Improving health care with systems thinking

WE STRIVE TO REACH the theoretical goal of perfect patient care. But is defect-free health care possible? Or are avoidable deaths from preventable errors inevitable?

Sociologist and organizational theorist Charles Perrow describes *normal accidents* as inevitable, yet unanticipated, events resulting from a convergence of system failures. Because health care is a complex, high-tech industry and a complex adaptive system, it's more prone to accidents. Our tightly coupled system doesn't tolerate delays between intended actions. Think of care in the operating room or resuscitation in the emergency department. We expect events to take place in a predictable pattern and tight sequence.

By definition, a *complex system* has interacting components that work in both expected and unexpected ways. If one component fails, all downstream components may fail. In an *adaptive system*, we can't predict how each component will respond to a particular stimulus. In our healthcare system, humans contribute this element of unpredictability, creating the possibility of error or innovation.

Theories about high reliability and human factors can teach us how to build safer systems. Creating *high reliability* means simplifying and standardizing processes as well as building in levels of redundancy in personnel and safety measures. Understanding the human–system interface allows us to improve the design of our systems and processes.

Working with statistician and quality philosopher Dr. W. Edwards Deming, Toyota helped develop the application of *systems thinking* and *continuous quality improvement*. This approach focuses on understanding how people do their work and how people are connected to each other when providing a service. At Toyota, using systems thinking and continuous quality improvement led to a reputation for producing defect-free products.

In our complex system, we use nonlinear thinking to understand how things work. We try to understand the relationships—human and operational—within a system. To improve our complex system, we need a new mindset to expand our understanding of work, patients, and co-workers. That new mindset is systems thinking.

A systems thinker sees how the parts of an organization interact and how effectively people are working together. This new way of thinking permits us to see things we didn't see before. Expanded thinking allows us to recognize and imagine ways of solving problems by grasping entire processes and systems. Such thinking also reinforces the idea that the whole is greater than the sum of its parts.

Systems thinking is fundamental to quality improvement, which requires a unity of purpose. Having a unified or shared purpose allows individuals and departments to come together, so all energy is directed toward achieving a single goal. Systems thinking creates a drive for never-ending improvement. It instills a sense of doing good work and learning to do it better while we work.

Dr. Deming also believed in removing fear from the workplace, changing the mindset from "What did this individual do wrong?" to "What is wrong with the system or process that created an opportunity for error?" Eliminating fear and blame encourages people to report mistakes and allows creativity to flourish.

Systems thinking can be transformational. It transcends the quality-improvement cycle, producing better and safer patient care. Unity of purpose and seeing and realizing the possibilities of error-free care can create joy in work. By continuously improving the quality of work we do, we will produce better and safer patient care.

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