Two Years Before the Mast: Learning How to Learn about Patient Safety

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The 1996 Annenberg Conference marked the beginning of new explorations by individuals, small groups, and organizations of the subject of patient safety. Before Annenberg, health care safety activities were limited to a search for applications that would "root out error" by eliminating its isolated sources. The 1996 conference made it clear that these efforts had been and would continue to be failures not because of insufficient willingness or lack of motivation but because they were predicated on incomplete, naive, and misleading notions about the sources of robustness and vulnerability that create accidents and safety. A major accomplishment of Annenberg was the disassembly of the complete set of old ideas of safety.

During the past two years, the individuals in the health care community have struggled to replace their old ideas with a newer, more productive understanding of safety by turning to the established and growing base of research on human and system performance. Research findings about how complex systems fail and how people contribute to safety, collectively called the "New Look," are the basis for the emerging new view of safety in health care. This view of error, systems, and safety is derived from two decades of research on performance, complex system function and failure, the impact of technology, the nature of accidents, and studies of the reactions to failure. The New Look is not a single theory or a model but rather a network of theory and linked empirical findings. Key portions of the New Look are spread over cognitive engineering, cognitive anthropology, social research on systems, management research, and interdisciplinary efforts like naturalistic decision making. Major contributors to the New Look were at the First Annenberg Conference (including Jim Reason and Dave Woods) and are present today (among them Woods, John Senders, Gary Klein, Charles Billings, and Karlene Roberts).

This research has already influenced thinking and approaches to problems of safety in health care. The National Patient Safety Foundation has made a concerted effort to make the New Look accessible to those interested in health care safety. It sponsored, along with the Department of Veterans Affairs and the Agency for Health Care Policy Research, a meeting entitled *Assembling the Scientific Basis for Progress on Patient Safety*,[1] at which New Look principals examined health care accidents, productive research approaches, and the "hot" topics of incident reporting and event classification. At the time of the current Annenberg conference, the New Look is neither universally accepted nor completely understood among health care practitioners, administrators, regulators, or the public. Many recent proposals to do work on safety reflect not the new but the old; they are incomplete, internally contradictory, sterile, or simply repetitious. But this reflects the fact that much of the health care community is "between two stools"—neither completely divorced from the old, nor completely engaged in the new. The health care world is in transition from one view to another—not synchronously and not universally but inevitably and, it appears, irrevocably.

Learning How to Learn

The principle argument of this talk is that adopting the New Look itself is a form of learning about safety or, more precisely, **learning how to learn** about safety. The observations below are derived from two years of engagement with motivated, intelligent individuals inside health care who are grappling with safety, accidents, research, regulations, technology, and tradition. The individual stories of these struggles provide examples of the ways in which people and organizations are learning about safety. What have we seen? The following is a summary of the main points.

1. *Learning about safety is not continuous but occurs at intervals.* Safety comes to the foreground only at certain moments, usually after accidents, in connection with internal strife, in response to new challenges (eg, production pressures), or associated with moments of organizational or technological change.

2. *Learning requires dissonance between belief and experiences.* So long as beliefs (about how the system works, about the roles of people, about the ways in which people work, about the details of technical work, etc.) are consistent with experience, learning is limited. When events occur that challenge existing beliefs (eg, "impossible" accidents, unanticipated bad side effects of "safety neutral" organizational change), the disturbance in the [manager's, regulator's, operator's, and designer's] structure of belief opens opportunities for fundamental learning.

3. *Not everyone learns at the same time.* Especially in large systems, learning occurs differently in different parts of the organization. A corollary is that some parts of organizations may learn at very high rates, especially if there is a perceived relationship between the need to learn about safety and current, local work. This learning can expose tensions between parts of the organization, between groups, between high- and mid-level management, and so forth.

4. *Learning is not always sequential.* Although there is a general order in which people learn about the New Look and safety, there are a variety of "entry points" into this knowledge base. Where people make connections and learn depends, in part, on the starting stance, eg, sharp end practitioner, administrator, regulator, but also on recent experiences with failure. What appears relevant is contextually determined and contexts are constantly shifting.

5. *Learning does not necessarily produce appreciation for the consequences of what has been learned.* Knowledge does not lead immediately to applications, nor are all application pathways immediately apparent. For example, the basic idea that catastrophic failure follows from the combination of multiple small faults rather than a single point failure is extremely attractive in the post-accident period, and this New Look view can be quickly adopted. But the implication that future failures cannot readily be forestalled simply by providing yet another layer of defense against failure is much harder to accept.

6. *Learning about safety is not permanent.* What is learned can be forgotten. Knowledge can become stale, inert, and inaccessible. Continuing experience at the sharp end is valuable to prevent forgetting; exposure to near-catastrophic failures, conflicts and uncertainty reinforces learning. The longer one is disconnected from the ground truth of technical work, the more the understanding of systems and human performance tends to

recede and to be replaced by naïve, "easy" folk theories.

7. *Learning about safety requires close contact with failure and also the distance needed for reflection.* Disassembling old beliefs in order to learn components of the New Look, for example, depends on close experience with failure and its aftermath. While this experience can be described and discussed, the **meaning** of first hand experience cannot be directly shared. Learning about safety appears to require close, "hands on" experience with failure. (It is interesting that most operator cultures value such experience and seek to make certain that apprenticeship training involves such experience.) But learning about safety is not simply a matter of experience. It also requires the opportunity to step back and reflect on the larger lessons that are exemplified by experience, to see connections, and to interpret. This reflection requires guidance and contact with the research results.

8. *Learning recapitulates the sequence of research that comprises the New Look.* Certain components of the New Look are essential groundwork for others. Although there are variations, the primary sequence of learning that we observe is one where individual and organizational learning retraces the history of the research that makes up the New Look. This sequence is roughly from (1) understanding complex system failure, to (2) characteristics of human expertise in context, to (3) the social character of "error" and problems with attributions of "cause," to (4) the limited and paradoxical effects of countermeasures designed to forestall "error," to (5) the broader consequences of reactions to failure that shape individual and organizational function, to (6) the notion of safety creation as an active product of efforts at every level of the organization, to (7) to the search for means to support creation of safety.

   It is also clear that people get sidetracked along the learning path at various places for a variety of reasons. For example, because consequences of failure overwhelm learning, because of a lack of resources or guidance in interpreting failures, or because the need to make immediate improvements overwhelms the need to understand.

9. *Learning inherently involves exploring the "second stories" that lie behind accidents and failure.* The widely known, easily told "first stories" of accidents are always incomplete and misleading in ways that make them impossible to use for progress on safety. The deeper, more detailed stories that characterize the way failures arise from multiple contributing factors, competing demands, process complexity, usual success, powerful adaptations, and manifold hazard are the basis for progress on safety. Technical work and technical failure are intimately bound up with complexity and conflicting demands of the domain of practice, and these are the subject of the productive "second stories" that can be (but seldom are) discovered and told.

10. Learning about safety exposes organizational stress. Virtually all components of the New Look expose the underlying rifts, disagreements, and mixed character of the organization itself. This threatens some and makes many uncomfortable. But these conflicts are central to learning about safety because they are the sources of conflicting demands and resource limitations that constrain practitioners' and management's ability to create safety.

11. *Learning about safety begins with learning that people **make** safety.* People are constantly creating safety, at all levels. People are the adaptive element of systems. At the sharp end, the story of creating safety is mainly the story of **adaptation**. Practitioner's strategies are failure sensitive; people are aware of the potential for failure in their world. They also are aware of many of the mechanisms that lead to failure and constantly devising strategies to forestall failure. Successful strategies for increasing safety are those that extend the reliability and robustness of these strategies. At the blunt end, the story of safety is mainly about how to shape the world so that the sharp end adaptations are effective.

Conclusion

Making progress on patient safety begins with learning how to learn about safety. The research collectively known as the New Look maps out the territory of lessons to be learned. Observing efforts to grapple with safety reveals that learning occurs piecemeal and at intervals rather than continuously. The dissonance between belief and experience created by accidents and near-accidents provides the opportunity to learn about safety. Exploiting the opportunity is itself difficult and demanding. The realization that safety is the active creation of people marks the end of the first phase of learning about safety.

Reference

[1] Cook RI, Woods DD, Miller C. *A Tale of Two Stories: Contrasting Views of Patient Safety.* National Patient Safety Foundation. 1998. Available at http://www.npsf.org/exec/report.html. Accessed November 2, 1998.

About the panelist

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