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The Ethics of Ambiguity: Rethinking the Role and Importance of Uncertainty in Medical Education and Practice

Ronald E. Domen, MD[1]

Abstract

Understanding and embracing uncertainty are critical for effective teacher–learner relationships as well as for shared decision-making in the physician–patient relationship. However, ambiguity has not been given serious consideration in either the undergraduate or graduate medical curricula or in the role it plays in patient-centered care. In this article, the author examines the ethics of ambiguity and argues for a pedagogy that includes education in the importance of, and tolerance of, ambiguity that is inherent in medical education and practice. Common threads running through the ethics of ambiguity are the virtue of respect, and the development of a culture of respect is required for the successful understanding and implementation of a pedagogy of ambiguity.

Keywords

ambiguity, ethics, medical education, patient-centered care, professionalism, respect, uncertainty

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> We think that it's impossible to act unless you're certain that you're right; but certainty about yourself is also the quickest road to fanaticism ... Now, uncertainty—the sense that not only you don't know the truth but that many complex issues are irresolvably ambiguous—is sometimes the most productive way of allowing you to act while at the same time respecting that others are not going to accept your view, approve your action or follow your example. It produces a tentativeness that permits you to see many things from many points of view. Which is, I believe, the best definition of objectivity.[1]
>
> —Alexander Nehamas

> If we appreciate the profound identity changes that occur during the active and intrusive era of the residency life stage, we may consider how we can do this differently.[2]
>
> —Jacob J. Steinberg

Introduction

Medicine is an uncertain practice but as physicians we are taught that we can (and must) control and manage disease, patient behavior, and that we are expected to always provide the right answers.[3-6] When confronted with ambiguities and uncertain situations, physicians often feel powerless, lack of control, and heightened frustration. Even when we feel we are in comfortable situations and can exert some level of control—for example, diagnosing and treating a routine case of hypertension, making a tissue diagnosis of breast cancer, or removing a benign skin lesion—the physician can harbor doubts and anxieties about how effective they are in restoring the patient to a state of optimal health.[7] Despite the gains in medical knowledge that have been made in recent decades,

[1] Division of Clinical Pathology (Laboratory Medicine), Department of Pathology, Penn State Hershey Medical Center and College of Medicine, Hershey, PA, USA

Corresponding Author:
Ronald E. Domen, Division of Clinical Pathology (Laboratory Medicine), Department of Pathology, H160, Penn State Hershey Medical Center and College of Medicine, 500 University Drive, Hershey, PA 17033, USA.
Email: rdomen@hmc.psu.edu

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physicians and patients all too often remain frustrated in confronting the uncertainties surrounding our inability to treat many diseases and illnesses and to engage the patient in shared decision-making.[7]

Why is this so? Why are physicians, in general, unable to understand and appreciate that ambiguity is a normal part of the practice of medicine and that learning to effectively incorporate uncertainty in our daily practice and in our educational curricula should be a routine part of what we do?

Ambiguity is a given in our everyday lives and it is impossible to prepare for every contingency or unknown event. The ability of a physician to have any positive effect on a patient's progressive hereditary peripheral neuropathy, for example, is virtually nil because of the lack of effective treatments, and the ultimate extent of nerve damage is uncertain and unpredictable. And, while medicine's ability to potentially identify the gene(s) associated with certain diseases, the uncertainty of what this means for any of the patient's children developing the same peripheral neuropathy—and the level of severity of that morbidity—is uncertain at best. Along with our exponential growth in medical knowledge, the amount of uncertainty also grows exponentially. Of course, medical research continues to clear up some ambiguous areas, but even more uncertainty seems to be the end result. How we deal with and tolerate ambiguity is important to our well-being as well as how we practice as physicians and how we train those coming behind us.

Ambiguity (uncertainty) is prevalent and ubiquitous in all aspects of medicine from patient care, to research, and to education (Table 1). There are many diseases for which there are either no effective treatments or less than ideal therapies, diseases for which it is often impossible to predict their course or outcome, and patients who have their own set of goals for their health outcomes that may be in conflict with those of the health-care team. As noted by others, medicine (and patients) does not tolerate ambiguity and uncertainty very well and the inability to come up with the right answers or diagnosis or treatment plan causes frustration and anxiety.[5] Beyond frustration and anxiety, a physician's level of tolerance of ambiguity can affect their degree of disillusionment with medicine, the way they practice clinically (eg, test-ordering practices), their choice of specialty practice, their attitudes toward underserved or marginalized groups, and risk consideration in research trials.[8-17]

Patient-centered care is the ethical concept of treating patients as persons with respect and with the understanding of the individual's right to self-determination (autonomy).[18,19] Health-care leaders and patients continue to advocate for patient-centered care as a way to improve outcomes, enhance the physician–patient relationship, and heighten professional and ethical behavior.[18,19] As health-care organizations continue to struggle to establish such programs in a very hierarchical structure that is disease centered and not comfortable with ambiguity and uncertainty, a physician's ability to tolerate uncertainty in clinical situations may have important implications for developing patient-centered care approaches to health care. A key component to the successful development of patient-centered care is the establishment of a culture of respect.[20-22]

Table 1. Ambiguity in Medicine.

- Diagnosis (patient)
  - No or poor diagnostic tests
  - Overutilization/underutilization of diagnostic tests
  - Clarity is often missing
  - Often no single answer
- Treatment (patient/disease)
  - No effective or less than ideal therapies
  - Measures of efficacy can be elusive
  - Treatment interactions and side effects
  - Ineffective or conflicted patient-centered care/shared decision-making
- Outcome (patient)
  - Lack of appreciation for the biocultural impact on health
  - Future is unknowable
  - Ineffective or conflicted patient-centered care/shared decision-making
  - Conflicted moral and ethical pressures to restore health
  - Satisfaction not always achieved
- Education
  - Inability to know everything in conjunction with exponential growth of knowledge
  - Impact on critical thinking skill
  - Questions with no definitive answers
  - Tolerance levels of uncertainty are variable
  - Ineffective teacher–student relationships
  - Ineffective community relationships
- Research
  - Increased moral and ethical pressures to seek answers
  - More questions and uncertainty are created
- Personal (practicing physician, resident, and student)
  - Increased disillusionment with medicine
  - Frustration and feelings of lack of control
  - Influences choice of specialty practice
  - Adverse attitudes toward underserved and marginalized groups
  - Conflicted risk versus benefit consideration in research trials
  - Decreased respect and tolerance toward others
  - Ineffective teacher–student relationships
  - Difficult decisions and creative thinking are often required
  - Experience and insight are often required
  - Adverse effect on character traits (honesty, respect, empathy, humility, etc)
  - Ineffective patient-centered care/shared decision-making
- Health-care organizations
  - Ineffective patient-centered care
  - Adverse financial impact (eg, overutilization/underutilization of diagnostic tests, increased time to diagnosis, increased patient dissatisfaction, etc)
  - Ineffective community relationships
  - Often requires difficult culture change(s)
  - Requires managing change from within and without

It is the author's contention that ambiguity is an underappreciated component in the practice and teaching of medicine that is perpetuated by its significant absence in our medical curricula and that an understanding of the ethics of ambiguity is important to fostering the virtue of respect and before a patient-centered approach can be established and be successful.

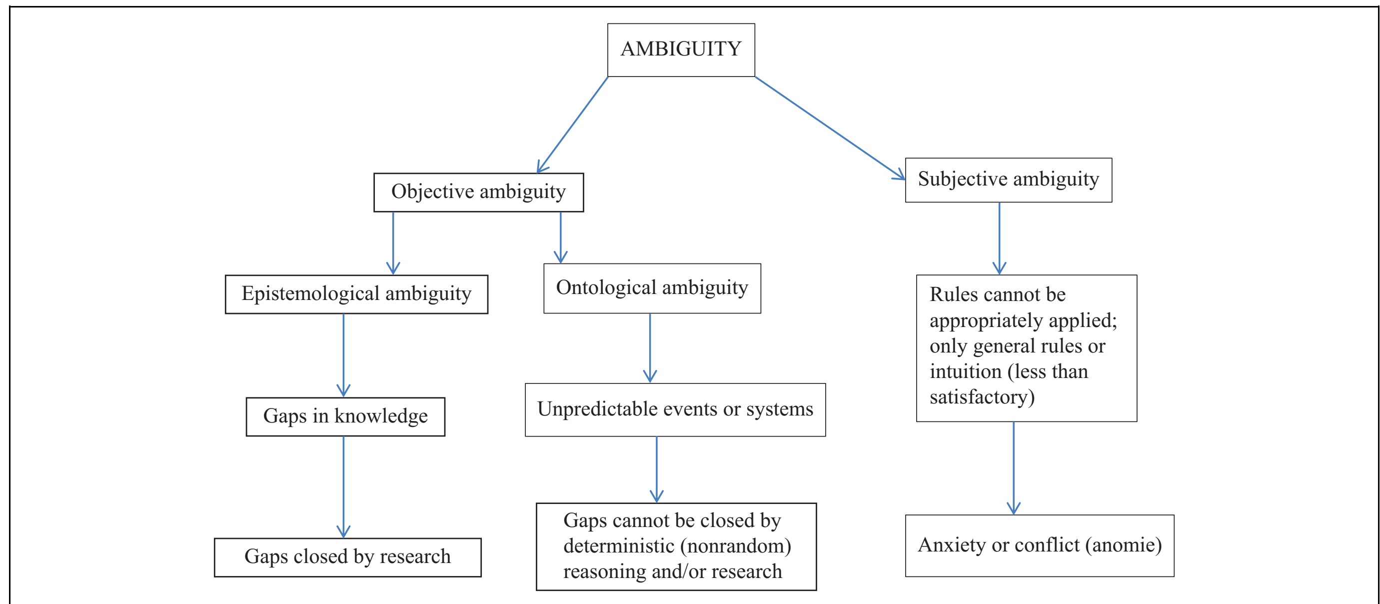

Figure 1. Basic forms of ambiguity (uncertainty).

The Ethics of Ambiguity

There are several possible ways of thinking about an ethics of ambiguity in the context of medical education and practice. The existential philosopher, Simone de Beauvoir was one of the first to examine the ethics of ambiguity. In her 1947 book on the subject,[23] de Beauvoir agrees with Immanuel Kant that every human being should be treated as an end and not simply as a means to an end, and she refers to this individual's right as "freedom." Each of us must recognize, engage, and validate this freedom in ourselves and in others in order to be validly fulfilled and to not treat others as objects. "I concern others and they concern me. There we have an irreducible truth."[23(p72)] True, it is an interdependence on others, and this creates ambiguity, but realizing this allows for greater things to happen and to transcend ourselves. Thus, when one recognizes the "freedom" of another person and that other person recognizes my "freedom," then we are in a better place to treat each other as human beings rather than as objects to be denigrated. As teachers, we must demonstrate ("mirror back") empathy in our mentoring and teaching relationships.[2] Misrecognition of another's freedom happens too frequently in authoritarian student–teacher relationships where the student ends up being mistreated and harmed. By accepting the ambiguousness and limitations of our knowledge in what we do in medicine, then we can better tolerate ambiguity in those we teach as well as in those we treat in our clinics.

To take de Beauvoir's concept a step further, the ambiguity that is inherent in medicine and the teacher–student relationship requires compassion, skilled communication, and truth telling (ultimately, respect and professionalism writ large).[24(p269)]

In a similar vein, it has been argued that a biocultural model of illness—with all of the attendant ambiguities it would entail—will be required of physicians and other health-care professionals if medicine is going to better understand the changes, conflicts, and uncertainties of a future health care that is already here.[25] "An understanding of the interrelations between culture and biology will require a tolerance for ambiguities ... [and] demands an awareness of unusual new patterns where traditional observers see mere randomness or a confusion of unconnected data."[25(pp18,19)] In the biocultural model, society's quest for perfection in health and medicine is futile and that perhaps what we really should be striving for is an "aesthetics and an ethics of imperfection."[25(p162)] That is, an ethics to recognize, appreciate, and tolerate the imperfections (and uncertainties) that we all have so that our shared humanity is more just (ie, respectful) and has less suffering.

Such an ethics of imperfection (or ambiguity/uncertainty) might allow learners and physicians to better recognize and tolerate the imperfections in self, patients, and our learners and to recognize the need to treat others with kindness.[26] Such an "acknowledgment of imperfection and limitation"[26] (and ambiguity) no longer views others as the physician's "object" but allows for the development of humility and empathy and a deeper respect.

In their paper on "The ethics of uncertainty," Tannert et al[27] build on the work of Faber et al[28] to make the point that our scientific knowledge is always incomplete and that continued research can only "produce estimates of what we think is happening." The authors propose a "taxonomy of uncertainty" that recognizes objective uncertainty and subjective uncertainty (Figure 1).[27] Objective uncertainty can be further divided into epistemological uncertainty that is caused by gaps in knowledge that can be closed by research (ie, research then becomes a moral duty) and ontological uncertainty that is often characterized by nonlinear behavior and cannot be resolved by deterministic reasoning or research (ie, rational decisions are

impossible). Subjective uncertainty exists when there is an inability to apply appropriate moral rules. One subtype of subjective uncertainty is rule-guided decisions that cause moral uncertainties due to a lack of applicable moral rules (eg, the Hippocratic Oath). In this case, decisions are made using general moral rules in special situations that are less than ideal and give less satisfaction. The second subtype is intuition-guided decisions where decisions are made by relying on intuition rather than knowledge. Uncertainty of these types, not surprisingly, can cause anxiety or conflict (ie, anomie). Failure to recognize these types of uncertainties and to appreciate the limits of our knowledge can have adverse effects on future decision-making.

There is moral value in an environment where the healthcare professional can act in a way that allows respect for the patient as well as other persons.[29] The ability to act in accordance with the virtue of moral courage can be stymied in large part by the anxiety and uncertainty that comes from a lack of knowledge, lack of evidence-based data, concerns about how best to serve the patient's best interests, or competing moral values.[29] However, physicians are taught that certainty is a valuable character trait and that uncertainty is a weakness to be buried and ignored.[29] Thus, we as a profession fail to prepare our graduates and trainees in how to deal with ambiguity. The virtue of moral courage "is required to act in the face of irreducible uncertainty."[29]

In his critique of physicians and uncertainty, Katz formulates his thoughts on physicians' "disregard of uncertainty" being related to 3 possible actions: (1) denial that uncertainty even exists, (2) traditional ways of thinking about how they should ethically conduct themselves toward their patients, and (3) continually thinking about how they should best execute their professional responsibilities.[30] For Katz, acknowledging uncertainty will enhance the effectiveness of the physician–patient relationship because it brings honesty into the equation and a willingness on the physician's part to be more engaged, more intimate, and more truthful in their communications with patients. Again, one could argue that the underlying theme is the basic tenet of respect for others.

Finally, Katz and others point out that physicians can learn from the poets.[30,31] First, the practice of medicine is an art that is not dissimilar to what poets do. The author has referred to this as the "maintenance of humanism."[31] By this the author means those characteristics and virtues that not only connect us as human beings (ie, our shared humanity) but also those that should continually be held in the forefront of the physician–patient relationship, such as compassion, empathy, trust, integrity, engaged communication, altruism, and respect. Poetry "concerns the values of the spirit," and "the moral imperative" for the concern of poets is to focus on the world (outward) rather than exclusively on the self (inward).[32] Thus, paying attention to the art of medicine (poetry as metaphor) can help to illuminate the physician's (poet's) moral reasoning process and serve to clarify responsible and professional behavior (action) and to appreciate the ambiguities that are inherent in medicine. Second, medicine is also a science that works to dispel uncertainty and ignorance (unknowns) through research and the beauty of discovery.

This summary review of some of the ethical issues related to ambiguity and uncertainty in medicine highlights the moral imperative to promote a culture of respect that has also been raised by others.[20-22] Such a culture would promote the recognition of our shared humanity; the concept that patients, learners, and teachers should treat each other as a means to an end rather than simply as an end; that it is impossible to know everything and that acknowledging our ambiguity can enhance the profession's well-being as well as the physician–patient relationship; and the hope of patient-centered care and shared decision-making is unlikely to succeed unless medicine learns to embrace ambiguity. A change in the culture related to ambiguity and learning the value of living with uncertainty has been a neglected aspect of the medical curriculum and it will require a significant effort to educate students, residents, practicing physicians, and patients.

Implications and Recommendations for Medical Education

The majority of medical students enter medical school with the sincere desire to help sick people get better and to, overall, try to make the world a better place. In the author's personal experience of interviewing applicants to medical school, many students have participated in medical mission trips abroad or to underserved areas in the United States prior to entering medical school and often express desires to continue such activities in the future. However, once into their third- and fourth-year clinical clerkships, their confrontation with ambiguity, uncertainty, and other aspects of the hidden curriculum (ie, the unwritten and unintended transmission of values and beliefs) begins in earnest and their level of tolerance is tested. How they tolerate ambiguity has been shown to possibly affect their choice of residency as well as their attitudes toward patients.[15,33-36] How their mentors and teachers tolerate ambiguity is no less important.

Residents, fellows, and attending physicians are the role models and mentors for medical students during their formative clerkship years.[37,38] Attending physicians are role models and mentors for residents and fellows during their training.[39-41] While interjecting educational tools related to tolerance of ambiguity into the medical school curriculum should be accomplished, a greater emphasis should be placed on the teaching of ambiguity to residents and faculty who, ultimately, have the greatest influence on the qualities and behaviors we hope to instill in our students, residents, and other learners. Faculty development courses directed toward faculty, residents, and fellows should be developed as a key component of medical education. Faculty mentors with the requisite training and behaviors should be developed to work with both residents and medical students to help foster and teach a tolerance for ambiguity.

Medical school and residency training have been likened to a series of life cycle events where trainees are transformed from

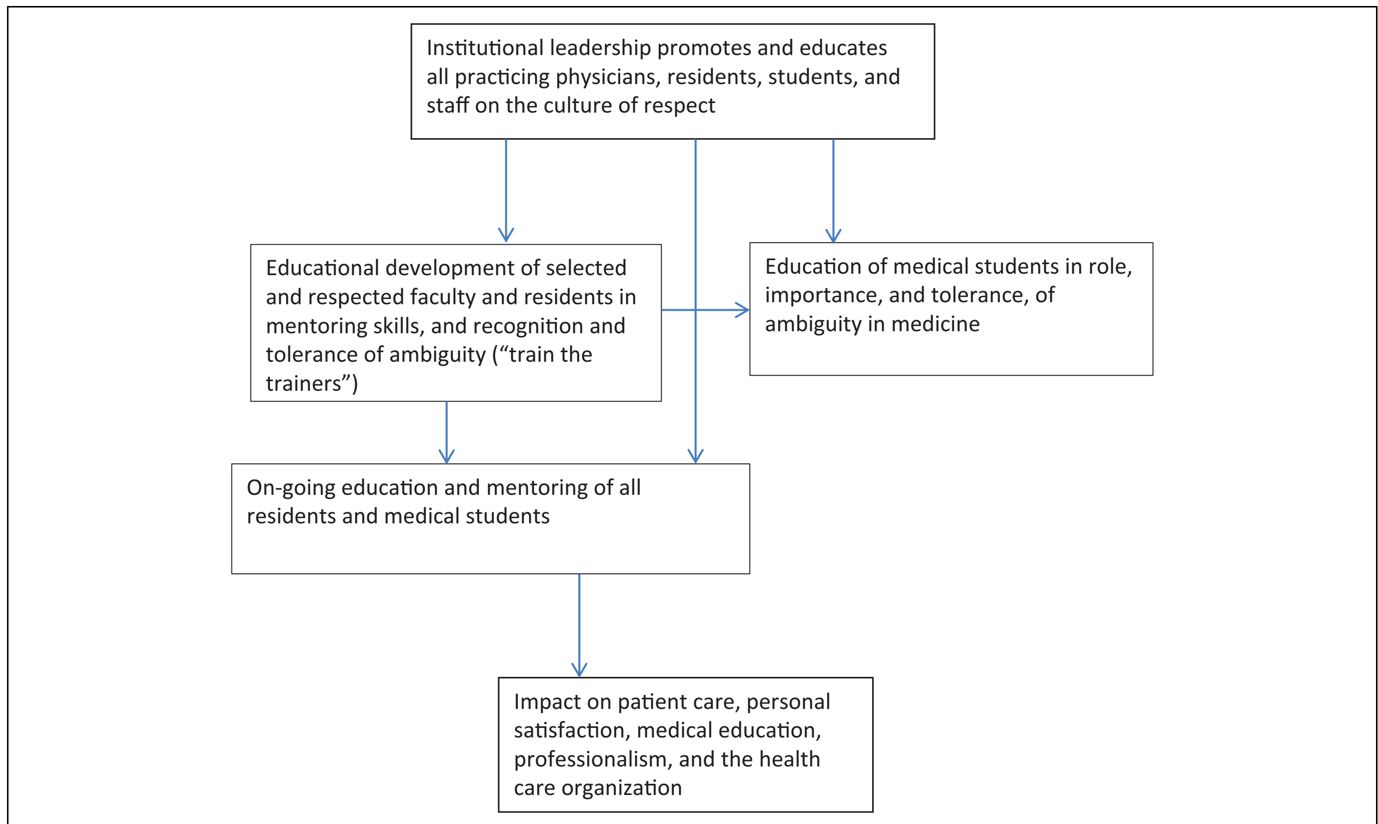

Figure 2. Recommended approach to ambiguity tolerance in medical education.

incompetent to competent physicians in their chosen field and their identity formation is solidified.[2,36,42] Identity changes occur that will quite possibly remain for a lifetime. This is a teacher–learner relationship—a mentoring or role modeling relationship—that is not only life altering for the learner but is also one that must be highly respected by the teacher. The mentor/teacher must be able to recognize the ambiguity inherent in the teaching–learning process and that, as noted above, the relationship between learners and teachers should be one of mutual respect, mutual recognition of the other's freedom, and mutual solidarity as a means to an end in order to fully achieve the transcendence and transformation that we all hope for. Mentoring skills that appreciate the role uncertainty plays in medical practice, that eschews the concept of always being right, that teaches humility in our ability to know everything, that values the virtue of respect, and that promotes the moral courage to say "I don't know" should be a cornerstone of faculty development programs in all institutions.

Others have raised concerns that an appreciation of ambiguity and uncertainty in the medical education curriculum has been neglected for far too long.[5] However, recommendations for improving tolerance toward ambiguity tend to place the burden on the student to "express and deal with clinical uncertainty."[5] Left out of discussions to educate about ambiguity is the important role played by resident and faculty mentors. As Slattery and Morris note, "We must acknowledge the ambiguity of the teaching and learning process and the reciprocal nature of the relation between students and teachers."[43(p29)] The apprenticeship model of medical education readily lends itself to focusing on the important role mentors and role models play in shaping not only the classroom curriculum but also the hidden curriculum.

The author's proposal entails a "top-down" approach to teaching the importance of, and tolerance for, ambiguity and uncertainty (Figure 2). First, as noted above, the virtue of respect is the common thread throughout an ethic of ambiguity; thus, instilling an institution-wide culture of respect is critical if the challenges surrounding ambiguity—patient-centered care, shared decision-making, enhanced clinical reasoning, and so on—are to be incorporated into regular practice. Second, respected physicians who role model and who express the ideals of a tolerance for ambiguity as discussed above should be recruited to undergo faculty development training to enhance their skills in educating residents, students, and other faculty in addressing uncertainty. Similarly, residents and fellows should also be identified to undergo similar educational development and to then act as mentors for students (and other residents) because, in reality, it is often the resident who has the greatest amount of contact time with medical students during their clerkship years. Such mentoring provides the opportunity for "real-time" teacher–learner interaction that allows the teacher to "mirror back"[2] appropriate behaviors. Role modeling appropriate behaviors by teachers is critical to fostering an ideal educational environment that demonstrates respect

Table 2. Benefits of Embracing Ambiguity in Medical Education.

- Improved personal well-being
- Effective mentorship
- Culture of respect imbedded throughout the institution
- Meaningful learning
- Meaningful physician–patient relationships and patient-centered care

between all learners and teachers and that promotes the highest standards of professionalism.

Final Thoughts

Ambiguity exists in the daily practice of medicine and it exists in teacher–learner relationships from medical students to residents and fellows. An ethical analysis of ambiguity makes it clear that both educators and learners must be aware of their responsibility to treat each other with respect and as human beings and not as objects. Ambiguity will forever be a part of medicine, and as outlined above, there are numerous advantages and incentives to become comfortable with uncertainty. "A pedagogy of ambiguity will necessarily be unsettling [but it] reinvigorates the teaching and learning process by including multiple interpretations, alternative representations, and silenced voices in the curriculum, while at the same time challenging the quest for absolute certainty."[43(pp31,34)] Teachable moments and meaningful learning readily occur when we are open to ambiguity and uncertainty.[43-45]

Instilling and promoting a culture of respect provide the underpinning needed to establish an effective pedagogy of ambiguity. The benefits of such an approach would seem to be far reaching and to provide important benefits for medical education, the practice of medicine, and the physician–patient relationship (Table 2).

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