Socializing Identity Through Practice: 
A Mixed Methods Approach to Family Medicine 
Resident Perspectives on Uncertainty

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OBJECTIVE: Uncertainty is a central theme in the practice of medicine and particularly primary care. This study explored how family medicine resident physicians react to uncertainty in their practice.

METHODS: This study incorporated a two-phase mixed methods approach, including semi-structured personal interviews (n=21) and longitudinal self-report surveys (n=21) with family medicine residents.

RESULTS: Qualitative analysis showed that though residents described uncertainty as an implicit part of their identity, they still developed tactics to minimize or manage uncertainty in their practice. Residents described increasing comfort with uncertainty the longer they practiced and anticipated that growth continuing throughout their careers. Quantitative surveys showed that reactions to uncertainty were more positive over time; however, the difference was not statistically significant.

DISCUSSION: Qualitative and quantitative results show that as family medicine residents practice medicine their perception of uncertainty changes. To reduce uncertainty, residents use relational information-seeking strategies. From a broader view of practice, residents describe uncertainty neutrally, asserting that uncertainty is simply part of the practice of family medicine.

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Uncertainty, a central theme in the practice of medicine, may stem from bounded rationality, gaps in medical knowledge, and/or the mystery of human illness. Physicians’ varying tolerance for uncertainty may affect medical testing choices, differences in treatment, approaches to guidelines, and career choices. For physicians, high stress reactions to uncertainty correlate with low work satisfaction, and anxiety caused by uncertainty has been associated with burnout for US emergency physicians and Australian general practice registrars.

Residents need to learn to recognize patient preferences, personal heuristics, and the limits of medical science when discussing diagnoses and treatments with patients and then making medical decisions. Although research has demonstrated how medical students are introduced to the themes of uncertainty in family medicine, literature has yet to describe how family medicine residents are socialized to the uncertainty of medicine and how they approach it over time in their own practice. Our objectives were to explore how family medicine residents perceive the uncertainty in their practice and to assess if reactions to uncertainty change over time in the family medicine residency.

Methods
This study explored family medicine resident reactions to uncertainty through two methods: thematic analysis of qualitative interview data and cross-sectional comparison of self-report survey data.

Qualitative Interview Method
We systematically analyzed personal interviews with family medicine residents to explore their experiences...
with uncertainty in medical practice. After approval by the local Institutional Review Board, purposes of random sampling included all first- and second-year family medicine resident physicians at a metropolitan Washington, DC, hospital. To preserve confidentiality of patients, and reluctance to disclose uncertainty, consent from second author trained in qualitative methods from a local medical school conducted all interviews in September 2012 at a time and place convenient to the participants. (Interview guide available from the first author on request.)

The first and second authors independently conducted an open-coding process, analyzing transcripts line by line. Through team meetings, the emerging codes were discussed to develop axial codes by consensus. The coders then recorded final themes as they emerged. As a validation strategy, five participants reviewed findings to judge accuracy and credibility. Additionally, one resident from another residency program reviewed findings as a peer check, providing content validity. Member and peer checks did not contribute new information.

Quantitative Survey Method

To quantify change in perceptions over time, a longitudinal survey was administered in June 2012 and again September 2013. All first- and second-year residents (at time of first survey) were invited to complete the paper and pencil survey. Fifteen months later, participants were asked to repeat an identical version of the survey. Unique identifiers were assigned to residents to allow confidential linkages between the two administrations.

The 15-item Physician Reactions to Uncertainty scale (PRUS) includes four subscales: anxiety due to uncertainty, concern about bad outcomes, reluctance to disclose uncertainty to patients, and reluctance to disclose mistakes to physicians. We did not include a measure regarding malpractice because the organizational nature protects providers from litigation. Each item was measured on a 7-point Likert scale and then summed for a range of 14 (fully comfortable with uncertainty) to 98 (discomfort with uncertainty).

Results

Qualitative Interview Findings

Of 24 eligible participants, 21 completed the qualitative interview. Five (23.8%) of the participants were female. Themes emerged in three broad categories: defining uncertainty, assimilating a family medicine identity, and practicing in uncertainty.

Residents defined uncertainty at four levels: scientific, systems-oriented, patient-oriented, and individual (Table 1). Most globally, residents discussed uncertainty as inherent in the discipline of family medicine. They described the emerging, dynamic evidence base that informs their practice, including population-based evidence of literature and clinic-based evidence of practice. Residents also cited uncertainty in system processes, including administrative features of scheduling and patient access. Relationally, residents recognized that uncertainty emerged in the context of patient-centered medicine, an approach to medicine that recognized “every patient is different.” This approach reduced the value of clinical guidelines and textbook recommendations across the continuum of disease. Individually, uncertainty stemmed from knowledge gaps or inexperience in patient care.

As residents discussed the implicit nature of uncertainty, they described how uncertainty contributed to their identity as a physician: personally, relationally, and communally (Table 2). First, physicians described how uncertainty was part of their personal identity. Recognizing their role as learner and clinician, they explained the universal limits of cognitive capacity and the inability to develop mastery. As they described this personal identity, they also discussed uncertainty in the context of their relational roles of doctor-patient, learner-teacher, and primary care-specialist. Each of these relationships contributed to their identity and how they perceived uncertainty. Role development influenced expectations of uncertainty and their perception of uncertainty when they encountered it within each relationship. As doctor, they talked about their physician role as primarily a consultant, in which they provided information and advice, leaving the decision to the patient. As learner, they posited that uncertainty “was expected.” As family physicians, they recognized that primary care physicians have a specific role in the broader context of medicine, that when situated with specialists’ narrower expertise allows the primary care physician to accept uncertainty. These three relational identities contributed to a communal identity as a family physician. This identity dictated the expectation of uncertainty, arising from the inability to master all of medicine. Additionally, in this resident population who provides care in an academic setting, “teaching cases” that inherently pose scientific questions were not only accepted but encouraged.

Though residents described uncertainty as an implicit part of their identity, they still developed tactics to manage uncertainty in their practice (Table 3). Each of these strategies was related to a specific type of uncertainty. When residents experienced uncertainty at personal or relational levels, they engaged in information-seeking tactics to reduce uncertainty. Personal tactics included researching case information in literature or guidelines of care. Learners recognized that the dynamic nature of the evidence base required them to revisit these sources to discover the most relevant evidence. In patient care, residents also engaged in biomedical information seeking through ordering laboratory or radiologic tests to minimize the uncertainty in diagnosis and/or treatment.

Relationally, residents reached out to patients, colleagues, and specialists to reduce or manage uncertainty. In the clinical encounter, particularly
when faced with uncertainty in screening guidelines, residents described a process of informed decision making in which the physician provided all available information to the patient but then allocated the responsibility of the decision to the individual. Residents reached out to colleagues, including faculty and peers, particularly when they felt the uncertainty was resulting from lack of experience. When residents described encountering uncertainty in the inpatient setting or as a result of lack of expertise, they consulted specialist physicians.

Whereas personal and relational strategies to manage uncertainty focused on information seeking, communal strategies were in response to a neutral appraisal of practice uncertainty. These were not information avoidance strategies but affective re-appraisals of the role of uncertainty in family medicine and medicine as a science, through which they enacted communicative behaviors that contributed to a culture comfort with uncertainty.

Quantitative Survey Findings
Of 25 eligible participants, 16 residents completed the survey at first administration (2012). Of 24 eligible participants, 21 residents completed the survey at second administration (2013). All participants were first- or second-year family medicine residents at first administration and subsequently second- or third-year residents at second administration. To test for change in PRUS, an analysis of variance was conducted using administration date as the independent variable. From 2012 (M=53.25) to 2013 (M=48.41), though reactions to uncertainty were more positive, the difference was not significant. However, by subscale, one significant difference emerged. At the second administration, residents reported they were more likely to disclose uncertainty to patients, F (1, 36)=4.423, P<.05. See Figure 1.

Discussion
Family medicine residents define uncertainty consistent with previous literature, classifying types of uncertainty in medicine.22,23 However,

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Table 3: Sample Quotes From “Practicing in Uncertainty” Theme

| Personal strategies | “I wasn’t entirely sure what I needed to do or what was going on, but I’ll get these [radiographic] studies to kind of direct us to the next step, and I’ll read about some things to kind of help me make decisions.”
|                     | “So I was actually pulling up stuff to read while the patient was in the room to guide me onto what kind of labs and stuff to order.”

| Relational strategies | “I’m not going to deny them the screening. I try to feed the patient as much information as I can and let them make their own decision.”
|                      | “But when we reach our limits and see something that is beyond our space in medicine, we will refer to somebody who will have less uncertainty than us in a specific issue.”

| Communal strategies | “We gotta be very comfortable with how uncertain we are. Otherwise we can get pretty dangerous, I think.”
|                     | “You have to be confident with what you don’t know...if you are someone who wants to know everything, it’s not going to be the specialty for you.”

Figure 1: Differences in Average Physician Reaction to Uncertainty, From 2012 to 2013, Among Resident Participants (n=21). Higher Numbers Indicate Greater Stress Reactions to Uncertainty (Scaled 14 to 98)

This group of physicians described additional uncertainty at the individual level. This may be an outcome of the learner sample, but residents did not describe this personal uncertainty as only a function of learning but of experience. This represented both individual and aggregate levels of uncertainty, in which residents recognized that it was not something that they could individually overcome through knowledge gain but that would have to come through practice. Qualitative and quantitative results show that as residents practice medicine, their perception of uncertainty changes.

Although their perception of uncertainty may change, residents described a variety of uncertainty management strategies. Residents primarily discussed information-seeking tactics, both personally and relationally, to reduce uncertainty. The information-seeking strategies discovered here extend the interdisciplinary “hierarchy of assistance,” establishing that residents reach beyond their own specialty when appropriate to manage uncertainty.

Relationally, residents described including the patient in discussion of uncertainty as a tactic to manage uncertainty. Similarly, quantitative results showed the only significant change as an increase in comfort with sharing uncertainty with patients. These findings show
that residents are open to shared decision making\(^{26}\) and could likely benefit from faculty teaching and modeling in this patient communication concept. Family medicine teachers can emphasize the importance of identifying relevant evidence\(^2\) and presenting evidence along with accompanying uncertainty\(^{10,26}\) to patients in an understandable (tailored) way.\(^{27,28}\)

From a broader view of their practice, residents did not consistently appraise uncertainty negatively. Rather, they described a neutral uncertainty appraisal, in which uncertainty is simply part of the practice of medicine. Just as specialists taking care of patients living with HIV have developed a culture “comfortable with mystery,”\(^{29}\) results here show that family physicians are socialized into a culture that is comfortable with uncertainty. This culture creates an environment of social support for family physicians at all practice levels. Research has shown that patients also intentionally seek social support as a coping mechanism for dealing with persistent uncertainty.\(^{30}\) This socialization may be a part of the “hidden curriculum”\(^{31}\) within family medicine teaching.

Results are limited to the population represented here. Specifically, the number of female residents (23.8%) in this study is representative of the residency’s gender distribution; however, it is lower than the 2010 estimated 55.3% of family medicine residents nationwide who are female.\(^{32}\) Although some broad themes may be generalized to family medicine as a discipline and independently to academic medicine, individual health systems factors likely influence the program culture and socialization of learners in that system. Quantitatively, interpretation is also limited by the small sample size and the possibility of a type 2 error.

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