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Discussion

Dr Jennifer C. Romano *(Ann Arbor, Mich)*. Congratulations on an excellent presentation and your progress on a challenging endeavor. The buzzword of care is clearly minimizing practice pattern variation and improving patient throughput and experience. However, this is challenging, especially in a large, highly complex health system such as Boston Children's. I congratulate you on getting all the key stakeholders at the same table with a common vision. I have found that if you can get all the key stakeholders involved in the patient care experience together in the same room, it can be immensely powerful in terms of understanding everyone's roles as well as a platform for change. Your study is really evaluating the infantile phase of implementation of this complex care model. It is notable that you were able to identify subtle but real improvements, but, most important, areas for future focus. I have several questions.

First, I was impressed by the level of compliance of multimodal pain regimen, PONV prophylaxis, and early extubation in the operating room. To me, it would seem that the operating room is the best place to achieve compliance because it's a controlled environment, and early capture of pain and nausea in the operating room can have a huge impact in those first postoperative hours.

Dr Nathalie Roy *(Boston, Mass)*. As you stated, it took a while to get everybody in the same room, get started with the process, and develop guidelines. I think looking at early data was key in identifying where we had issues and discussing it with our cardiac anesthesia colleagues. We found great collaborators in the anesthesia pain team, and the cardiac anesthesia group. Showing stakeholders data from month to month makes a big difference in achieving compliance, and there has been a lot more interest in extubating patients in the operating room now. As you stated, it's a lot easier to move on with the process when things are started in the operating room.

Dr Romano. Next, over the study period, only 35% of patients were eligible for this program. It seems that it is easier to implement something that is applied to the majority rather than the minority. Is this primarily driven by the comorbidity burden of your remaining patient population or the neonatal age of your remaining patient population?

Dr Roy. It is both. We have a high number of neonates, also a high number of patients who are referred for complex care after multiple operations. We wanted to start the process and achieve compliance in the order of 65% to 70% for major components and get buy-in from the providers by showing that we can do ERAS in this group of patients first. The plan, in the next year or 2, is to expand the program to different populations.

Dr Romano. Although your intubation ICU LOS was statistically shorter, when you look at the time difference, it is clinically insignificant. What do you think is ultimately going to be the primary end point to monitor success for your initiative? You already have excellent hospital length and ICU LOS.

Dr Roy. Patient-reported outcomes and satisfaction surveys are going to be important. We have little insight on how well patients are recovering after surgery. We implemented virtual visits a couple of years ago, and as part of this program we have added questions about pain medications and activity level and sleep. I have no data related to the last two, yet. We are in the infantile stage at this point, but that's going to be really important to understand recovery.

I also think there are real opportunities for improvement in a subset of patients who come in with failure to thrive at surgery, and implementing a nutrition program with visits before surgery to optimize their status going into surgery will hopefully make a difference in this population.

Dr Romano. How do you track in real-time compliance with this program? Are there repeated alerts or reminders for patients who are on this protocol or how do you make sure that all the care providers are aware of what they should be doing for this program?

Dr Roy. Real-time alerts is a research interest of one of my ICU colleagues. It would be great to let clinicians and bedside providers know it is time to extubate patients or to draw another lab sample. His research group is working on this challenge, but we don't have alerts at this point.

Currently, we have education aids such as guidelines and ERAS journey posters. I am present in the ICU, and we are considering hiring a nurse navigator/coordinator to educate and get feedback from the ICU and floor nurses. We also hold monthly multidisciplinary meetings where data are presented: It is powerful and engaging to show outcomes and differences, especially for bedside providers. We have a large cardiac program, as you mentioned. However, we have dedicated providers who want to improve the outcomes of our patients. They can be very engaged once they see how it affects results.

Dr Kevin Lobdell *(Charlotte, NC)*. Please allow me to reinforce the importance of the question about real-time compliance and what's called an ERAS coordinator or a quality improvement coordinator. In my 15 years of experience doing this work, the 2 components are central to a program's success.

Dr Daniel T. Engelman *(Springfield, Mass)*. Dr Roy, I noticed you have an Amazon skill now being rolled out. How is that going to allow you to collect patient-reported outcome measures through an Alexa app? Can you give us some broad picture of what this could possibly bring to future iterations of your ERAS program?

Dr Roy. This is just being rolled out now. We are currently receiving patient-reported outcomes via an electronic platform that the hospital has created; it's sent to families via text messaging or E-mail. To that we will be adding a voice component through voluntary registration with the hospital Health Insurance Portability and Accountability Act–compliant skill. The registered families will get reminders and can engage while on their phone application or through a voice speaker in their home. We are hoping that it will improve compliance by being interactive, rather than just filling in questionnaires related to outcomes. We will have to follow up once it's deployed for many months. We are in the process of launching it in the postoperative period, but we are hoping to develop interactive education preoperatively and have reminders about surgery and appointments soon.