encounters (Manson, 1988). Non-English speakers are also less likely to receive preventive services (Woloshin, Schwartz, Katz & Welch, 1997). Among Spanish-speaking patients, those seen by physicians with even limited Spanish ability feel that they understand the disease and treatment better, have better recall, and ask more questions than Latinos seen by non-Spanish-speaking physicians (Erzinger, 1987; Seijo, Gomez & Freidenberg, 1991; Baker, Parker, Williams, Coates & Pitkin, 1996).

In addition to the problems associated with conveying information about diagnoses or medications, a language barrier impedes the effective use of information for encouraging compliance. Some patients prefer to be well-informed so that they can monitor their own progress, while others prefer to avoid medical details. Giving too much information to a person who prefers to avoid the medical detail, or not giving enough information to a person who wants to be informed, can increase the anxiety level of the patient enough to delay recovery (Suls & Fletcher, 1985). In addition, reducing the patient's anxiety level by use of the appropriate level of information encourages calm decision-making if choices between alternatives must be made (Kerrigan et al., 1993; Kent, 1996). Similarly, some patients prefer to feel in control of their medical care, while others prefer a more dependent role and trust the physician to make decisions (Thompson, 1981). However, even if a physician discerns the appropriate amount of information and control desired by an immigrant patient regarding treatment options, the information might not be understandable to the patient if the symptoms are perceived within a cultural idiom.

A commonly held idiom among Latinos as well as many other immigrants is the humoral concept of illness (Bastein, 1987; Messer, 1987; Nichter, 1987; Tedlock, 1987; Weiss et al., 1988). Illness is perceived as a hot-cold imbalance within a fluid of the body, such as blood, phlegm, or semen (Bastein, 1987). When illness is associated with an imbalance the imbalance perceived as a reaction to an unfavorable situation or an unusual action by another person (Weiss et al., 1988). Illnesses, medicines, and people themselves may be located

anywhere on the hot–cold continuum, and recovery from illness requires the appropriate balancing of all elements to achieve a “temperate” outcome (Messer, 1987). Solving the problem, then, requires addressing both the symptoms and the context in which the symptoms developed. Western medicine, which relies heavily on technology, often treats symptoms independent of their context. Although many immigrants have a complex perception of caregiving that incorporates popular, folk and professional medical options (Tedlock, 1987), immigrants may still have difficulty understanding the physician’s logic and be hesitant about following a regimen perceived as addressing only a portion of the problem.

Physicians who are not proficient in their patients’ languages must use interpreters. The problems when using ad hoc interpreters are well known. Ebden and colleagues found that between 23 and 52 percent of physicians’ questions were either misinterpreted or not interpreted at all by non-trained, ad hoc, staff interpreters (Ebden, Carey, Bhatt & Harrison, 1988). Other researchers have corroborated the frequency of editing errors and omissions by non-trained interpreters (Marcos, 1979; Diaz-Duque, 1982; Ebden et al., 1988; Serrano, 1989). Misdiagnoses among psychiatrists have also been attributed to cross-language difficulties (Alpert, Kesselman, Marcos & Urcuyo, 1973; Marcos et al., 1973; Marcos, 1979; Seijo et al., 1991).

It has been recommended that physicians utilize medical interpreters who can avoid the problems inherent in the use of a family member or ad hoc interpreters (Erzinger, 1987; Hardt, 1991; Seijo et al., 1991). Professional interpreters allow patients to speak freely, and they provide patients the opportunity to explain problems without modifications by family members who can bring their own objectives and perceptions to the encounter. However, for economic reasons, many physicians and health care facilities employ bilingual nurses rather than hire trained medical interpreters. Nurses understand the need for a flexible blending of questioning, listening, eliminating irrelevant information, educating, and collecting of facts for hypothesis formulation — the necessary steps in medical inquiry. Patients often mention important material casually or indirectly, and only a medically trained person would recognize its significance (Putsch, 1985). Additionally, nurses are likely to understand the physician’s medical assumptions and rationale for repeated questions, so they can elicit the type of information needed for clinical decision-making. Patients may not view nurses’ presence as invasive in the intimate context of a medical encounter as they might view the presence of other interpreters.

However, the extent to which nurses’ professional standing mitigates their willingness to identify and explain points of confusion or medical conflicts to the

practitioners, to whom they are subordinate, is unknown. The relationship between the patient and nurse-interpreter is also vulnerable to the class, gender, age and educational biases of their shared ethnic culture. Nurses may have social positions that they perceive as superior to the immigrant patients, and this perception may influence their interpretations of patients’ narratives. Interpretations are framed by the beliefs and assumptions of the interpreter, so how an interpreter views a patient personally may influence how he or she understands and interprets the patient’s comments (Poma, 1983; Seijo et al., 1991).

Yet the use of bilingual nurses as interpreters for non-English-speaking patients in lieu of trained medical interpreters has received little critical attention, and there is almost no empirical research literature of which we are aware that examines the accuracy of these interpretations. To examine the effectiveness of nurses who had excellent bilingual skills but no prior translation training, we qualitatively analyzed interpretations provided by nurses during cross-language medical encounters. The research focus was on the accuracy of the interpretations. If inaccuracies were found, we were interested in the nature of the inaccuracies and the behavioral processes that promoted the occurrence of the errors.

## Methods

### *Participants*

Patients between ages 18 and 66, seeking first-time episodic care at a walk-in primary care clinic sponsored by a Southern California university, were approached by bilingual/bicultural research assistants to participate in a research project on mental health issues in primary care funded by the National Institute of Mental Health (NIMH). The clinic serves a low socioeconomic area with a large number of immigrants from Mexico and Central America. Over a 6-month period, patients who consented to the NIMH study were approached for additional permission to videotape their medical encounters. Of the 356 patients who consented to the NIMH study, 49 percent ( $N = 175$ ) also agreed to having their encounters videotaped. Sixty-seven percent ( $N = 117$ ) of the participants met with physicians who had agreed previously to participate in this communication study. Eighteen percent ( $N = 21$ ) spoke only Spanish, did not bring English-speaking family members with them to the encounter, and met with physicians (five male and two female) who spoke only English, necessitating the use of a bilingual nurse-interpreter (see Table 1).

The bilingual nurses (three male and six female) were full-time employees ( $N = 7$ ) or student trainees ( $N = 2$ )

Table 1  
Demographic profile of Latino and non-Latino patients<sup>a</sup>

	COMMUNICATION STUDY SUBSAMPLE			LARGER MENTAL HEALTH (NIMH) STUDY
	Spanish-speaking patients		English-speaking patients	Spanish-speaking patients
	With interpreters	With and without interpreters		
	<i>N</i> = 21	<i>N</i> = 30	<i>N</i> = 87	<i>N</i> = 123
Gender				
Male	57% (12)	43% (13)	55% (48)	33% (40)
Female	43% (9)	57% (17)	45% (39)	67% (83)
Average age	36	36	38	36
Years formal schooling	6	6	12 <sup>c</sup>	8 <sup>b</sup>
Employed				
Yes	52% (11)	47% (14)	28% (24)	29% (36)
No	48% (10)	50% (15)	72% (63) <sup>b</sup>	69% (85)
Unknown	0%	3% (1)	0%	2% (2)
Marital Status				
Married	62% (13)	57% (17)	19% (17) <sup>c</sup>	52% (64)
Divorced/separated	9% (2)	13% (4)	37% (32)	15% (19)
Never married	29% (6)	30% (9)	44% (38)	33% (40)
Av. number children	4	4	2	3

<sup>a</sup>Note: (1) Comparing Spanish-speaking patients to English-speaking patients within the Communication Study produced differences for marriage status (more Latinos were married), employment status (more Latinos were currently employed), and schooling. (2) Comparing Spanish-speaking patients in Communication study to all Spanish-speaking patients in the larger mental health (i.e., NIMH) study, including those with interpreters and those without, produced a difference in education. (3) Significance tests include chi-square tests of categorical variables and t-tests of interval variables. Numbers of patients are in parentheses.

<sup>b</sup> $p < 0.05$ .

<sup>c</sup> $p < 0.005$ .

at the clinic who possessed excellent bilingual skills. Physicians were primary care residents and senior-attending from a university medical school. The protocol for the research was approved by the University of California, Irvine, Human Subjects Committee.

### *Procedures*

When patients were approached for consent to videotape their encounters, they were assured that their decision on participation would not affect their care at the clinic and that they could stop the videotape at any time during the encounter if they chose. The first author met with physicians to answer questions about personal and professional confidentiality and to assure them that patients' privacy would be maintained. The nursing staff also agreed to cooperate with the videotaping project. To videorecord the encounters, a camera was mounted close to the ceiling in the examining room at an angle that allowed recording of patient and physician while seated and facing each other. The nurse-interpreter usually stood equidistant from physician and patient. The dialogue during the physical examination, which took place underneath the camera, was audiorecorded.<sup>1</sup>

### *Analysis*

Bilingual research assistants transcribed the videotaped encounters using a transcription technique developed in socio-linguistics and adapted to medical encounters (Frankel, 1984; West, 1984; Street, Mulack & Wiemann, 1988; Waitzkin, 1991). Assistants presented the flow of the interaction by preserving interruptions, nonverbal utterances of encouragement (Uh-huh), emphases, pace, overlapping speech and pauses (see Appendix A). Transcriptions were then translated. The translations were verified by a second research assistant who compared the transcript to the videotape and reviewed the accompanying English translation. Differences between the assistants were resolved by discussion. If the interpreters remained uncertain after conferring, a senior translator reviewed the passage in question.

Videorecordings with accompanying transcripts were reviewed by the first author and the senior translator. Each utterance, each sequence of utterances, and each

topic of conversation was analyzed to determine if physicians and patients appeared to understand the meaning of the other's comments (Edwards, 1994; Potter, 1996). The degree to which the interpreter created ambiguity or distortion through editing changes, omissions, or misrepresentations of the patient's meaning was noted.

Changes in meaning in the dialogue were coded according to two large, predetermined categories: (a) language errors or changes, and (b) interpersonal conflicts (Strauss & Corbin, 1990). Language errors or changes included lack of mention of cultural practices (e.g., dietary habits, social relationships, ethnic beliefs regarding the meaning of symptoms, use of native healers), or semantic problems (ambiguity, nontranslatable terms, medical jargon, paraphrasing or editing mistakes, and absolute interpretations<sup>2</sup> of conditional statements). Interpersonal conflicts were subcategorized into behavioral demonstrations suggesting (a) lack of trust and/or respect toward the patient by either the interpreter or physician, and (b) conflicts over control of the direction of the discussion. Conflicts in control existed if a participant introduced a sequence of talk or line of inquiry two or more times without getting the issue discussed or resolved.

For each encounter, researchers summarized the types of errors detected in the transcript. Encounters in which language or interpersonal errors occurred repeatedly or remained uncorrected for at least the majority of the encounter were examined for processes that fostered their development and acted as barriers to their correction. On the other hand, encounters in which few or inconsequential interpretive errors occurred were examined for processes that prevented or mitigated the development of errors (Strauss & Corbin, 1990). The processes conducive to both accurate and inaccurate interpretations were determined with the first nine encounters analyzed. The additional 12 encounters did not add to the number of theorized processes but did corroborate those already extracted.

Medical charts were examined by the first author with an attending physician six months after the encounter for physicians' illness summaries and evidence of patients' adherence to physicians' recommendations. Medical chart reviews to assess adherence included completion of physicians' requests for laboratory tests, return visits to the clinic, specialist appointments, or diagnostic procedures. The review was limited to information contained in the clinic's medical charts as there was no follow-up procedure to collect records from sources outside the clinic or additional information from the patient.

<sup>1</sup>There was no indication in the current study that the physicians or patients were reacting to the camera. Physicians' primary concern was with patients' acceptance and comfort. Patients did not appear to restrain their comments. Other studies have found that videorecording of encounters has little impact on patient behavior (Pringle & Stewart-Evans, 1990; Redman, Dickinson, Cockburn, Hennrikus & Sanson-Fisher, 1989; Wilson, 1991) although physicians may be tense and provide a more thorough examination than normal (Arborelius & Timpka, 1990).

<sup>2</sup>In an absolute interpretation, the nurse-interpreter dropped a limiting adverb or adjective: e.g., "If I get up quickly, I become dizzy" became "He becomes dizzy when he gets up."

At the same time, patients' complaints were classified as uncomplicated or complicated. In uncomplicated cases, patients reported a known chronic condition, displayed an obvious lesion, or reported a symptom cluster that was easily identified such as a breast lump or hypertension, and the medical chart information corroborated the videotaped complaint. If the patient required additional testing or prompted detailed queries to establish a suspected etiology, or provided symptoms that offered multiple possible etiologies, the case was considered complicated. Complexity was, therefore, linked to the amount of communication necessary to diagnose and treat the complaint rather than the severity or degree of threat implied by the patient's complaint.

English interpretation of Spanish text appears in italics in the following excerpts.

### Results

The 21 encounters divided evenly between complicated and uncomplicated cases. Ten contained minor interpretive errors — usually editing changes — that did not become clinically significant. In these successful interpretations, the symptoms were generally conveyed accurately and were understood by the physicians. Medical chart summaries of patients' symptoms were accurate and subsequent notations within the following six-month period indicated that follow-up procedures were completed and patients complied with suggested regimens. As might be expected, patients who presented uncomplicated cases with either previously diagnosed illnesses or symptom clusters with readily identifiable problems were half as likely to have communication difficulties as patients with more complicated symptom presentations. Approximately one-third of the uncomplicated cases had communication problems compared to two-thirds of the complicated cases.

Techniques used by physicians for successful communication during cross-language encounters are presented first, followed by discussion of encounters that contained multiple interpretive errors. Four processes were found to contribute to the development of clinical misunderstandings, and problematic encounters typically contained one or two of the processes. The problem interpretations selected for discussion do not contain the most egregious errors, but represent the four error patterns as they emerged in one uncomplicated, routine case and one more complicated case in which the etiology was not readily apparent.

#### *Characteristics of encounters with successful interpretations*

In the following encounter the physician and nurse-interpreter worked slowly to understand the patient's opening comments and to verify each fact.

#### Patient A

- 001 Doctor: Ok. And (2) He had the ac:cident =  
 002 Interpreter: = Mm =  
 003 D: = in September =  
 004 I: = Mmhm.  
 005 D: (1) N' then he went to- he had the  
 hernia =  
 006 I: = Mmhm.  
 007 D: He went to see a doctor in Hu:nti:ngton-  
 008 I: Mm.  
 009 D: Beach (1) or Hu:nti:ngton (1)Hospital?  
 010 I: In Hu:nti:ngton- In a hospital in  
 Huntington Beach but he doesn't  
 remember the name =  
 011  
 012 D: = Ok. He received surgery on Sep-  
 tember 29 at a hospital in Huntington  
Beach.  
 013  
 014 It was corrected =  
 015 I: = Mmm =  
 016 D: How soon after the surgery did he  
 have the recurrent hernia problem.

This physician used these periodic reviews to explain her perception of the problem. By doing so, the nurse-interpreter was able to confirm each of the physician's inferences individually. By the doctor and nurse speaking slowly and distinctly in short, simple sentences with few pronouns, the patient, who appeared to understand some English, was able to follow her description of his problem. He occasionally nodded his head in agreement with the interpreter. The physician began to speak more quickly when she addressed the nurse for another question (line 16), yet she continued to use questions that were simply worded. She waited for the nurse to finish the patient's answer before moving to the next exchange or reviewing the answer.

Another physician–nurse team used a more detailed review process and also created an empathetic environment for the patient by careful attention to the patient's nonverbal behavior. Additionally, the nurse translated the patient's comments with a minimum of editing and the physician then condensed the patient's comments. As a follow-up, the nurse back-translated the physician's inferences to the patient for verification.

#### Patient B

- 018 D: Monday. (1) ^She's really in a lot of pain to:o.  
 [She looks like-]  
 019 I: [You have a lot] of pain, right  
 020 P: Yes.  
 021 I: Yes.  
 022 D: Ok.What was she doing when the..pain came on.  
 023 I: What were you feeling when this pain began, as  
 you remember.

- 024 P: *I was only sitting down...and the pain began first in the back-*  
 025 *... and later I felt as if something.. was inflamed inside =*  
 026 I: *= inside-*  
 027 *I was sitting down, and certain I felt..this pain in my back.*  
 028 *And then I felt .. that .. like something-*  
 029 *ah::.. ah::was inflamed inside of me-*  
 030 *-got inflamed right away..and then it went like that. ((makes snapping noise with fingers))*  
 031 *snapping noise with fingers))*  
 032 D: *^Oh, so the pain that she got in her stomach goes all the way to her back?*  
 033 *her back?*  
 034 I: *The pain that you feel..in your stomach goes..it goes to your back?*  
 035 P: *Yes.*

The physician acknowledged immediately the patient's tense position and downcast eyes (line 18). The interpreter thoughtfully mentioned the doctor's observation to the patient (line 19). While watching her closely for an opportunity to make eye contact, the physician asked a question about her activities when the pain began (line 22). When interpreting the patient's reply, the nurse used the first person in his interpretation, which recreated the narrative of the woman's words and supplemented the physician's continued close observation of the patient's distress (lines 27–30). The nurse also attempted to preserve situational details as he interpreted, e.g., she was "sitting down" when the pain began. The nurse spoke slowly, but the physician waited for the full interpretation and then reflected his summary regarding the location of the pain back to the nurse (lines 32–33). The nurse back-translated the physician's summary of the patient's original comments, and the patient verified the accuracy, so all participants shared the same interpretation of her original comments.

The patient's presentation of gastrointestinal distress was challenging communicatively because the patient began to change some of the details of her symptoms as the history-taking progressed. Both men—physician and nurse—continued to encourage her to contribute information.

- 207 P: *= Yesterday it had left me, but just as I ate*  
 208 *...and then it hit me another time.*  
 209 I: *O::h, ok::..That- this is very important.*  
 210 *Ah::h. Yesterday the pain went away, but as soon as I ate..*  
 211 *Came back right away.*  
 212 D: *(2) Oh. ^She didn't say that. Ok, ok.*  
 213 *I'm glad she said that=((smiling))*  
 214 I: *= Ya.*

- 215 D: *So..we- we- on Sunday, did she eat something*  
 216 *on Sunday that brought the pain on?*

She had earlier said that the pain was constant. When she connected the pain to eating, the physician began to redefine the pain as intermittent, but he first sought confirmation (lines 215–216). The physician and nurse then established that the patient had stopped eating to eliminate the pain (lines 245–248), which she had earlier characterized as constant, apparently because it reappeared whenever she ate.

- 245 I: *And, ah..since yesterday that I ate at five p.m.*  
 246 *I haven't..had any – not even water -*  
 247 *because she's afraid...that it's gonna get worse*  
 248 *and she's gonna start throwing up*  
 249 D: *So then, so the pain then is not constant.*  
 250 *The pain..was fine .. yesterday*  
 251 *..and then when she ate, it came back.*  
 252 *So she was fine, like...for a while.*  
 253 I: *So the pain has not been constant-*  
 254 P: *No. Not all the time. Yesterday it quit.*  
 255 *Yesterday .. it went away a little to the point*  
 256 *that ah:: I was able to do things.*  
 257 *Ah::h =*  
 258 I: *But it was here.*  
 259 P: *= It was here.*  
 260 I: *It went down yesterday, but it was there all the time.*

By line 249, the doctor concluded that the pain was not constant but was associated with eating. He voiced his conclusion aloud so that the nurse could reconfirm his inference with the patient (line 252–253). When the interpreter back-translated the doctor's summary for the patient, he confirmed the revised interpretation that the pain was not constant but recurring. The nurse's summation (line 260) sounded contradictory, but by then the physician understood that the nurse was reporting the patient's fear of potential pain as well as overt pain. Gradually, the physician was able to identify the food that was causing the problem and recommended an antacid.

#### *Development of misunderstandings during interpretations*

Other physicians had more difficulty changing their perception of the problem than did the above clinician. For example, the following physician spoke limited Spanish, and initially he did not request an interpreter when he met with a young construction worker. A misunderstanding developed, but later when the clinician was given information that contradicted his original perception, he was unable to reformulate his definition of the patient's complaint. The nurse-interpreter tried to rectify the situation by providing the information that she thought the physician was expect-

ing even though the information was not congruent with the patient's comments. Thus, the first two processes of problematic encounters are failure of the physician to redefine a problem when contradictory information is presented, and the tendency of nurse-interpreters to solve differing perceptions of the problem by providing the clinical information expected by the physician.

Patient C

008 D: *Why did you come today?*

009 P: *Oh: s:::- be:cause..it hurts here on my face.*

010 *I don't know if it might be an allergy..or what.*

011 D: *(2) When did this problem start?*

012 P: *From 3 month..ago to..now.*

013 *Now it hurts more but I have like 4 years but very little*

014 *but for some months now it hurts tremendously.*

The young man had a mild rash for four years, but only recently had it become painful (lines 13–14). To the patient, the 'problem' was the onset of pain, which was separate from the onset of the rash. The physician perceived the onset of pain and rash as occurring simultaneously. He appeared to understand only the first phrase of the patient's description of time, i.e. the three-months duration (line 12), which he repeated in line 85 below.

085 D: *(4) Okay, alright- um- hum-(2) okay. It started three months ago, yes.*

086 P: *Aha.*

087 D: *What- what- were you doing when this started?*

088 P: *(1) Th::is, we::ll, wor:king.*

089 *And the pain began stronger.*

When the patient answered the physician's question as to what he had been "doing" when "this" started, i.e., working, he was not suggesting an etiology for his long-standing rash but indicating his employment at the time the pain increased. The physician's responses, however, indicated that he conceptualized the start of the rash as related to the man's working conditions. At this point, the physician requested a nurse-interpreter to explore the context of the developing rash and the possibility of acne.

109 D: Does he have acne problems before?

110 I: *In the past you never have problems with your facial skin?*

111 *With pim:ples or:: irritation of the skin?*

112 P: *^Only with this..but very little- very mild. Well..he had that problem before but its been very mild.*

113 I:

114 D: Okay(2) u:mm..does he have any runny eyes or runny nose?

115 I: *And you don't have your eyes cry a lot or your nose run a lot?*

116 P: *A:h the eyes cry a little when..I rub them or something makes them itchy.*

121 I: He gets- okay- he says he has a lot of itching all around the eyes and that they do water but only when-if he scratches them and they're too itchy

122 .

127 D: Okay um okay um is he is he still working outside?

128 I: *Are you still working outside?*

129 P: *Yes I am.*

131 D: Okay um has he ever had this problem before=

132 I: =prior to his working?=

133 D: =Yes aha

134 I: *He wants to know if you ever had this problem with your skin before the work outside?*

136 P: *Yes*

137 I: *Yes.*

138 D: He's had it before, okay.

The nurse-interpreter said that a mild problem had existed prior to his working outside (line 113), but she then mis-paraphrased his description of when his eyes would water. The patient said his eyes watered "a little" if he rubbed them or "something" made them itchy, but he did not implicate the rash as a cause in the itchiness or suggest a chronic condition. The nurse, however, implied a strong association by saying that the patient experienced frequent itching around the eyes, and his subsequent scratching made the eyes water. Her error, however, addressed the association implied by the physician's previous question regarding possible "runny eyes or runny nose" accompanying the rash.

In line 131, the clinician again asked when the rash began. He was still trying to establish a relationship between the rash and working conditions, which the nurse had just disconfirmed. The nurse assumed that the "problem" was the rash (lines 134–135) — not the pain — that the patient confirmed as existing prior to his working. After the nurse commented that the "problem" existed prior to his working, the physician acknowledged the presence of a prior condition (line 138), again using the indeterminate "it." However, in subsequent dialogue he continued to define the context for the onset of the rash as the man's work setting, and he did not conceptualize the rash and the pain as separate problems. The misunderstanding continued when the physician who was a resident, requested an attending review the case.

273 D2: Ask him- ah:: if he noticed that this rash  
275 started when he started at work.. 6 months ago?



- 275 I: He said if you noticed that these..the blotchi-  
 276 ness started *when you started to work?* =  
 277 P: = No.  
 278 I: *When did this start?*  
 279 P: *No I ha:ve 4 years..but..very little pain.*  
 280 I: He has 4 years already with it  
 281 D1: How many years?  
 282 D2: 4 years-  
 283 D1: Four years. He told me 4 months. Okay.

The patient appeared to understand the miscommunication problem: he quickly denied the relationship between work and the rash, and he reiterated that the onset of the rash predated the pain (lines 277–279). When the nurse interpreted that the rash had existed for four years, she combined the two conditions of pain and rash into the singular “it”, perpetuating the physician’s terminology (line 280). Both physicians questioned the nurse’s interpretation of the duration (lines 281–282). The resident (D1) articulated the misunderstanding in line 283 but he did not verbally restate the problem or query the patient for clarification of the two time periods.

The ambiguity lingered in the discussion, and both attending and resident physicians continued to focus their questions on the man’s recent work history. Rather than challenge their assumptions, the nurse tried to get the expected information.

- 312 D2: Does he touch his face a lot?  
 313 I: *Do you touch your hand a lot...I mean your face.*  
 314 P: = Yes  
 315 I (1) *Befor:e- before..finishing you would touch them or-*  
 316 P: No  
 317 I: *After you had finished?*  
 318 P: *Aha. The itching.*  
 319 I: He says he touches a lot because of it:ching...-  
 320 but the- but the itching was first...^not the- the touching.  
 321 D2: Right. What does he work with- what kind of material is it- is it dusty?  
 322 I: *What..kind of- material is there at your work?*  
 323 *Do you have a lot of du:st ^or what is it?*  
 324 P: ^No:: little- little dust.  
 325 I: *What is it then?*  
 326 P: *We::ll more or less..dirt or something like that-*  
 327 *...work with shovel and things.*  
 328 I: *What do you do?*  
 329 P: *Huh*  
 330 I: *What do you do?*  
 331 P: *Construction helper.*  
 332 I: O::h he does construction so he says there’s a lot of dust  
 333 D2: Mm-huh  
 334 I: Ah, he works with a lot of dusty too:ls and..um- that um-

The patient denied touching his face while working or experiencing dusty conditions at the construction site (lines 316 and 324). The nurse persisted and asked him to explain how he was causing the rash (lines 323 and 325). The patient appeared to misunderstand the implication of her question (lines 328–329) and repeated that what he “did” was construction work. Impatient with the patient’s inability to provide the information implied by the physicians’ line of questioning, she contradicted him by asserting that he worked in dusty conditions and used dusty tools (lines 332 and 334). Unable to determine the source of the problem, yet still holding to the idea that the condition was work-related, the physicians referred the patient to a dermatologist. In the medical chart, the resident wrote that the man had “...pain and redness for three months with itching. Pain started at work”.

In the following encounter, two other problematic processes encouraged multiple interpretive errors. First, the nurse, educated in a South American country, interpreted the comments of a rural Mexican woman in a paternalistic manner that diminished her credibility and the seriousness of her symptoms. At times he appeared not to listen carefully to her answers, and occasionally he dismissed her answers outright. Second, the woman appeared to have a cultural explanation for her symptoms that she introduced via an idiomatic reference to abnormal movement of blood. The nurse avoided mentioning the meaning of the idiom, so the patient’s references to her blood sounded nonsensical when they were translated literally.

#### Patient D

- 016 I: *He said why are you here today.*  
 017 P: *I feel..my hands are numb-my throat I can’t speak.*  
 019 I: She has::: swell::in’ and num-numbness (2) in her arm- ar- ar – hands  
 020 D: Ah huh.  
 021 P: *I walk; I tire myself. Now I can’t grasp anything*  
 022 *because everything tires me.*  
 023 I: When she’s walking she gets tired  
 024 D: She gets tired..when she walk-=  
 025 = Now how long has she had this problem- the swelling in her hand.

Similar to the physician caring for the man with the facial rash, this clinician did not hear the patient’s symptoms correctly at the beginning of the encounter. The physician focused on the first symptom the nurse-interpreter mentioned, i.e., the swelling (line 19), although the interpreter mentioned both swelling and numbness. The interpreter also omitted the patient’s comment about difficulty speaking even though the woman was noticeably hoarse. She immediately elaborated about numbness when grasping objects and a

general state of fatigue, but the nurse substantially reduced her comments to a tiredness “when walking” (line 23). The doctor was independently reinforced in his attention to swelling by watching the woman hold up her hands and try to make a fist, and he surmised that the problem was with her hands and not her arms (line 25). The doctor referred to the swelling as “this problem”, a practice continued by the interpreter that introduced additional ambiguity.

When asked if the swelling was increasing, decreasing or remaining the same, the patient tried again to introduce her complaint of numbness in her hands, especially during the night.

- 066 P: *No: they are a little better but I'm not able to move them in the night.*  
 067 *I ca- do something...I try to do something and*  
 068 *when I have to do it a little. . later, later I feel they are numb*  
 069 *and I'm not able to do anything. .*  
 070 *and the pa:in isn't that strong [but-*  
 071 I: [She sa:ys  
 072 *that- it's gettin' better..but at ni:ght..when she try doin' something (2)*  
 073 *she cannot move her arm.*  
 074 P: *Like-... the blood runs through here-*  
 075 *nothing much (1)- and ends up here*  
 076 *or tries to lea:ve throug here.*  
 077 I: *Things don't fall when you grab them*  
 078 P: *I haven't dropped them myself but I don't fe:el them*  
 079 *and I have to [leave]-*  
 080 I: [S:ome]times she has to hold har:d..because  
 081 *she cannot- she doesn't have any feeling.*  
 082 D: *Oh. She doesn't have any fe:eling.*  
 083 P: *I can't close my hands good.*  
 084 *Later, later they look purple.*  
 085 *It's the same when I tighten and no- (2)*  
 086 D: What she say.  
 087 I: Come...ah::purple.

In lines 66–69, the patient reported loss of feeling and difficulty moving her fingers in the night. The nurse-interpreter interrupted her and then changed her meaning substantially by saying that she was improved but had some trouble moving her arm at night (line 73). The patient introduced the topic of an unusual movement of her blood — that it “tries to leave her hands” — a comment ignored by the interpreter. By juxtaposing the comments, the woman appeared to be trying to explain the loss of strength in her hands as a result of the abnormal movement of blood, i.e., using the hot–cold cultural idiom to describe her sensation. Repeating again — for the third time — her complaint about numbness, the nurse gave the first clear translation of her lack of sensation (line 81). The interpreter then ignored her

comments about the discoloration in her hands until prompted by the physician. The nurse's fragmented and literal translation made her belief about a connection between blood and numbness sound irrelevant, and the physician resumed directed questioning.

When the physician was gathering her past medical history, confusion over the patient's menstrual history was attributed to her, although it originated in changes in the questions presented to the patients. This exchange is cited because it is typical of the small changes that can produce a cumulative effect on the doctor's perception of the patient.

- 147 D: N' does she take any.. a::h (1) did she have a  
 148 hysterectomy- = did she have an hysterectomy  
 149 I: *Did they [do an operation on you for]-*  
 150 D: [Did they take out her ovaries  
 151 I: *or wh:y don't you menstruate?*  
 152 P: *^It went away.*  
 153 I: She doesn't know

The patient responded straightforwardly that her menstrual period “went away”. The nurse-interpreter's comment, “She doesn't know” (line 153), implied to the physician that she did not know if she had an hysterectomy. He did not interpret her comment about how her menstruation stopped although this comment addressed the purpose of the physician's original question.

Similar inaccuracies occurred throughout the encounter. Sometimes when the physician suspected that the interpreter was answering for the woman, he would insist that the nurse ask the woman directly, but sometimes he let the nurse's answer for the patient stand. In the passage below, the physician insisted on a direct query (lines 239, 241, 243).

- 231 D: Does she have any other problems.  
 232 I: *Do you have any other problems? ..Your feet -*  
 233 P: *Yes the feet...- They went two or three times..I fell day before yesterday*  
 234 *in the street [and I [couldn't get up.]*  
 235 I: *[Does it feel weak?]*  
 236 P: *Yes tired- I'm tired. Everything I hold - ya - makes me tired.*  
 237 I: When she gets tired and she fall down on the floor  
 238 Three days ago it was the third time.  
 239 D: She fell down? Well - I mean – did she pass out?  
 240 I: Um hmm  
 241 D: She passed out ..She doesn't remember anything?  
 242 I: She doesn't know.  
 243 D: She doesn't remember anything that happened?

244 I: *But when you fall did you loose memory?*

245 P: *No, no, no nothing like that.*

246 I: *No. . she doesn't pass out.*

247 D: *Oh::.. she doesn't pass out.*

After the patient described her difficulty with her feet and her fall, the interpreter changed the number of falls and the location. He mentioned falling three times although she mentioned one fall, and he said she fell indoors but she offered that it had occurred in the street. He also said that she fell when she got tired, but she had implied a constant state of fatigue that culminated in a fall. Furthermore, the nurse answered erroneously for the patient regarding losing consciousness during the fall. The physician persisted until the nurse asked the woman directly. The physician reflected the denial back to the nurse (line 247), but the nurse did not pass the inference back to the patient for verification, and the physician did not insist on the precaution.

Gradually during the discussion, the idiomatic use of references to blood emerged more clearly. A common belief among rural Latino immigrants is that the body must be balanced between hot and cold elements. According to ethnic belief, the correct hot–cold balance is maintained, or corrected, by eating the appropriate proportions of foods, changing the person's situation, or using medications or herbs that can increase or decrease hotness or coldness within the body. When the elements are unbalanced, they can manifest in disturbances in systems of the body, such as the blood, which can precipitate illness (Buchwald et al., 1994). Her initial comment regarding irregularities in the blood flow in her hands represented her concern about a possible imbalance of hot and cold elements with its attendant physiological implications. In the following comment, she articulated her concern more clearly.

215 I: *She sajid-*

216 P: *[The liquid is coming out like this. (Points to her fingertips)]*

217 I: *Sometimes coming out...of her hand*

218 P: *(1) First it comes cold and then something h:ot*

219 *(2) because...all of the blood wants to brea:k out,*

220 *it wants to com:e out.*

221 I: *She said- she feels that somethin' wants to come out of her finger.*

The nurse ignored the cultural significance of her reference and interpreted her comment literally, which sounded nonsensical without the cultural interpretation (line 221).

At the end of the encounter, the woman brought up her association between swelling and diet in a more direct manner than she had previously.

322 P: *^We:ll I have gotten fa:t..but (1) I don't know if*  
323 *^it is because of the swelling or because I eat. . .*  
*I don't exercise.*

...

336 D. *Ya. Tell her- is she trying to lose weight.*

337 I: *Are you trying to lose weight...or do you want to lose weight?*

338 P: *I want to lose it, but...I don't understand*

339 I: *[She would like[ to-*

340 D: *[Well tell] her to go on a low fat diet.*

341 I: *He's going to put you on a diet.*

342 P: *Oh, I know I can eat but less calories-*

343 D: *Tell her for now we're going to the lab today.*

The nurse avoided her confusion as to whether the weight gain was a manifestation of an imbalance of hot and cold elements or a result of inactivity; instead he edited her comments down to a concern about wanting to lose weight. The doctor suggested a low-fat diet. She tried again to introduce her concern (line 342), but the doctor appeared to consider the issue resolved and changed the topic.

The physician and patient appeared to interpret the symptoms differently, and neither was successful in informing the other of the meaning conveyed by the symptoms. At the conclusion of the encounter, the physician explained what tests were going to be done, but it is unlikely that the woman felt reassured that she did not have a hot–cold imbalance or that the physician could remedy the problem permanently without addressing her likely imbalance. On the other hand, the physician was never informed of how the patient was interpreting the problem, which may have influenced what symptoms she was reporting. In the medical chart, the physician noted that the patient experienced “bilateral hand edema and paresthesia” with no “morning stiffness”. He made no note of her falling, her difficulty during the night, or her generalized weakness. The physician ordered blood tests and made a preliminary diagnosis of arthritis. The woman returned to the clinic for a second appointment, and, by chance, met with the same physician. During the second encounter, the physician noted her generalized weakness, excessive sleeping, and bilateral hand and leg numbness; he diagnosed hypothyroidism.

## Discussion

Physicians who do not have trained medical interpreters available for their non-English-speaking patients frequently turn to bilingual nurses to provide interpreting services. This study examined the accuracy of the interpretations provided by nurses who were untrained in medical interpreting but who possessed excellent bilingual skills. Twenty-one encounters were examined,

and approximately two-thirds of the uncomplicated cases did not contain errors that jeopardized the diagnosis and treatment of the patient. However, approximately one-third of the uncomplicated cases and two-thirds of the complicated cases, i.e., those with multiple possible etiologies, experienced communication problems that resulted in errors or significant omissions in the medical chart.

Successful interpretations were accompanied by three processes that the physician and nurse appeared to develop spontaneously. The physician tried to use simply constructed sentences that were readily interpreted by the nurse and were understandable by patients who had some English capability. Furthermore, sentences were offered in a slow, systematic fashion so that the nurse was not fielding multiple questions at the same time. When the physician articulated a symptom or an inference to the interpreter, the nurse frequently back-translated it for the patient's verification or correction. Contradictory information or confusing points were thus addressed directly and inferences verified by the patient. Second, the nurse-interpreter did not edit the patient's comments to the clinically relevant information. Physicians patiently listened to full interpretations, and then edited the information. When the physician listened carefully to the full interpretation, the patient appeared encouraged to contribute further information on the expectation that it, too, would be given to the physician. Finally, the nurse-interpreter and physician created nonverbal rapport with the patient by noticing the patient's behavior and responding to it with the use of sensitive comments, smiles, or eye contact. Although physicians varied widely in their ability to implement the above techniques, their usage helped to avoid misunderstandings even in complicated cases.

Interpretation errors increased when four recognizable processes occurred in the encounter. First, when the nurse interpreted new information that appeared contradictory to previously presented information, some physicians resisted acknowledging the new information or revising their working hypotheses. When they focused quickly on exploring one line of inquiry, they had a tendency to dismiss the contradictory information without verifying its accuracy or the previous information's accuracy with the patient. The reason for the dismissal was not clear. Their resistance may have been related to a habit of developing working hypotheses within the first few minutes of an encounter (Beckman & Frankel, 1984), a habit they unconsciously continued in their non-English-speaking encounters. Perhaps they were reluctant to share control of the conversation with the nurse or patient and allow reformulation. On the other hand, physicians may have lacked confidence in the nurse's interpretive ability, or they may have assumed that changes were resulting from confusion in

the interpretive process rather than from comments made by the patient.

The other three processes were linked to behaviors of the nurse-interpreters. We had originally suspected that nurses would be effective at understanding a physician's medical assumptions and rational for a line of inquiry and eliciting the clinically relevant information. Occasionally, nurses were so effective that they misinterpreted patients' comments in order to provide information for the hypothesis that they attributed to the physician. They provided this information despite differing comments from the patients. Some part of this problem may be related to the nurse's ability to recall more easily information that was congruent rather than non-congruent with the perceived medical expectation. The tendency may have been related to a reluctance by nurses to challenge physicians' perceptions of the problems. Nurses also may have been influenced more than they realized by the subtle demand characteristics of the interpreting situation (Neubert, 1997). Interpreters must respond to the expectations of both parties in an interpreting situation by restructuring the spoken words of one language into another language to meet the needs of the listener. If the expectations of the physicians became salient to the nurses, they might have considered meeting those needs inherent to the interpreting process.

Third, many immigrants differed in social, economic, and educational status from the nurses. When the patient differed substantially from the nurse on dimensions of social prestige and power, occasionally the nurse treated the patient as a subordinate. Patient's comments might be ignored, the patient might not be asked for clarification, or the nurse might speak for the patient. If the physician insisted on direct queries to the patient, the social imbalance could be eliminated. However, even among physicians who demonstrated a desire to hear the patient's comments, the perception of the patient appeared to change if the interpreter continued throughout the encounter to dismiss the patient's comments or to interpret them in a subtly demeaning manner.

Finally, cultural idioms may shape the symptoms that the patient notices and chooses to report. The idioms are rooted in folk beliefs or in physiological or anatomical understandings that differ from Western biomedical constructs. If the nurse-interpreter chooses to avoid explaining the significance of the idiom, such as the relationship between blood movement and the hot-cold beliefs common among immigrant patients, and instead interprets the statements literally as a symptom, it is likely to sound nonsensical. Additionally, the physician misses an opportunity to understand how the patient perceives the symptoms and what concerns need to be addressed in order for the patient to have confidence in the recommended treatment (Day, 1992; Buchwald et al., 1994). The tendency of nurses to avoid mentioning

the cultural idioms in clinical situations most likely derives from nurses' attempts to appear professional and to avoid information that appears to reflect unfavorably on their culture.

Surprisingly, the errors were not attributable to a few nurses. A nurse could do an excellent job with one physician only to have difficulties with the next one. Some physicians wanted only clinical information; others wanted contextual commentary. Some were openly supportive of the nurse's interpretations and others were cautious and questioning. Every physician cared about his or her patient, but each had an individual style for relating to the patient, and the nurse had to accommodate that style.

Fortunately, despite interpretive errors, the medical charts did not reveal any cases where patients received inappropriate care if they sought follow-up care or were persistent about mentioning their problem numerous times. Illnesses or symptoms missed initially were subsequently uncovered during physical examinations, laboratory tests or procedures, discussions with nurses, encounters with referral physicians, or follow-up encounters. The patients who experienced communication difficulties and did not stay within the clinic system were the most troublesome. Some with potentially serious illnesses chose not to follow physicians' requests for diagnostic procedures, or they terminated care shortly after it was initiated.

Even the finding that correct diagnoses occurred in all recorded cases where the patient stayed within the clinic system, even if the diagnosis occurred belatedly through third or fourth parties, provides limited reassurance. Evaluations or recommendations for possibly serious co-morbid conditions were missing in this sample of patients because symptoms not directly related to the present complaint were routinely edited out. Nonverbal communication remained minimal between physicians and patients who tended to have little eye contact. Typically, when the physician looked at the patient, the patient was looking at the nurse who was interpreting the physician's comments. Also, physicians had difficulty identifying the words that were stressed by the patient. Loss of the usual nonverbal cues can diminish physician's ability to gauge the severity of an illness or the impact of the illness on the patient. Patients were unable to participate in the decisions determining their course of treatment; instead directions were told to them by the interpreter and shared decision-making was absent. Clinicians were often more dependent than usual on testing and laboratory procedures, increasing the cost of care and the possibility of undetected conditions. Encounters with subsequent primary or specialty caregivers to resolve the initial problem further increased patient costs.

Cross-language encounters produce lower satisfaction, which has been found to modulate compliance

rates (Marquis, Davies & Ware, 1983; Manson, 1988; Anonymous, 1996). In our study, one man who experienced communication difficulties but was found, belatedly, to have tuberculosis refused to return to the clinic for treatment despite repeated calls from the nursing staff and the social worker. One patient who experienced communication difficulties refused all requested tests or procedures and terminated care immediately after his encounter despite symptoms suggesting a cardiovascular problem. Finally, tort law has established failure to communicate as a source of medical negligence (Pergalis & Wachsmann, 1992). Physicians are responsible for providing an adequate medical review, and the failure to do so can constitute negligence if subsequent injury is attributed to the poor communication.

#### *Training for nurse-interpreters*

This study suggests that the type of interpreting done in medical encounters is more demanding than is generally recognized. Nurses must translate in two directions; their interpretations must be done quickly; and interpretation duties are added to their regular duties without additional compensation. Furthermore, the interpretations given to the physician are usually into their second, or weakest, language; i.e., from their native language into English. Interpreting requires the ability to extract meaning rapidly and to reconceptualize it in another language. This problem becomes more acute in situations that require interpreting in two directions when personal biases or frustrations can manifest unintentionally. Additionally, untrained nurses use "proximate-consecutive" interpreting in which they allow the speaker to finish before interpreting what they can remember. Professional interpreters use "simultaneous interpreting", a challenging method that can produce word salad if used by untrained personnel. When used by medically trained experts, simultaneous interpreting produces fewer errors and greater satisfaction among both physicians and non-English-speaking patients (Hornberger et al., 1996). Woloshin et al. (1997) reported that bilingual staff members, after 70 h of professional interpreter training, made significantly fewer interpretive errors after training than did untrained bilingual staff. Consequently, some training for all interpreters appears justified regardless of the nurses' bilingual capabilities.

#### **Conclusions**

The use of nurses as medical interpreters has become common as the number of non-English-speaking patients increases. During the interpretations, physicians can improve the quality by taking time to articulate

points on which they remain unsure, proceeding slowly and systematically with their queries, reflecting information back to the interpreter for back-translation and patient verification, and remaining flexible about the possibility of reformulating their working hypotheses when contradictory information is presented. Additionally, nurses can be made aware of the physician's desire to understand cultural idioms that organize symptoms for immigrant patients and to hear narrative interpretations, i.e., interpretations that contain contextual information in which the symptoms are embedded rather than the heavily edited versions of isolated symptom clusters. Ideally, nurse-interpreters would be provided with interpretive training on how to minimize errors. By making changes in their communicative and decision-making styles when talking with non-English-speaking patients and by encouraging high standards of translating competence, clinicians can increase the likelihood of gathering accurate data.

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### Appendix A

#### Transcription Conventions

001 Lines of speech are numbered sequentially from the first line of the transcript to the end.

D, P, I D is doctor, P is patient, I is for interpreter. Speaker is noted at the first line of an utterance and at overlap points.

Mary: I don' k[no:w if ] it [you don't] see Brackets indicate that the portions of utterances encased are simultaneous. The left-hand

But-, tie-tierne

CAPS or underscoring  
che:st problem

Swat I said =  
= But you didn't

(5)

\*\*\*

(a knob) or (word)

((softly))

° or ^

I (x) I did

.hh

Eh-heh, .engh-henh

.

Uh uh, uh-huh  
Uhm-hmm

We:ll now,  
I ca:n't do that

bracket marks the onset of simultaneity; the right-hand bracket indicates its resolution. Cutting short of the immediately prior syllable.

Both are used to represent heavier emphasis on words so marked. CAPS are reserved for an unusually strong emphasis.

Indicates that no time elapsed between the words "latched" by the marks. They can also mean that a next speaker starts at precisely the end of a current speaker's utterance.

Indicates the seconds between speaker turns. It may also indicate the duration of pauses internal to a speaker's turn.

Silences within speaker utterances and between speakers. Each asterik represents one second. Pauses beyond 3 seconds are denoted by number of seconds in parentheses.

Indicates that something was heard, but the transcriber is not sure what it was.

Double parentheses enclose descriptions of action. They are not transcribed utterances, but refer to some quality of the whole sentence.

Softness, or decreased amplitude.

Indicates a hitch or stutter on the part of the speaker.

Inhalation of breath in sigh or chuckle.

Laughter syllables (inhaled when preceded by a period).

A period within sentences denotes a pause of one tenth of a second.

Back channel comments of agreement. Can also signal impatience for speaker to finish, although it usually indicates attention on the part of the listener.

Colons within words or after words indicates slight stretching or prolongation of word of less than 1 second. Applies to vowels.

I put – I mean that	Indicates a change of thought without completing original utterance.
?	Indicates rising intonation. A period marks sharply falling intonation; a question mark indicates rising intonation.

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