

In This Issue: Doctor-Patient, Doctor-System, Doctor-Public

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This issue of the *Annals* contains a number of articles that look inside the doctor-patient relationship from the patient's, as well as the physician's, point of view.

DOCTORS AND PATIENTS

One of my teachers once reminded me to always take into account the power of countertransference. The article by Street and colleagues¹ uses a sophisticated process to come to the conclusion that patients prefer doctors with whom they share values. In groups, patients gravitate toward different physicians by their perception of what physicians think and believe. Where there is concordance, there is increased trust and a higher likelihood for agreement on management of problems. Conversely, in communities, particularly rural ones, with less choice of physicians with whom patients can match values, earning trust may be more challenging. Fortunately, by using patient-centered behaviors, clinicians can increase the chance that shared values can be achieved.

Both doctors and patients hold shared decision making as an important value. Krones and colleagues² show, through a randomized prospective trial of concentrated education of doctors about shared decision making, that patients are more satisfied with the process and doctors feel better about the decisions which are reached. Alas, actual behaviors that reduce risk are more resistant to change.

The article by Goodyear et al reinforces the general observation that pictures are more powerful than words, or at least more effective at conveying important information about risk.³ One conclusion from this study might be that physicians should be taught the effective selection and use of the graphic representation of data, particularly in the era of electronic health records. Very few medical schools or residencies include such training. Those interested in learning the power of visual representation might want to look at

the work of Tufte,^{4,5} which is used by scientists worldwide. Spiegelhalter's editorial on the subject⁶ elegantly highlights one of the essential elements of primary care practice—living with uncertainty—and explains, with a pack of cards and a coin toss, why there is uncertainty both for doctors and patients. Our attempt to help things be clearer inevitably bumps up against the fundamental truth of clinical care: there is no answer, only a series of choices that change with time, information, and human unpredictability.

Katoaka and colleagues describe the often benign nature of pulmonary crackles in many older patients.⁷ Their work suggests a natural history for clinical findings. Not everything that changes as we age indicates disease. I put this article to good use last month when a patient of mine, an 82-year-old man, still had his persistent crackles at both bases. In an interesting role reversal, I reassured the cardiologist that there were data to show that the patient's rales were a natural process.

DOCTORS, SYSTEMS, AND THE PUBLIC

The carrot-and-stick element of the widely used pay-for-performance to "incentivize" doctors to adhere to guidelines seems to work in the study by Campell and colleagues from the United Kingdom.⁸ Goals are met, and increased reimbursement for doing so is a result. Another consequence, however, seems to be that a guideline-driven process of care leaves physicians feeling that they are becoming less skilled, are losing their sense of place in the clinical enterprise, and are less connected with patients. The result might be wealthier doctors with less emotional investment in their practices and, if satisfaction for both doctors and patients comes from the relationship, lower overall satisfaction.

Physicians are aware of the evils of antibiotic overuse, but we are slower to change than one would predict, given the high visibility of cautionary literature in both the general and medical press. Stille and colleagues⁹ report that a multimethod intervention to

reduce inappropriate prescribing through physician education, as well as public information, did reduce prescribing of antibiotics, but the campaign did not affect physician self-reported attitudes or practices in the intervention group compared with a control group. Physicians sometimes exemplify the bumper sticker that says, "I have my mind made up. Don't confuse me with the facts."

Devoe's essay on the unsustainability of our current health system invokes the need for individual responsibility to do something beyond provide good care.¹⁰ We not only have to warn others of the impending end of medicine-as-we-know-it but also must work with our colleagues and communities to do something about it.

OTHER ARTICLES OF INTEREST

Two articles in this issue address methods and tools of primary care research and practice. Hahn and colleagues¹¹ report that medical record flow sheets are associated with adherence to guidelines for diabetes assessment and treatment, but not with achievement of intermediate outcome targets. Fisher and colleagues¹² introduce a new tool for measuring emotional distress and concerns in patients with diabetes.

A meta-analysis finds that, although nonergot dopamine agonists reduce the severity of symptoms of restless leg syndrome, significant numbers of patients discontinue their use because of adverse events,¹³ perhaps an example of the treatment being worse than the disease?

Finally, Middleton's essay¹⁴ reflects on the pain of those left behind after a physician suicide and calls for greater attention to the issue of physicians' mental health.

Please share your thoughts about these articles in the online discussion at <http://www.AnnFamMed.org>.

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Understanding Uncertainty

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This issue features studies concerning the presentation¹ and impact² of risk information, contributing to a huge literature on how people react to being told of what might be in store for them. I decided to put myself through the ARRIBA-Herz algorithm, developed by Krones et al,² and notched up 10 points, corresponding to an 8% 10-year risk of a myocardial infarction (MI) or stroke, similar to the chance of drawing an ace out of a pack of cards. To me, this absolute risk is worrying, but that 8% is below average for my age is reassuring (incidentally supporting, with my meager sample of 1, the findings of a considerably larger recent study which showed that absolute risk and risk relative to average are 2 independent and additive contributors to anxiety.)³

By reflecting on the meaning of this number, 8%, we may gain some insight into why different representations of risk, apparently describing the same information, can tell such different stories to people. This 8% risk offers a numerical summary of the uncertainty about what might happen to me over the next 10 years, and, as Goodman⁴ describes, quantifying an idea as apparently vague as uncertainty came comparatively late to science. This is perhaps unsurprising when we acknowledge a distinction between chance or aleatory uncertainty, concerned with essentially random phenomena, and probability or epistemological uncertainty, which concerns lack of knowledge about unique and potentially verifiable events and so is essentially a measure of ignorance.

An experiment I carry out in front of school audiences helps to distinguish these 2 concepts. I hold a coin and ask, "What is the chance this will come up

heads?" They cheerfully say something like "50%" or "half-and-half." I then toss the coin, catch it, flip it onto the back of my hand without revealing it, and ask, "What is the probability this is heads?" Pause. Then someone, less confidently, mumbles "50%." I reveal the coin to myself, but not to them, and ask, "What is your probability that this is heads?" Very grudgingly they might eventually admit "50%." In this experiment I have gone from pure aleatory uncertainty to pure epistemological uncertainty, showing (1) epistemological uncertainty is "in the eye of the beholder" (my probability was eventually 0% or 100%, whereas theirs was still 50%), (2) that the language of probability applied to both forms, and (3) that these different types of uncertainty may be perceived differently.

So what about real life? Is my 8% risk epistemological (ie, it is essentially already decided whether I am going to have an MI or stroke, I just don't know the answer), or aleatory (the situation is analogous to drawing an ace from a pack of cards)? In screening for disease, the uncertainty is all epistemological—the disease is either there or not and we simply don't know. But in making clinical predictions, there is generally a combination: further information may change the risk assessment, but always leaving a degree of irreducible unpredictability. Because people have different internal models for how the world works and the degree to which future adverse events are preordained but unknown, we should not necessarily expect a strong degree of uniformity regarding the perceptions and interpretation of risk information.

If numerical statements about risk can keep on changing according to what information is available, can we even say that the probability objectively exists as something to measure or estimate? This topic has been the subject of many years of polemical argument, and I shall temporarily renounce academic objectivity by simply stating my opinion. In line with the work of de Finetti⁵ and others, my subjectivist position considers that *probability does not exist*, that any numerical statement of risk is constructed by argument, is contingent on available information, and is a relationship between

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you and the event in question. It is therefore personally quantifiable but not objectively measurable: there is no "correct risk" to estimate. This view sidesteps the aleatory/epistemological question by viewing any quantification of risk—whether of a future outcome or preexisting disease—in the common currency of betting odds on the event in question. For example, when teaching a class in January 2008, I (being in the United Kingdom) could place an online bet at 3 to 1 odds (25% probability) on Barack Obama being the next US president. Anyone reading this in the future will know whether my bet paid out in November 2008, but on the information available at the time, these odds seemed reasonable, although they are currently (April 2008) changing daily.

How best to assess odds for individual events? The standard way is to use historical data by essentially embedding a new individual in a population of similar people in whom the frequency of adverse events is known. This process requires some judgment: being told an event has happened 43 out of 43 times suggests that it is almost certain to happen next time, until I tell you the event is that the President of the United States is a white man. By embedding someone in a historical class, we are inevitably ignoring additional, potentially informative, personal information that could influence our odds.

Finally, we must decide on a way of communicating the risk, and we might look for guidance to a recent authoritative review⁶ of numerical, verbal, and graphic methods of individual risk communication in health. Lipkus identified some well-known biases—for example, risks reported as "10 out of 100" are generally perceived as higher than "1 out of 10"—but could not come up with any very firm conclusions as to the correct method for communicating risk.

In this issue, in Goodyear-Smith et al¹ the verbal descriptions for numbers needed to treat (NNT) and natural frequencies are entirely in terms of populations—what happened to others. Goodman⁴ suggested that the NNT description, developed for health policy rather than individuals, encourages an epistemological interpretation ("either you will be 1 of the 14 that benefit, or you will not"). Krones et al² use 100 smiley faces⁷ and the words "picture 100 people with the same point values as yours," firmly in the population perspective. People are known to see their own risks as different from the general population, and it is unsurprising that these modes of communication might elicit a different response from a direct statement about your risks.

A recent study in the *Annals*⁸ suggested people did not like crowd charts showing what heart events might happen to 100 people; instead, they were most impressed with a measure of heart-age that avoids the language of uncertainty by mapping increased risk onto a characteristic that may be more easily grasped. Providing people's

lung-age (the age of a healthy individual with equivalent lung function) was recently found to help smoking cessation,⁹ while one can express the survival risk of continued smoking as being equivalent to aging an additional 6 hours per day spent smoking.¹⁰ This suggests that alternative metrics may be used to express risk profiles.

It should be no wonder that clear recommendations for risk communication are not forthcoming, as every representation carries its own connotations and biases that may vary according to the individual's perspective concerning the way the world works. A consequence is that the message can be varied to maximize the impact on behavior. My personal feeling is to acknowledge there is no correct answer and pursue multiple representations, telling multiple stories, each with their own capacity to influence. The aim should be to communicate what are reasonable betting odds for this individual, using current available knowledge, and possibly making appropriate analogies with games of chance: "It would be just as reasonable to bet on you having an MI/stroke in the next 10 years as it would be to bet on drawing an ace from a pack of cards." This analogy provides an appropriate yardstick for our uncertainty, but an analogy with betting may be personally or culturally inappropriate. If you want to influence behavior, then an alternative yardstick in terms of equivalent risks, such as heart-age or lung-age, may be effective.

To read or post commentaries in response to this article, see it online at <http://www.annfamned.org/cgi/content/full/6/3/196>.

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