Continuous Quality Improvement: Wave of the Future?

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Rising mortality rates, network quality audits, staff turnover, reimbursement rates—all of these are "headline" news in dialysis units today. Can we come to grips with these issues in a way that actually results in improved patient care? I believe we can if we join the "quality revolution" sweeping this country (1). As physicians, we are taught to view our actions as derived from a normative standard; our task is to compare the patient's complaints to a textbook description, perhaps do additional testing, and then prescribe rational therapy. In fact, a physician must also decide what the patient wants from the encounter and estimate the degree of uncertainty that is tolerable. Then the physician engages a complex machinery of tests and treatments to achieve these goals. Once the machinery is engaged, however, the quality of the work is largely determined by the systems themselves. The notion of the physician working in isolation with only experience and knowledge to guide him or her is rarely true.

Once we see the physician as part of a complex system, then the quality of medical care can be analyzed using the insights of the quality revolution. But aren't physicians already conditioned to do their best? Of course, but so are nurses, laboratory technicians, office personnel, insurance company clerks, and everyone else involved in medical work. The key insight of the modern quality revolution is to recognize that complex systems are beyond the control of any individual. Improvement in the quality of the work requires improvements in the way work is done, rather than replacement of the workers who are not superior. Furthermore, these improvements must be defined using data produced as part of the system's operation. Said another way, quality can be improved continuously only as a result of design, in contrast to improving quality as a result of inspection (2).

Dialysis is a complex interaction of skilled people and advanced equipment that generates a large amount of data. In our units, we have been applying the principles of continuous quality improvement in the management of our patients (3). Let me list the steps that we have taken to illustrate the principles.

First, only well-trained personnel can be expected to operate complex dialysis systems. Thus, we had to develop both task-specific and general educational programs for our staff. Next, we established a goal of delivering asymptomatic dialysis and increasing the patient's sense of control of the treatment process. This required us to monitor complication rates, identify errors, determine methods necessary for control of symptoms in individual patients, and try to enlist the patient's cooperation, especially with fluid restriction. Initially, our complication rate was about 20%, which is the average reported by others (4), but with the feedback provided by our quantitative quality process, the number of symptomatic treatments now ranges between 10% and 14%.

We then expanded our goal to delivery of asymptomatic, adequate dialysis in a cost-effective manner. While no single measure defines adequate dialysis fully, we decided to use measurement of delivered Kt/V as our indicator (5). Initially, mean Kt/V was 0.9, and almost 40% of patients received a treatment that was less than 0.8. Simply stressing nurse training and education, plus the feedback provided by statistical analysis, but without changing dialyzers or any other major element of our system, we have raised mean Kt/V to 1.2, with only 7% of patients under 1.0. We are able to do this without causing symptoms 90% of the time. We are now looking at ways to reduce the cost of producing the service, without reducing the results. As long as we continue to monitor the processes the way we have been doing, we will be able to detect the negative impact of any change in our system as rapidly as we were able to detect improvement.

What about the human impact of this process? When we started the program, we emphasized that each person in the organization was empowered to make decisions to help us achieve our goals and that we were going to train each one to enable them to make informed decisions. This was a significant change and one that many of the people were unwilling to accept. However, those who stayed now say they would never go back to the old way. The feedback provided to the staff by analysis of the data has enhanced their sense of craftsmanship and pride in the quality of their work. As they have developed confidence in themselves and in the willingness of supervisors to accept and support their decisions, even in areas that might be out of their area of expertise (e.g., "medical" problems), the quality of our dialysis has continuously improved, and staff turnover has declined to manageable levels.

In the beginning I said that continuous quality improvement was a way for us to attack our "headline" problems. Now that we have a functional system with people trained in the methods of continuous quality improvement, we can take network "standards" and create valid operational definitions. We have done this without spending large sums of money, without hiring a "QA" nurse, and without major changes in the components of our system.

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When challenged with "Where are the data?" We can now respond. In the process, we have also achieved a result that was clearly worth the effort.

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