Epistemic Trust, Epistemic Responsibility, and Medical Practice

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Running Title: Trust and Responsibility in Medical Practice

Abstract

Epistemic trust is an unacknowledged feature of medical knowledge. Claims of medical knowledge made by physicians, patients, and others require epistemic trust. And yet, it would be foolish to define all epistemic trust as epistemically responsible. Accordingly, I use a routine example in medical practice (a diagnostic test) to illustrate how epistemically responsible trust in medicine is trust in epistemically responsible individuals. I go on to illustrate how certain areas of current medical practice of medicine fall short of adequately distinguishing reliable and unreliable processes because of a failure to systematically evaluate health outcomes. I conclude by articulating the devastating obstacles to the consilience assumption, which takes intellectual character (rather than reliable belief-forming processes) as the standard for epistemic responsibility.

Keywords: Reliabilism, Trust, Epistemic Responsibility
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A friend of mine recently got tested for HIV. As anyone who has gone through the process knows, a single test is not definitive. Whether the first test is positive or negative (whether it’s the ELISA or the Western Blot) a second test is recommended. As it turns out, my friend tested negative (twice), and so we might say that she knows she’s HIV negative. Of course, the only reason we could say she knows is that the nurse told her. The only reason the nurse knows is that the lab results indicate it. The lab results indicate it because the lab tech ran the test and interpreted the results. The lab tech knows how to interpret the results because she learned the appropriate optical density (for the ELISA test) or protein levels (for the Western Blot) for positive and negative HIV antigen tests.¹

According to standard philosophical skepticism, my friend, the nurse, and the lab tech cannot know that my friend’s test results came back negative. A seemingly infinite number of nagging doubts can be raised: the test could have been run incorrectly, the results could have been falsified, the test misinterpreted, there could be a “grand deceiver,” etc. Okay, so in that sense, she doesn’t “know.” But we can still meaningfully ask if it is epistemically responsible for her to claim that she knows. That is, does she have a good reason to believe that she is HIV negative? Historically in epistemology, good reasons were narrowly described in terms of first-person reasons like deductive or inductive inference and/or sense-perception and/or intuitions. On this view, my friend does not have a good reason to believe that she is HIV negative, and neither could the nurse. The lab tech, well, it might seem like she has a good reason, but, even she does not.

¹This train of relationships goes on for some time. For example, the lab tech also relies on the company that manufactured the equipment that was designed to produce reliable results as well as the supplier of materials for the ELISA and Western Blot tests. These companies, in turn depend on other companies to provide raw materials, and so on.
Unavoidable Epistemic Trust

As John Hardwig (1985) has pointed out, limiting good reasons to first-person sources has the unfortunate consequence of qualifying the vast majority of our beliefs as epistemically irresponsible. Hardwig argues instead that beliefs based on the claims of others can be epistemically responsible.² That is, we can have good reasons to believe something even if it is not something we directly experience or reason through. On this view, it is epistemically responsible to accept the claims made by an expert regarding his or her area of expertise: my friend can responsibly claim that she’s HIV negative. Hardwig (1991), however, goes even further, “In an important sense, then, trust is often epistemologically even more basic than empirical data or logical arguments: the data and the argument are available only through trust” (p. 694). In other words, the nurse may understand what a negative ELISA HIV test indicates, but she didn’t actually run the test. The lab tech may have run the test and seen the results, but she did not figure out how to run the test and how to interpret its results all by herself. She had to be trained by someone,

² Hetherington (2002), in an attempt to challenge the possibility of epistemic responsibility has, I believe, substantially misinterpreted epistemic responsibility as a useful concept. To begin, he sets up a dilemma between epistemic responsibility as purely subjective and not requiring objective evaluation—an individual can be epistemically responsible for believing x without satisfying any external criteria for believing x—and epistemic responsibility as objective and, hence, satisfying some external criteria. I am uninterested in the first horn, and so I want to show how Hetherington has mis stepped regarding the second horn. The key problem he identifies for the second horn is that in order to be responsible for or in some belief or action, one must have been able to do otherwise. As the problem associated with this horn, he suggests that the “perfectly epistemically responsible” individual would follow the evidence without the ability to do otherwise and so, this individual would always be epistemically justified even though they could not be judged to be epistemically responsible (because they could not have believed otherwise). There are several problems with this move. First, it’s not clear if the possibility of a perfectly epistemically responsible (PER) individual is a real possibility or one that we can simply imagine—like a brain in a vat. Fanciful examples provide limited critiques. Second, there is good reason to believe that the PER individual does not exist based on the overwhelming evidence of human bounded cognition. Of course, Hetherington may respond that there may be instances of a PER individual for the formation of a particular belief. To rebut, let us look at the third problem with Hetherington’s argument. Third, and most importantly, conceptions of epistemic responsibility are most usefully applied to the beliefs and not the actions of individuals. Guidelines for epistemic responsibility provide the tools to evaluate beliefs and do not provide clear benefit when subsequently applied to the individuals holding those beliefs. Hetherington overlooks this point by making epistemic responsibility a question of free will. He has subtly shifted from “is this a responsible belief?” to “are you a responsible believer?” The second question is uninteresting in that individuals will likely hold some responsible and some irresponsible beliefs. Epistemic responsibility provides guidelines, not to judge the individual, but to judge the process of belief formation.
and so trust them about what each cue indicates.

Epistemic trust is not limited to the lay person-expert and apprentice-mentor relationships. Research in many areas of expertise is also fraught with epistemic dependence. As Hardwig (1991, 695) notes, the increasingly complex and immense process of gathering and analyzing data raises the necessity of epistemic dependence. At times scientific research requires the inclusion of various specialists who are not competent to do the research that other research team members are doing (1991, p. 695; 1985, p. 346-348). In such cases, “a belief based partly on second-hand evidence will be epistemically superior to any belief based completely on direct empirical evidence whenever the relevant evidence becomes too extensive or too complex for any one person to gather it all” (Hardwig, 1991, 698, emphasis added). This has particular significance for medicine because of the complexity of medical practice. In order to achieve results that are widely applicable, medical research at various stages involves medical researchers from geographically distant locations. Even in smaller scale experiments, it’s necessary to employ various physicians, nurses, and other professionals to take advantage of the various times that new research subjects arrive. Just like a lay person or an expert-in-training, experts in a vast and complex field of research like medicine cannot avoid being epistemically dependent on others.³

³ There is a substantial and growing literature on the concepts of trust and testimony that is fraught with disagreement about the appropriate conceptions of epistemic trust and testimony. (For a comprehensive review of the testimony literature, see http://plato.stanford.edu/entries/testimony-episprob/) In this essay, I will side-step these disagreements because my thrust is for recognition rather resolution—an adequate epistemological understanding of medicine must incorporate epistemic trust. Nonetheless, one problem of prominence in this literature is whether or not trust in the claims of others is reducible to induction, and so may or may not provide independent warrant for a belief. (See Coady, 1992) My account below prima facie commits me to a reductionist view, where epistemic trust in medicine is justified by background conditions that can be evaluated independently of an individual’s trust in a medical practitioner. Even on such a reductionist view, epistemic trust remains a key component of medical practice. Though trust may be reducible to induction, limits of time and expertise will limit the practicality of patients performing this work. This position does not commit me to a reductionist view of the testimony of non-expert strangers because it is specific to the well-developed area of expertise in medicine.
**Responsible Medicine**

Epistemic trust is unavoidable. It is a direct (when taking someone’s word about an issue) or indirect (when trained to read certain cues) causal root of our beliefs. Denying that epistemic trust can be responsible defines all beliefs as equally irresponsible, but accepting the epistemic responsibility of epistemic trust allows us to distinguish between beliefs in an important way. If my friend claims that she is HIV negative, it makes a difference if she based this claim on a Western Blot test or on the flip of a coin. Denying that epistemic trust can be responsible, we are left in the awkward position of describing epistemic trust in either the lab test or the flip of a coin as equally (ir)responsible.

Beneath this conception of responsibility is an appeal to reliability. When informing a patient of his diagnosis or prognosis, and identifying possible treatment plans, reliability is the primary criterion for evaluating the process. Reliable information is welcome, all others need not apply. As Michael Bishop puts it, “being epistemically responsible would involve nothing other than employing reliable belief-forming procedures.” (Bishop 2000, p. 205) I will not produce a full defense of reliabilism here (though I briefly address the generality problem below), but say again that claims produced by reliable processes are *exactly* what we look for in medical practice.

When determined in accordance with reliability, six aspects of epistemically responsible beliefs are worth noting. First, in some cases a belief-forming process that is more reliable than chance may not be available, but this does not doom us to epistemic irresponsibility. If an individual mistakenly believes a process to be reliable, when in fact it is not, the belief is clearly epistemically *ir*responsible. Nonetheless, we will be forced to make actionable decisions at times when chance is the most reliable belief-forming process.
available. This does not require us to hold epistemically irresponsible beliefs. In these cases, by explicitly acknowledging the limited (or lack of) reliability of the belief-forming process used to guide actions we avoid epistemic irresponsibility while making a “best guess” decision. This is significant for medical practice because of the vast expanses of general ignorance. Medical practitioners, to avoid their own and their patients’ epistemic irresponsibility must be aware of and acknowledge this ignorance (and, as I will discuss below, do something to address it).

Second, as the above implies, epistemically responsible beliefs are not necessarily true beliefs. Based on the most reliable strategies available, epistemically responsible beliefs will be more or less accurate, but not perfectly accurate. For example, the reliability of a diagnostic test in medicine is primarily measured in two ways: sensitivity and specificity. Sensitivity indicates the percentage of true positives that the test accurately identifies and specificity indicates the percentage of true negatives that the test accurately identifies. The ELISA test is very reliable in identifying HIV positive individuals. It has a sensitivity of about 99.5%—only one out of every 200 HIV-positive individuals gets a false negative. When the lab tech’s belief about my friend’s HIV status is based on the ELISA test results, the belief is epistemically responsible because the agent has evidence that the test is reliable even though the resulting belief is not necessarily true.

Third, epistemically responsible trust is epistemic trust in others who employ reliable belief-forming processes. My friend has an epistemically responsible belief that she is HIV negative because she trusts some person (the lab tech) who is using a reliable belief-forming process. This definition may appear, however, to lead to an infinite regress.

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4 It should be noted that the “best guess” in these cases may require attention to the biases of human decision-making. Even though chance (e.g. flipping a coin) may provide the most reliable belief-forming process, our decision-making (even when guessing) may be biased so that our “guess” turns out to be less reliable than flipping a coin.
To flesh out this point, let’s begin by noting that there will be multiple levels of trust and epistemic responsibility in many situations. In my friend’s case, there at least three such levels. As mentioned, the epistemic responsibility of the lab tech’s belief that my friend is HIV negative is grounded in the ELISA test’s reliability. The lab tech trusts, epistemically, those who illustrated the test’s reliability. At the next level, the epistemic responsibility of the nurse’s belief arises from the reliability of the test and the reliability of the communication of the test results by the lab tech. Thus, the nurse’s trust is epistemically responsible if and only if both conditions are met. At the final level, my friend’s epistemic responsibility arises from, in addition to the previous conditions, the reliability of the nurse’s communication.5

Concerns about an infinite regress arise in connection with the trust the lab tech places in others. For example, how does the lab tech know that the ELISA test is reliable? The test’s reliability was confirmed by comparing its results with previously known results, illustrating 99.5% sensitivity. How was it known that the previously known results were reliable? Those results were produced from other tests, perhaps several, that definitively showed the HIV positive or negative status of certain specimens. And how does anyone know that those tests are reliable? And so on.

In a narrow sense, this infinite regress proves intractable to resolution. Like the evil demon or the skeptical worry it will linger in the background of any discussion. In response to reliabilist epistemology and in the context of medical practice, however, this concern is misplaced. Using reliabilism as a standard for determining epistemic responsibility shifts the focus from a concern for justification in the sense implied by this

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5 Institutional structures could ensure that the tests, the execution of these tests, and the communication strategies are generally reliable. Unreliable tests could be abandoned, unreliable technicians could be fired and unreliable communication procedures modified. Indeed, this is precisely what taking reliabilism seriously would recommend. The oversight necessary to achieve this goal, however, is not always in place. See, for example, Gawande (2002, pp 88-108).
worry to a concern for reliable prediction. If a belief-forming process produces reliable predictions that is precisely what tells us that it is responsible. Moreover, in my friend’s situation, and that of any other patient, their concern is with the information they have been given.

To put this point another way, the reliability requirement for an individual’s beliefs to be epistemically responsible is role relative. My friend’s epistemic responsibility arises from who she trusts, and so her epistemic responsibility, on one hand, is defined by the reliability of the test results reported by the nurse. Ultimately, it doesn’t matter for my friend why the reports are unreliable (whether it’s the test or the communication), unreliable reports preclude epistemically responsible beliefs. The lab tech’s epistemic responsibility also arises from who he trusts, and so his epistemic responsibility, on the other hand, is determined by the reliability of the test. Again, as far as the lab tech is concerned, it is only whether or not the test produces reliable results that determine the epistemic responsibility of his beliefs.6

Fourth, one of the most significant problems for reliabilism is the generality problem. One recent example of this problem has been described by Conee and Feldman (1998). In this situation, Smith is a middle-aged person looking out the window at a tree he believes is a maple tree. To determine if this belief is responsible, we need to evaluate the belief-forming process. The generality problem points out the indeterminacy of identifying

6 Role-relative evaluations of reliability may appear to belie the actuality of epistemically responsible trust—instead of trust, there are role-relative evaluations of reliability. Because my friend evaluates the reliability of the clinic’s reported results, she does not trust the nurse. Because the nurse evaluates the reliability of the lab’s results, she does not trust the lab tech. And so on. As discussed in the first section, epistemic trust is a necessary feature of our epistemic existence. Epistemic trust, then, is not precluded by these evaluations—it is made responsible. My friend’s ignorance about the most reliable test for HIV status does not excuse her from making a judgment, but requires her to trust someone, specifically someone who identifies HIV status reliably. Trusting only those who are trustworthy (e.g., use reliable belief-forming processes) does not mean that no trust is involved.
the subject of this evaluation. Which of the following processes should be evaluated: the use of leaf shape to discern tree classification, the use of retinal images to produce accurate mental images, the perceptual process of this middle-aged man at distance X (where X is the distance to the tree), etc.?

Goldman’s (1986) initial response to this problem, as it was first raised by Feldman (1985), was a brief reference to identifying the mechanism that is the narrowest casually operative process that produced the belief token. This response has been recently amplified by Beebe (2004), who defines the operative process in terms of a tri-conditional coupled with a standard of statistical significance. In short, for any particular belief token the appropriate process to evaluate for its reliability 1) must be used to solve all relevantly similar information processing problems, 2) must use the same algorithm for all of these problems, 3) must share a cognitive structure, and, additionally, must be the most broadly defined statistically significant group. On Beebe’s view, these conditions will accurately identify a single (potentially reliable) process for each belief token.

In terms of purely cognitive processes, Beebe may have found a solution, or at least be on the right track. In medicine, however, the problem is more complex because many of the processes are not cognitive. The patient’s process is cognitive to the point that it requires her to accurately interpret the information provided by medical practitioners, but it also involves multiple inputs: 1) the lab tech discerns the results of the ELISA test 2) that has been run on the properly functioning equipment, and 3) the results are accurately read and 4) recorded. It might seem that this is only a non-cognitive version of the generality problem—there are at least 4 different processes that are needed to support my friend’s

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7 Goldman’s response is reflected in my previous discussion of role-relative evaluations of reliability. By limiting the determination of reliability by my friend to the results reported by the nurse, this determination can be accurately described as the narrowest causally operative process.
belief. Which one or ones should we evaluate? However, this version of the generality problem lacks traction. When my friend is tested for HIV, the processes that need to be evaluated for their reliability are straightforward: the ELISA test for HIV, the lab tech’s competence to run the test, the equipment used, and the process of communicating the results. It is disingenuous to ask what processes should be evaluated for their reliability. There are several and they are neatly identified by the administrative structure of the testing and the responsibilities for communicating its results. The processes in question have been defined in advance.

Fifth, reliability as a requirement for responsible epistemic trust provides a standard for evaluating the testimony of others. The interaction between my friend and the nurse is obviously social, during which the nurse offers testimony about my friend’s HIV status. Only through this testimony can my friend be informed, and, moreover, in the background of this testimony is an agreement about the best test for determining HIV status. Medical experts have agreed that either the Western Blot or ELISA test are appropriate ways to determine HIV status, and they have brought my friend into the fold, so to speak, by providing her with this fact as it was produced by specific members of the medical community and relayed to her by the nurse. Requiring reliability of testimony produced by such background agreements allows my friend to discern testimony and agreements that are worth paying attention to from those that are not. Certainly psychics have loose agreements about the meanings of particular tarots cards, but this agreement and the testimony from a particular psychic that results do not tell my friend her HIV status, at least not in a way that’s worth paying attending to.

Sixth and finally, it is best to think of epistemic responsibility strategically. Certainly some belief forming processes are generally unreliable (e.g., flipping a coin to
determine HIV status), while some are more reliable (e.g., the ELISA HIV test) and others are maximally reliable (e.g., the Western Blot HIV test). Though the ideal may be to use maximally reliable processes at all times, other considerations may be significant—for example, the Western blot HIV test is more reliable, but the ELISA test is cheaper and still very reliable. Under conditions of fiscal scarcity, it may be more epistemically responsible to use the ELISA test even though it is slightly less reliable. Attending to economic efficiency does not, of course, write a blank check for responsibility: flipping a coin to determine HIV status (which costs even less than the ELISA test) is irresponsible because it uses the process of chance when an inexpensive and very reliable process is available.\(^8\)

**Distinguishing Trust and Reliance**

The distinction between reliance and trust has been pursued vigorously by some,\(^9\) yet beyond the existence of a distinction between the two, no consensus has been achieved. The strictest definition of reliance is proposed by Virginia Held (1968) and adopted and illustrated by Celeste Friend (2002): “we need not trust a paraplegic not to run after us, because it is a situation of certainty: the paraplegic cannot run after us, and therefore we are certain that he will not” (28). Nonetheless, Friend (2002) oscillates between distinguishing between “trust and prediction” and between two types of trust—a “predictive” trust and “a thicker, moral” trust. A looser definition of reliance is provided by Karen Jones (1996): “I can rely on someone to behave in a certain kind of way because I have evidence that it is likely that she will behave in that way out of, say, habit, fear,

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\(^8\) For a more complete discussion of “strategic reliabilism,” see Bishop and Trout (2005). Separately, it is also possible that experts will disagree about the reliability of a test. For the most part, these disagreements can be addressed, but it will require a larger pool of information. If we are in the position to analyze the accuracy of each available test for a given condition, we can determine the best test available. Some disagreement may still linger so long as the reliability of diagnostic tests and treatments is left up to speculation.

vanity, or stupidity” (14, emphasis added). Holton (1994) and McLeod (2000) both borrow from Baier (1986) by defining trust as “mere reliance” coupled with (a) a readiness to feel betrayed by failure (Holton, 67) or (b) an individual motivated by a moral commitment (McLeod, 474).

The disagreements about the features of reliance versus trust are important because they end up classifying medicine very differently. Because even the most reliable medicine often involves uncertainty of action and result, on Friend’s definition, medical practice will never satisfy the criteria for reliance. However, on Holton’s and McLeod’s definitions of reliance, medical relationships will most often be defined by reliance and not by trust—some practitioners are undoubtedly motivated by goodwill or a moral commitment, but it would be foolish to think that all are. ¹⁰ We cannot reasonably believe that the lab tech is motivated by goodwill toward my friend. The definitions of trust in these texts are often put in terms of personal relationships, but epistemic trust in medical practice cannot be predicated on personal relationships because of the distance, both literal and figurative, between the patient and the individuals involved in his or her care.

It makes little difference whether the epistemically responsible relationship is dubbed “reliance” or “trust.” Individuals may think of “trust” as a personal and moral relationship, precluding the kind of objective evaluation of reliability that I have been suggesting. Others may find reliability too distancing to accurately describe the

¹⁰ Chalmers C. Clark (2002) argues that physicians have a self-interested motive to foster the trust of patients. According to Clark, fostering patient trust protects the professional autonomy of physicians. Presumably, Clark is simply noting an existing motivation or possible motivation for fostering patient trust. However, Clark (perhaps unintentionally) isolates the importance of patient’s trusting their physicians without appropriate attention to the trustworthiness of physicians. Physicians’ professional autonomy would be protected by misplaced trust as well as it would be by well-placed trust. There is no built-in incentive to have goodwill toward patients. There is also a presumption running through Clark’s arguments that the professional autonomy of medicine is broadly desirable. Even if we are convinced that health is a primary good, what would make it so that the practitioners should sit in such a privileged position? The simple fact that health is foundational would not. Even though shelter is foundational, we do not imagine that architects’ professional autonomy is necessary. The same goes for farmers, etc.
relationship that they have with their internist and other medical practitioners. These psychological propensities notwithstanding, describing the relationship as one of reliance or trust is less significant than simply requiring that the processes are reliable.

*Implications for Physicians and the Medical Community*

Given the demands of epistemic responsibility that we base beliefs on reliable processes, physicians can draw some clear directives. Specifically, Evidence-Based Medicine (EBM) should continue to be embraced and the use of an individual clinician’s judgment should be limited as much as possible.

EBM is the impetus for the wide-spread use of the Randomized Controlled Trial (RCT). These trials are the gold standard for producing evidence about the efficacy of certain treatments in addressing a disease, disability, or syndrome and its symptoms. RCTs are not without their problems. One significant limitation of RCTs is their failure to produce results that are applicable to all patients. By narrowly focusing the trial on a particular disease and excluding complicating factors, the conclusions of RCTs are more certain, but they cannot be readily applied to patients who have complications or multiple diseases. RCTs also produce conclusions that are refined after the trial is over. A successful treatment is “efficacious” after a controlled trial, but only after real-world application is that treatment considered “effective.” This has led some to emphasize the limits of RCTs (and EBM) in medical practice (e.g. Tonelli, 2001) and to recommend integrating the conclusions of RCTs with the individual clinician’s judgments.

Given the biodiversity of the patient population and number of possible complicating factors, the physician’s judgment will be needed in some cases. However, individual clinicians, like all human decision-makers, are open to specific limitations and
predictable biases that are avoided in RCTs. For example, if a clinician attempts to recall the general success of a treatment for a particular disease with a specific complicating factor, this judgment can be biased by: limited memory, small sample size, confirmation bias (by only attending to the cases that confirm her presumptive conclusion), and availability bias (the cases she’s most recently encountered or the drug rep who most recently visited her office), to name a few.\textsuperscript{11} Hence, the reliability of medical judgments can be improved if we can eliminate the individual clinician’s judgment. Even as we accept that the clinician’s judgment is necessary in some cases, we can also acknowledge that we would be better off without it.\textsuperscript{12}

One might plausibly worry that the move to excise physician judgment would produce a psychological dissonance for physicians that would adversely affect health outcomes for patients. By eliminating the need for active judgment, physicians may become detached from patients and their practice in general. This could lead to a larger number of errors due to inattentiveness. Such a concern is likely misguided for three reasons. First, physicians would still be actively involved in the care of the patients. Difficult and unprecedented cases will still arise that require physicians to make judgments that cannot be prescribed in advance. Second, physicians as well as other professionals are already guided by rigid protocols in certain situations (i.e. the common cold). Third, even though the speculation of physician despondence may have intuitive appeal, evidence of its actual (or even likely) effect would be needed given that so many other professions already operate under more rigid protocols without attendant disasters (houses do not fall down,\textsuperscript{12}

\textsuperscript{11} For a general discussion of these biases see Kahneman, Slovic and Tversky (1982). For how these biases specifically relate to experts (medical and non-medical) see Baumann (1991) and Henrion and Fischhoff (1986).

\textsuperscript{12} Kathryn Montgomery (2006) appears to disagree with this conclusion, but I think this is because her argument is against medicine understood as a positivistic “basic” or “hard” science. I think it is best understood as a science, certainly, but a social science. Certainty is out, but that should not require dependence only on the frailties of human judgment.
pipes do not fall apart and electrical systems still function)

**The means to limit physician judgment**

One possible means of limiting the need for individual clinician’s judgment would be to increase the number of RCTs for a particular treatment in order to include a wider array of complications. After the initial RCT to establish efficacy in a narrowly focused trial, the second or third or fourth trial would include a wider array of complications in the subject pool. As much as this may satisfy our interest in attaining more reliable information, the cost of running so many trials may be prohibitive.

Another possibility would be more comprehensive analysis of health outcomes after a treatment has been approved for use. Currently, once a treatment has been approved, there is limited systematic analysis of the treatment’s effectiveness. Rather than run additional RCTs, regression analysis of data compiled in the years following a treatments’ approval could be used to continue evaluating the effectiveness of the treatment on patients. The effects of complications and multiple diseases, for example, on the effectiveness of treatment could then be identified. Although the results of this analysis will not be perfectly accurate, it will be an improvement over the judgments (with all their limits and biases) of individual clinicians. The obstacle to this approach is the infrastructure and its attendant start-up costs. Specifically, electronic medical records would need to become a more standardized part of clinical practice. At present, only one in ten office-based physicians in the United States use electronic medical records (Bert et al, 2005). I will return to this point in the next section.

*A little light reading*
Physicians’ epistemic responsibility is grounded in the reliability of RCTs (as well as the meta-analysis of RCTs) as published in medical journals. Two aspects of these publications and their use by medical professionals warrant consideration regarding their role in the epistemic responsibility of physician beliefs. First, ghost-written articles in medical journals have received some substantial attention in last decade. Second, physician habits when reading medical journals has been studied with some surprising results. In combination, these two aspects of medical publications could have an undermining effect on reliable medicine.

Ghost-written articles are a substantial part of the published medical literature. (Healy and Cattell, 2003) For those who are unfamiliar with the practice, it involves a company (usually pharmaceutical) paying a research staff to write an article that the company pays some esteemed physician to read, approve or edit, and sign. The article is then submitted to medical journals and often published without any reference to the actual writer or, in many cases, the affiliation with the sponsoring company. Of course, these articles are favorable to the sponsoring company. This is certainly dishonest. However, that an article is ghost-written does nothing to undermine the reliability of the claims made in these articles. Suspicions of misinformation are warranted, but the reliability of the process that produced a claim is not necessarily traceable to the messenger—the reliability of the process does not depend on the individual employing it, but on the process itself.

At the same time, it is also important to recognize that part of what makes this practice appealing for the sponsoring company is the speculation that other physicians are persuaded as much by the esteem of the signing physician as they are the information presented. This leads us to our second concern: how do physicians read medical journals?

Physicians spend a lot of time reading and read a lot of articles, but they don’t read
them particularly rigorously. In the late 1990s, surveyed internists acknowledged reading only the abstracts of 63% of the articles that they claimed to have read in medical journals (Saint et al., 2001). Any conclusions that these internists could draw would rely on the rigorous evaluation of these articles by peer-reviewers and journal editors. In conjunction with the illustration that open peer review is more open to bias than blinded peer review (Ross et al. 2006), this emphasizes the need for blinded peer review to ensure the quality of articles published.

Even with blinded peer-review, the cursory attention physicians pay to medical journal articles may be the in-road for the insidious effects of ghost-written articles. Specifically, ghost-written articles that are more public relations than analysis or data-reporting may more easily sway physician views of particular treatments if these views are based on a cursory understanding of the effectiveness of a treatment. Although we can only speculate about the effect of the combination of ghost-writing and cursory reading, it is worth noting that these have the potential to undermine the reliability of physician beliefs about particular treatments.

*Implications for Patients*

Patients do not have a basis for epistemically responsible trust in most of what they are told by most physicians regarding their treatment. One of the fundamental oversights in the current health care system is the failure to systematically evaluate the health outcomes associated with particular treatments and particular physicians. In prescriptions for approved uses, off-label prescriptions, and non-pharmaceutical treatments, the harms of this failure are evident. In approved prescriptions, Rezulin was approved by the FDA in early 1997 for the treatment of insulin resistant type 2 diabetes with no concerns for effects
on liver function. By the end of the year, warnings about “rare” case of liver damage were acknowledged. In mid-1998, an NIH study was performed that included the death of one patient as a result of liver failure brought on by Rezulin (a.k.a., Troglitazone). At that point, the warnings about Rezulin’s effect on liver function began increasing significantly, leading to its eventual removal from the market in March 2000. Lacking a systematic evaluation of patient outcomes from the time of its initial approval, an adequate account of Rezulin’s effect on liver function was unavailable. (Krentz, Bailey, Melander, 2000) ACE Inhibitors are another class of approved drugs with unnoticed adverse effects. Recently, a preliminary study cited by the FDA (Cooper et al, 2006) indicated that ACE Inhibitors, when taken during the first trimester of pregnancy, increase the rate of congenital malformations of the fetus. This is a surprising and important finding because 1) second- and third-trimester complications were already known and 2) the ACE inhibitors have been on the market since the late 1980s. Almost two decades of harms that could have been avoided through systematic evaluations of health outcomes.

An excellent example of this problem for off label prescriptions is the case of Phen/Fen, a popular off-label weight-loss prescription during the middle 1990s. No studies were done on its effects on the liver until 1997. This study showed a significant number of patients with primary pulmonary complications apparently resulting from the drug regimen. Subsequently, many other cases of primary pulmonary complications associated with Phen/Fen were also reported. The harms from the millions of prescriptions of Phen/Fen written in 1996 could have been avoided if any regular systematic review of health outcomes had been in place (FDA, 2005).

Non-pharmaceutical treatments also remain largely unevaluated. For example, the treatment of abdominal aortic aneurysms using Medtronic’s AneuRx Stent Graft System
has been shown to fail to prevent aneurysms. Despite this fundamental inadequacy, this medical device remained on the market for over a year for two reasons. First, the only evaluations of the device’s success were left up to the company, which hid the data. Second, the information about patient’s using this stent could not be systematically evaluated until a second study was designed, funded and completed. (Cohen and Orr, 2002) Drug eluting cardiac stents have also been shown to have ominous, but not entirely known complications when implanted off-label. This, of course, has led to the recommendation of further studies. (Mayor, 2006) Off-label uses of these stents have been employed since 2003, and if patient outcome information regarding off-label use was already available, such studies could be done retrospectively.

The above examples are not comprehensive, but go to illustrate the cost of failing to produce systematic evaluations of the outcomes of approved prescriptions, off-label prescriptions and non-pharmaceutical treatments. If you were to ask your physician how well a treatment has worked for her patients or for the patients in her group’s practice or how well it works in general in a geographic area like a city, state, or region, in most cases, the only straight answer you could get is that they don’t know. If it is an evidence-based treatment, they may be able to tell you what the initial trial showed and perhaps subsequent trials as well, but our health care system does not continue to evaluate the effectiveness of treatments over the long-term and neither do particular doctors.

At present, the evidence for why a physician offers an EBM treatment is available in the RCT, but the evidence that the physician’s execution of the treatment is reliable is unavailable. At best, a doctor can offer his individual opinion about how well it’s working. As noted, these judgments will be open to bias from a number of sources. Epistemically responsible trust is grounded in two things, the reliability of the process of the belief
formation for the physician and the reliability of the physicians’ execution. So long as we have no access to the second aspect, epistemically responsible trust is not possible for many patients. As I mentioned before, electronic medical records could be used to improve the basis of physicians’ beliefs about the best treatment. Those same records could also be used to evaluate particular physician’s treatment successes and systematically evaluated the outcomes of patients receiving specific treatments.

This does not remove all chances of epistemically responsible trust. There are some notable exceptions to this problem, including the well-known fact that the United Network for Organ Sharing (UNOS) gathers and analyzes data about transplant success. I’ll mention one other example. The New York State Department of Health gathers and analyzes information about Adult Cardiac Surgery to provide hospital and physician specific rates of success, mortality, and morbidity. (New York State Department of Health, 2006) Similar analysis of other types of treatments could provide the information patients need to achieve epistemically responsible trust. Without it, patient trust in physicians cannot help but be irresponsible.

**Avoiding Reliability**

In contrast to identifying reliable strategies, there is a temptation to encourage patients to base their trust in physicians on a physician’s character. Instead of investigating the strategies employed or the reliability of the process on the whole, we should trust the physician, the nurse, the lab tech because we take them to be “good people.” Correlating the appropriate intellectual character with epistemic responsibility has been described in the literature of epistemology as the “consilience assumption”: an individual’s epistemic
responsibility is defined by that individual’s “intellectual character.” On this view, intellectual character would be justified by an individual’s intellectual character.

The set of characteristics that determine epistemic responsibility are currently underdetermined. Recommendations include accounting for all the facts, having a coherent view of the situation, etc. The particulars are not of concern to me here, but the assumption itself. In what follows I will show that the consilience assumption is inadequate as a basis for epistemic trust on three grounds: 1) intellectual character is too fragile to carry the weight of the argument, 2) it inadequately correlates with accurate judgments (conversely, other strategies are more effective) and 3) judgments of intellectual character are too prone to bias.

There is a preliminary concern that the consilience assumption is not compatible with epistemic trust. Mark Owen Webb (1993, p. 264) argues that epistemic trust depends on an externalist epistemological theory. This is because internalist accounts depend on the “knower” having access to the premises which justify the conclusion. In a relationship of trust this is not plausible. The layperson trusting the expert does not have access to the premises that justify what the expert claims. The “consilience assumption” commits one to an internalist account, and so a proponent of the “consilience assumption” is left to explain how their view is externalist or how an internalist account is compatible with epistemic trust. Whether or not such an explanation is forthcoming, there are three good reasons to avoid the consilience assumption.

First, intellectual character is fragile. Despite the folk view that character is robust

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13 See for example Bonjour, 1985. The kind of intellectual character that I’m referring to here is that which enables an individual to fulfill their professional responsibilities while also having the wherewithal to challenge professional norms that are inappropriate. As we will see in our discussion of Rolin’s work (2002), evaluations of intellectual character will include judgments about the individual’s ability to perform their professional duties. Part of what it means to evaluate an individual’s intellectual character is evaluating their ability to perform their professional duties. Accordingly, the institutional constraints placed on a profession are not a sufficient stand-in for intellectual character.
and static, when put under conditions of stress, it bends. There are a number of examples of this dating from the famous Milgram experiments (1963) where someone in a position of authority pushes an average person to torture a stranger to Darley and Batson’s (1973) study where the pressure of time kept seminary students from helping someone who appeared to be in cardiac distress. These examples do not preclude the possibility that character has some settled range for each individual. For this project it’s not important to describe the limits (if there are any) of the flexibility of an individual’s character. It is enough to show that character bends, and so provides an unstable basis for epistemic trust. Reliable belief-forming processes may be improved or altered, but the results will not depend on contingencies like the fact that someone is running late.

Second, Michael Bishop (2000) has convincingly illustrated that meeting standards of intellectual character (however character is defined) will not lead to the most accurate beliefs. He uses the example of Stuart and Beavis to make this point. In evaluating potential admissions, Stuart takes all the information (quality of school, quality of letters, etc.) into account, while Beavis simply adds the test score rank and class rank, but ignores all other evidence. Intuitively, we conclude that Stuart, the more responsible one, will come up with the best belief. He is trying to take all relevant information into account. However, study after study has shown that statistical prediction rules (SPRs) outperform individual judgment. Indeed the studies on the subject since 1954 have repeatedly and consistently shown that SPRs are at least as good as, and in many cases better than, an individual’s judgments. (Bishop and Trout, 2002, S198) As Bishop notes, there’s evidence that academic success (in essence what Stuart and Beavis are trying to figure out) can be most reliably predicted by simply adding high school rank and aptitude test scores. (Bishop, 2000, 187) Accordingly, the consilience assumption is not supported by
measurable evidence. Bishops suggests that on a better view, “being epistemically responsible would involve nothing other than employing reliable belief-forming procedures,” (Bishop 2000, p. 205) and these procedures would not include the steps commonly associated with intellectual character.

To ignore the intellectual character of a physician or other medical team member in favor of a reliable process may be counter-intuitive. We think we want the years of experience and the well-developed judgment of a wizened physician. One means of attenuating any resistance to relying on process instead of character is to recommend a significant limit on processes that do not rely on the physician’s judgment. For example, Geissbuhler and Miller (2000), in addressing the use of computer programs to improve clinical decision-making, begin with the reasonable restriction that it “should be used in clinical practice only after appropriate evaluation of its efficacy.” (376) They go on to suggest that it “should be used to augment or supplement, not replace or supplant, such individuals’ decision-making.” (Geissbuhler and Miller, 2000, 376) It seems that the thrust of this move is to improve on the reliable process by using the physician’s judgment as an override option. If the program is more reliable than the physician’s judgment, then using the physician’s judgment to override the program should not improve the decision-making. Arkes et al (1986) illustrated exactly this point. Allowing decision-makers to defect from a reliable strategy only decreases the reliability of the decisions made.

Third and finally, judgments about an individual’s intellectual character are open to bias. Defining epistemic responsibility in terms of intellectual character puts the burden of judging intellectual character on individuals when they put epistemic trust in others. Kristina Rolin (2002), for example, argues that Hardwig’s account of trust in science is “inadequate,” because he fails to distinguish between trustworthiness, the actual
“intellectual character” of an individual, and credibility, his or her perceived “intellectual character” (p. 96). One of the methods Hardwig had recommended for evaluating who to trust epistemically was through their acquaintances’ and colleagues’ knowledge of the individual. Rolin criticizes this method because it assumes that “most of the time scientists have knowledge of the moral and epistemic character of others scientists, and such knowledge can be acquired either by means of acquaintance or by relying on others’ assessment of the informant’s reputation” (2002, p. 99). By assuming this, we fail to consider that the “credibility” of scientists may be due to factors unrelated to their character.

Drawing on a number of studies, Rolin demonstrates the unduly diminished scientific credibility of women in hiring and funding decisions (2002, pp. 103-111). In short, women and men with similar credentials have been ranked significantly differently in these decisions. She attributes this problem to unconscious bias on the part of other experts (largely men) in the field. Such a bias is especially significant when the most authoritative members of the field are largely men. The implications of Rolin’s critique are two-fold. First, injustice in the financial support and recognition of women as scientists needs to be redressed. Second, the biases of judgment about an individual’s intellectual character would undermine epistemic trust justified by intellectual character.

I will not spend a great deal of time here addressing the injustice biased judgments produce, as it falls outside this project, but moving forward, institutional resolutions via process reform should be implemented.14 For example, the study that Rolin cites as an

14 Gender bias in science and medicine affects more than the credibility of women-as-experts. It can also guide research in ways detrimental to the interests of minority groups like women. Up until the early 1990s, the prevailing norm of medical research was to study the white male and extrapolate results from him to other groups (Dresser, 1992, pp. 24-25). Limiting medical research in this way produced various problems for non-white, non-male medical patients. For example, difficulty in diagnosing women’s heart disease has
illustration of the gender bias in funding presumably used improved criteria to determine the adequacy of certain candidates and then compare the ranking of those candidates with the actual results of the review process. Altering the existing process to focus only on appropriate criteria (e.g. those used by the critical study) should resolve the evident bias against women in funding decisions.

Bias in judgments of intellectual character underlines the need to avoid using intellectual character to evaluate epistemic responsibility. We could hope that individuals will work to overcome this possibility of bias as they make particular judgments. In some cases they may be successful. However, this only returns us to a reliance on the individual to have the appropriate characteristics in the process of belief formation. We have simply added “attention to possible bias,” to “accounts for all the evidence” and “has a coherent view.” As the previous two critiques show, these attempts will be undermined by the circumstances surrounding the judgment, and will be inconsistently accurate.

In short, by using reliability as the standard for epistemic responsibility, we avoid dependence on unreliable intellectual character and we eliminate the concern that judgments of intellectual character will be biased.

Conclusion

I have provided an account of how my friend and other patients could be epistemically responsible when making claims about their state of health. This account depends on a notion of epistemic responsibility defined by reliable belief-forming processes and unrelated to the intellectual character of the particular individual. Examining the practices of medical practice, we can see that there are a number of obstacles to a

only recently been recognized as a problem for medical practice (Mitka, 2006), a problem produced by setting white male symptoms of heart disease as the norm.
patient’s epistemically responsible trust, including the failure to regularly and systematically evaluate outcomes associated with particular treatments and particular physicians.
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