PERSPECTIVES

Beware of Boxes

Matthew R. Grossman, MD

There have been 2 major approaches to improving the quality of care for infants with neonatal abstinence syndrome (NAS) over the last several years. The first takes the accepted model of care and improves it by creating more efficient processes and standardizing care.[1,2] The second model, and the one we followed at Yale New Haven Children's Hospital (YNHCH), makes more radical changes, implementing a new and different approach.[3] As Shigeo Shingo, a godfathers of the Toyota Production System wrote, "Improvement usually means doing something we have never done before."[4] I am often asked how I was able to get people to accept such radical change, but the real challenge was opening myself up to these changes.

Before we began our attempt to improve the care of infants with NAS at YNHCH, we had been following the standard of care. We managed infants in our NICU exposed to opioids using the modified Finnegan Tool to guide treatment. Nonpharmacologic interventions were the first-line treatment but were difficult to deliver in our barracks-style NICU. Parents could not room in, and we relied heavily on pharmacologic treatment. Over the course of 5 years at YNHCH, our team redesigned how we managed infants with NAS. We looked at why we were doing all the things we were doing and realized that there was little if any data to support it and, frankly, it did not make a whole lot of sense. The real reason for doing what we did today was simply because that was what we did yesterday. The standard approach was really a traditional approach; it was just what we did. In an effort to rethink how we managed infants with NAS, we standardized and increased our delivery of nonpharmacologic interventions such as rooming in and feeding on demand; changed the location of management to the well nursery and inpatient units; stopped using the Finnegan Tool and evaluated infants on whether they were able to eat, sleep, and be consoled; gave medications as needed instead of on a slow weaning schedule; and prepared the parents before delivery for their role in the treatment of the infant.[3] The results were dramatic: our length of stay and use of morphine decreased to levels well below those in other published reports. We sustained these changes, and other institutions have replicated them.[5,6]

These interventions are not particularly innovative or original. In fact, in hindsight, they seem fairly obvious. So why did it take us 5 years to come up with them all? None of the interventions are technically difficult or at all complicated and we were actively trying to improve the care of these infants during this time. The long delay in making change was not in persuading the staff to go along with it; they had long been convinced that the way we had been doing things did not make a lot of sense. When we did come up with a new intervention, we were usually surprised that it had taken us so long to come up with it because, on reflection, it seemed so straightforward. The best way to explain our difficulty is by looking at the concept of thinking outside the box. We tend to explain "thinking outside the box" as thinking originally, unconventionally, or from an unusual perspective. However, if we go back to the origination of this concept, a different definition emerges. The concept of thinking outside the box comes from the 9-dot puzzle. The challenge is to connect all 9 dots with 4 lines without taking your pen off of the paper. It is

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a tricky puzzle, and to solve it, you have to look at the problem from a different perspective and draw the lines outside of the box; you must literally think outside of the box.

The point that is often lost when describing this problem is not that one must think outside the box to solve the problem, it is that there actually is no box. Look at the original 9 dots again and they are just 9 dots; there is nothing connecting them. It is not actually a box. Our minds create a box that is not really there.

The same process slowed our progress in changing our approach to managing infants with NAS. We had been using a version of the traditional approach for decades and it came to feel like something we had to do, not something we had decided to do. Not using the Finnegan Tool, although we thought it was doing more harm than good, did not seem like an option; it seemed like using it was the law. Slow, methodical morphine weans? Management in the NICU despite not needing lines or respiratory support? These were both boxes that we had created.

These assumptions make it difficult to create changes that are anything but incremental. In the case of NAS, to make big changes, we needed to identify the rules that we had created and then examine how they were developed. Once we identified that our approach was really built on norms rather than evidence, radical change was possible. For example, once we confronted whether to continue use of the Finnegan Tool, instead of just assuming that we must use it, it became easy to analyze this question and decide to discard the tool. The same held true for analyzing whether to maintain an approach of slow morphine weans and NICU management. Instead of having these methods automatically imbedded in our care of infants with NAS, we would have to actively decide whether to continue using them. Once we took a step back and questioned our assumptions, it became easy to discard old standards that were unsupported by evidence.

The approaches we eventually decided on are fairly uncomplicated and cannot be considered thinking outside the box by using the traditional definition of original, innovative thinking. However, these changes would not have been possible if we were not able to identify that we had created certain unnecessary rules. In building our new model of care, we have intentionally tried to create new "boxes" or guiding principles: (1) the family, particularly the mother, at bedside is a powerful treatment; (2) treat the infant the same way you would treat any infant (in other words, pick up and hold a crying infant); and (3) treat the mother with the same respect that you would treat any other mother.

Standardizing care has been shown repeatedly to improve outcomes; however, the danger of standardization is that it can stifle change. When we create a guideline at our institution, or more powerfully, if the American Academy of Pediatrics develops a guideline, we feel compelled to follow it. These guidelines often become boxes. How many of us are still treating patients using the 2004 American Academy of Pediatrics hyperbilirubinemia guidelines? There have been 15 additional years of data; how much of it has been incorporated into practice? It is difficult to make even evidence-based changes when we are constrained by these rules that do not really exist. To quote another automaker, "If you think of standardization as the best you know today, but which is to be improved on tomorrow, you get somewhere."[7] There are boxes everywhere in medicine; if we are going to improve how we care for our patients, we need to be vigilant in searching them out.

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