# Being LEAN never hurt anyone

**By David Novis, MD**

In most industries, inspecting products to remove defects before they are passed on to consumers is standard procedure. Not so in healthcare. For example, between one and five of every 100 surgical-pathology-reports cases contain misdiagnoses that remain undetected in slide-storage cabinets. An audit of 1.67 million pathology reports performed by the College of American Pathologist's (CAP) benchmarking Q-Probes program showed that only about 10% of the 359 participating pathology departments were confirming diagnoses and inspecting reports before they were issued to patients — despite the fact that doing so was associated with fewer diagnostic recalls.

In healthcare, performance-improvement systems designed to reduce medical errors are often modeled along a benchmarking system. Case material is reviewed after diagnoses are released or therapy is initiated. Defects may be discovered after they have had opportunities to harm patients. Less-than-perfect performance levels and persistent errors may be tolerated as an institution inches its way toward benchmark goals. As Richard Zarbo, MD, DMD, chairman of the Department of Pathology at Detroit's Henry Ford Hospital, and former director of the Q-Probes program once put it: "Pursuing nationally accepted benchmarks allows providers to focus on mediocrity." While benchmarking data provides valuable information, the healthcare industry is poised to try new approaches in performance improvement like one from the manufacturing industry, a model begun by Toyota.

To achieve its ideal of building products high in quality and low in cost which were accessible on demand and safe, Toyota instituted the LEAN production system. Before Toyota implemented its new system, pallets queued up on its factory floors, forming inventory bottlenecks at various stages of vehicle assembly. With LEAN processing one vehicle at a time, Toyota eliminated bottlenecks and inefficiencies. LEAN philosophy also works in healthcare. At the University of Pittsburgh Medical Center Shadyside Hospital, Chief of Pathology Steven S. Raab, MD, applied LEAN production techniques to "manufacture" his daily caseload of microscopic slides. Since then, according to Dr. Raab and his co-workers, their histology laboratory has significantly increased its productivity.

A LEAN system purges all sources of production waste — it removes any opportunity to make a mistake — and builds quality directly into the product or service as it journeys downstream. The approach to dealing with hospital-bed shortages, for example, is to eliminate inefficiencies that prolong hospital stays, not to increase the numbers of hospital beds.

Once visualized, defects can be corrected immediately. Thus, Toyota builds product quality by making defects visible — parts are color coded and bolts slip into place one way only. Workers check the accuracy of previous assemblies before moving to the next. Human movement is strictly choreographed. How many centimeters does an arm move? How many degrees does a body turn? How many steps are taken? All of these are proscribed by strict protocol. Any product defect or discordance along the line immediately throws the assembly "dance" out of step.

These practices function similarly in hospital laboratories. Q-Probes benchmarking studies show that that blood transfusionists are more likely to check patients' vital signs during transfusions when they use standardized checklists than when they work from memory. They are less likely to mismatch units of blood when assistants confirm their identification procedures than when they go it alone. And while Toyota's defects are corrected as soon as they are discovered — even if that means halting production — this is not done in healthcare. It is not uncommon to find teams of doctors, nurses, and administrators sitting around a hospital conference table discussing the root cause analysis of a problem that occurred four months ago, during which time similar disasters have had ample opportunities to recur.

Differences in approaches to error reduction may lie in how industries label errors. Manufacturing identifies defects in products, inviting ownership of problems by everyone responsible for production. Healthcare identifies errors in performance, which invites blame of individuals responsible for segments of production. Making products or services — rather than individuals — targets of strategies designed to reduce errors possibly allowed Toyota to confront and reduce errors more successfully than other arenas, like healthcare. Toyota's success in controlling defects is as much about philosophy, people, and commitment as it is about turning wrenches more efficiently. Sacrificing short-term profits to achieve long-term growth, investing in the people who propel that growth, and unflagging commitment to the notion that things are never as good as they could be drive quality at Toyota.

The healthcare industry would need a cultural overhaul to duplicate Toyota's successful model. Everyone delivering healthcare services would need to be of the same mind. Supervisors would have to begin each day by looking at value flow diagrams and asking "What non-value steps can I eliminate today?" Employees would have to begin each day by asking, "What change can I implement today that will reduce errors?"

To create the trust that this mentality requires, employees must be empowered with the resources to institute change. For instance, at a thermal-cutting-tool company that operates using Toyota's LEAN principles, employees are organized into brainstorming teams. To pilot a labor-saving or defect-reducing idea, team members need only to convince fellow team members. One year, 700 employees submitted 2,500 suggestions for improvement; 1,800 were eventually incorporated into the company's production systems.

Healthcare providers may regard the proven track record of LEAN production techniques as a way to drive performance-outcome metrics to levels that yield the greatest reimbursements. If the results are as successful in healthcare as they have been in manufacturing, healthcare consumers may be afforded a level of quality they thought they were paying for in the first place. □

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