The Error of Counting "Errors"

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I don't understand why people are frightened of new ideas; I'm frightened of old ones.

—John Cage[1]

There are 2 fundamentally opposed ways to look at "human errors"; we can see "error" as a cause of failures, or we can see "error" as a consequence, a symptom of problems deeper in the organization.[2] Although partisans of safety in health care often emphasize the importance of incorporating new thinking from other fields about how human performance contributes to success or failure, the penetrance of these ideas has unfortunately been limited[3]; the continued focus on pursuing "errors"[4] shows just how deeply we as a profession remain trapped by old ideas.[5]

The old view of "human error" can be characterized by 3 basic principles[6]:

- "Human error" is the cause of many accidents; therefore, to explain failure, you must seek failure in the form of "errors", mistakes, violations, etc, committed by the frontline workers.
- Our systems of care are basically safe; the chief threat comes from the inherent unreliability of people.
- Safety can be improved by protecting the system from the erratic humans through selection, training, procedures, protocols, automation, and discipline.

The old view, which is unfortunately currently dominant in health care, leads investigators to focus on finding the points at which people failed. These findings are typically expressed in counterfactual language: if only they had noticed X, how could they not have seen Y, and so on. It is often operationalized by counting "errors" in work, points at which now, with our knowledge of the outcome, we can see that a zig instead of a zag could have avoided disaster. In this view, finding or counting "errors" is typically the stopping point of an investigation. The study by Berk et al[4] in this issue of *Annals* exemplifies this approach. The old view is in a way reassuring; our systems are basically safe, there are just a few aberrations to deal with, there is no need for fundamental change that might upset the established order.[7] It is also convincing, in the same way that optical illusions are convincing; it is easy to see "errors", especially in hindsight.[8]

In contrast, the new view of "human error" holds that[6]:

- "Human error" is not a cause of anything; in fact, it may not even exist as an objective, separable, and reliably identifiable construct.[9] Rather, it is a symptom of trouble deeper inside the system; to explain failure, you must find how people's assessments and actions made sense to them at the time (because if they made sense to someone once, they will probably make sense to someone else again).
- Our systems of care are intrinsically hazardous, not the least because they embody fundamentally irreconcilable conflicts among goals that must be pursued simultaneously (eg, thoroughness versus efficiency); frontline workers dynamically create safety by resolving these conflicts "on the fly" through their actions, in highly specific contexts.
- "Human error" is not random, but systematically connected to features of workers' tools, tasks, artefacts, and working environments; improving safety comes from understanding and influencing these connections.

The new view, although arguably counterintuitive, takes "human error" not as the stopping point of an investigation, but rather as its start. It holds that underneath every simple and obvious story about error, there is a deeper, more complex story[10] and that eliciting, sharing, and learning from that story, not the "error" story, is what leads to improvement. It takes a more appreciative stance, based on the principle of local rationality—the idea that people's actions always make sense, given their context, point of view, focus of attention, constraints, immediate goals, and understanding of organizational goals.[11] It also recognizes that people (for example, in emergency departments) do not operate in isolation, but instead are parts of complex, joint cognitive systems[12,13]—communities of practice composed of tools, procedures, artifacts, and coworkers, distributed over time and space and conditioned by organizational, professional, and institutional contexts.

But the new view is hard to hold. It threatens cherished ideas about free will and professional autonomy; it implies that our occasional accidents are not aberrant events but rather normal outputs of our systems, caused not by defective components but rather by the unanticipated interaction and tight coupling of normally operating components.[14] Thus, it challenges important and powerful interests. If our systems are basically safe (except for sporadically unreliable components), then there is no need for fundamental change: but ". . . finding that faulty designs were responsible would entail enormous shutdown and retrofitting costs; finding that management was responsible would threaten those in charge; . . . finding that [human errors]

were responsible preserves the system, with some soporific injunctions about better training."[7]

So, despite all good intentions, many of those interested in and committed to patient safety tend unconsciously to regress, maintaining the old view in new clothing. They do this by displacing it upward or downward along a decomposition axis.

First, one might move down a level, from the level of individual workers to the level of their hypothesized mental components. Health care researchers tend to naturally adopt this view because so much of biomedical science is based on decomposition: organisms to organ systems, organ systems to organs, organs to tissues, tissues to cells, cells to intracellular inclusions, and so on. Here the concept of unreliable humans is replaced by one of unreliable mental components (eg, working memory, attention, effort, motivation, heuristics, biases).

Or one can move up a level, from the sharp to the blunt end of the system, from the frontline workers to the managers of clinical units or entire organizations.[15] Similarly, here the concept of unreliable frontline workers is simply replaced, this time by one of the unreliable managers and executives. This view tends to be satisfying to frontline clinicians, who often feel that organizational managers are insensitive to their concerns. But the reality is that everyone's blunt end is someone else's sharp end; although displacing responsibility might feel satisfying to those usually held accountable for failures, it is unlikely to lead to improvement.

Most clinicians tend to believe that getting hold of our "human error" problem requires us to quantify it, but concentrating on counting or reporting "errors" is not likely to contribute to improvement, for 2 reasons. First, identifying where someone failed, or what they could have or should have done, does nothing to enlighten us about why what they did seemed so reasonable to them at the time. By not explaining why they did what they did, it allows the same "error" trap that caught them to remain hidden in the work environment, where it can catch somebody else. Second, "errors" and injury bear only a loose relationship to one another. Many "errors" never lead to harm, and many injuries occur without errors. The goal of safety efforts should be to reduce harms. Focusing on reducing "errors" diverts energy and attention into sterile debates about preventability and into overly detailed, narrowly targeted "fixes" that treat symptoms but not the underlying problem. What labeling a fragment of behavior as an error really means is that we do not yet have a good enough understanding of the problem. "Error" counts are thus measures of ignorance, rather than measures of risk.

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