Discussion to: Remote monitoring following adult cardiac surgery: A paradigm shift?

Presenter: Kevin W. Lobdell, MD
Invited Discussant: Marc Pelletier, MD, MSc, FRCSC
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Unidentified Speaker 1. [applause] Dr Pelletier from University Hospitals in Cleveland. Thank you.

Dr Marc Pelletier (Cleveland, Ohio). Thank you very much. And thank you for the privilege of discussing this. Thank you for providing your manuscript in advance and thank you for the 15-page response, single line. Very much appreciated.

Dr Kevin W. Lobdell (Charlotte, NC). I haven’t recovered from that.

Dr Pelletier. Yeah. Look, the concept is not new. I think you’re speaking to an audience today that’s generally very supportive. Some of the Canadian sites have been doing this for over 30 years in fact. But what seems to have been a bit of a barrier is the standardization and the adherence to a program that would be utilized in everybody, the ownership of that program, who would have ownership of that, whether it’s your department of cardiac surgery or your advanced practice providers or who would really own that, and then for other centers to justify the costs. I must say that I really enjoyed your paper, and I really enjoyed the comments that you were able to show and the results that you displayed, because I do think by looking at other systems, that we can show a decrease in hospital stay. We can show a decrease in hospitalization and more patient engagement. So, with that, in showing us something that I think we all believe has some value, I’m going to ask you specifically a couple of questions.

So, I think all of the reviewers specifically to the statistical validity of what you showed attacked, I think, primarily 1 thing, which was the matching of your 2 groups, and understanding that you had a cohort that participated willingly in the care that they received in order that you matched, and you did a very nice job showing that you matched them for procedure or those issues. But did you match them for things that are actually tangible to whether somebody will adhere to this type of monitoring, right? Socioeconomic access that are access to a tablet or a phone, or their zip code, or any other surrogate marker like that. So, any comment on that, I think, would be helpful to help us understand if these were really 2 similar populations, or if you had 1 that was really more prone to be self-selected. And we’re going to participate in this no matter what. My other question would be, how would you advise other centers that have a lot of interest in this and want to duplicate your work but don’t have the due foundation to provide them with that grant? So how would you advise other centers to make the financial argument to support this? Those are my 2 questions. Thank you.

Dr Lobdell. Great questions. Thank you. I’ll approach the first one to the best of my ability as a nonstatistician. With the help of Robert Habib at STS and Greg Russell and colleagues at Wake Forest, we reviewed the literature in cardiac surgery. We decided propensity scoring was the way to match the cohorts. And we chose methodology based on some of the most recent, similar efforts (not necessarily remote modern monitoring, but just in general). And we’ve decided that’s the way we want to look at it for a period of time. And the reason is if we change that, then somebody says, “I can never keep up with you because you keep changing your methodology.” So, the response to the statistician that gave us a lot of feedback was we hear what you’re saying. There’s always a difference of
opinion on how to evaluate the efforts. We’ve published in The Annals of Thoracic Surgery a smaller, isolated coronary artery bypass study with very similar results, and we want to continue to use that methodology. Is there potential for selection bias? Absolutely. I responded with the George E. P. Box (statistician) quote, “all models are wrong, some are useful”. We picked something. You can look at it. You can interpret it and you can say, “I like it” or “I don’t like it.” I’m not here to sell you anything. It’s just the way we did it. Is there some inherent bias? Absolutely. Western Electric had the Hawthorne effect that they described. We’re watching them. We’re working on it.

Now, the interesting thing that’s different than many improvements and may not be lost on this sophisticated crowd. There’s often a sleight of hand in quality improvement. Results went from poor to fair, or went from fair to acceptable. What I hope you see, and I’ll reinforce, we went from very good to excellent. So, these are very good outcomes that we have in our system, and then we’ve even improved upon that baseline. So, will we do a better job at matching them? Yes, I think the next phase would be to start incorporating more data to try to better understand the differences. Responding to the second question, it’s $260 per patient for their digital health kit plus the subscription. Simply put, when you look at benchmarks for what it costs to be in the hospital for a day and what readmissions cost, our return on investment on this is somewhere between 16 and 24 times the digital health kit plus the application. That’s much more valuable when you’re at risk. It means a lot less if you’re in a non-risk environment. Vivian Lee, who was at the University of Utah, and subsequently worked for Verily was very interested in the things that we’ll do in the next phase as we say, what we’ve really done is try to stay focused on the things like the postoperative length of stay, the 30-day readmission, and mortality composite, and we’re going to have to accrue more data and do more analysis to get into that. That said, we live in the second-most rural state in the United States. Texas is number 1. North Carolina is number 2. We use this. We have others, for instance, Miami Heart reached out and said, “How can we do this?” So not only could we help say this is how we did it. But if somebody says, “Hey, I want to write a grant for our local foundation.” We’re glad to help do that sort of work so people have the credibility to do that too. So, thanks.

Unidentified Speaker 1. We’re going to have to keep it really brief.

Dr Shemin. It’ll be very brief. We’ve been doing it for 8 years, similar results. One question. Right now, we’re trying to figure out how to incorporate this into our electronic medical record. And I wonder if you have any insights into that. And also, how do you handle the alerts, workflow, in an efficient way?

Dr Lobdell. Yeah, it’s really important, interoperability and workflow. Those are the future. We’re working with some people that that’s what their interest is, in the health information exchange world, and they can with application programming interfaces take in these real-time biometrics. As some have alluded to, it’s a tough sell in the organization. Let me just touch on that briefly. I’m glad to help people. We have others, for instance, Miami Heart reached out and said, “How can we do this?” So not only could we help say this is how we did it. But if somebody says, “Hey, I want to write a grant for our local foundation.” We’re glad to help do that sort of work so people have the credibility to do that too. So, thanks.

Unidentified Speaker 1. One last comment and question for Dr Lobdell. So, your title and the thrust of your paper is about how this is done without disparity. And yet, that only is looking at a binary outcome of Caucasian vs non-Caucasian. And I want to draw the attention of the audience and the authors to the Healthy People 2030 Social Determinants of Health website that there’s a whole lot more to that subject than White and non-White. And I think we’re doing a disservice by keeping it that superficial.

Dr Lobdell. Yeah. That mirrors what we got in the feedback with the manuscript. And so, as it’s been edited, and the title will change. We’re the first to say we didn’t look at distress community index and many of the other things. So, while that’s a subanalysis as we say, what we’ve really done is try to stay focused on the things like the postoperative length of stay, the 30-day readmission, and mortality composite, and we’re going to have to accrue more data and do more analysis to get into that. That said, we live in the second-most rural state in the United States. Texas is number 1. North Carolina is number 2. We use this. We think we’re doing a good job with the initial investigation, but we’re here to learn. We’re not here to argue.