In Reply:
We appreciate the message from Drs. Klein, Yentis, and Clyburn in response to our Editorial in Anesthesiology and our Letter to the Editor in Anesthesia. Clearly all correspondents are dedicated to scientific integrity in research.

Competing Interests
Dr. Kharasch is Editor-in-Chief and Dr. Houle is Statistical Editor for Anesthesiology.

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Michael M. Todd, M.D., served as Handling Editor for this letter.

Clinical Decision Support Tools Need to Improve More Than Just Process Outcomes

To the Editor:
We read with great interest the recent article by Kheterpal et al. We would contend that this article highlights an issue common in studies of clinical decision support—namely, that they improve process outcomes but have little demonstrable ability to improve clinically relevant outcomes. To date, there have been few studies correlating clinical decision support to improved patient outcomes in the perioperative literature. Given the amount of time and energy investigators devote to designing and implementing clinical decision support, this is, to be blunt, frustrating. Even more so because clinical decision support tools offer a means for using informatics expertise to implement an intervention that has significant face validity. That is, they offer providers timely and relevant information that highlights opportunities for making clinical interventions that they otherwise may have failed to recognize, thereby improving outcomes.

Why, then, the disconnect—inadequate validation and flawed study design, as Dr. Sessler asserts in his editorial? Small effect size? We would contend that it is more likely indicative of a need to perform multicenter validation of clinical decision support tools. As the authors have shown previously, clinical decision support tools may vary in their effectiveness across institutions. We propose that future studies of clinical decision support tools would be best structured as multicenter studies and, where possible, should be designed to demonstrate the intervention’s impact on patient outcomes, rather than just process change—the field is ready for that critical next step.

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Competing Interests
Dr. Freundlich has received grant support from Medtronic (Boulder, Colorado) for work unrelated to the content of this letter. The remaining authors declare no competing interests.

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The Curse of Dimensionality

"Remember that all models are wrong; the practical question is how wrong do they have to be not to be useful."—George E. P. Box

To the Editor:
In a recent article, Kheterpal et al. analyzed the impact of a real-time intraoperative decision support system. Borrowing tactics from the aviation industry, the authors hypothesized that “decision support systems, which integrate across disparate data sources, devices, and contexts, to highlight and recommend specific interventions” might lead to better postoperative outcomes. For now, the authors showed that these systems did improve process measures, but the clinical outcomes were lacking. These results are not surprising.