Cichos and colleagues (1) describe applying the process of lean to surgical trays at the University of Alabama at Birmingham Hospital. Through a consensus process, three surgeons in the Division of Cardiothoracic Surgery identified the least number of instruments required for mediastinoscopy, video-assisted thoracoscopic surgery, robotic thoracic surgery and thoracotomy, achieving reductions of 75%, 62%, 61% and 44%, respectively. This important study adds to a growing list of publications documenting the accumulation of excess instruments on surgical trays and demonstrating effective deliberative processes to reduce surgical trays and enhance efficiencies (2-6).

The authors estimate cost savings of $69,412 in 2016, derived from savings in instrument replacement costs and sterile processing costs across the four procedures. Replacement cost estimates were based on 5-year historical data. It would have been helpful for the authors to provide more details about this historical data. How frequently were instruments replaced? Also, authors made no adjustment for inflation and this may have resulted in an underestimate of the cost savings. The approach to estimating instrument repair costs was also unclear. Sterile processing cost estimates were derived from the literature. Authors prorated published estimates downward to $0.35 per instrument on the rationale that costs are lower in Alabama. It would have been helpful for the authors to cite data supporting this rationale.

Tray reduction has the potential to streamline tray assembly and sterile processing, reduce operative time and increase operating room throughput. Unfortunately, the researchers did not directly measure these reductions. Researchers did document a reduction in wet trays, which are improperly sterilized, from 2% in 2015 to 0% in 2016. While it's not clear that this reduction should be attributed to the lean process, the authors make a compelling argument that less crowding on surgical trays would lead to fewer wet trays and a reduced need to rerun the autoclave.

Lean process case studies provide a compelling rationale for hospitals to implement surgical tray reduction. However, several factors limit more widespread adoption of lean processes.

The cost savings are modest. Even if lean processing were implemented in all surgical divisions, the savings of $69,412 pale in comparison to the $1.5 billion budget of the University of Alabama at Birmingham Hospital in 2017 (7).

Another factor limiting widespread reduction of surgical trays is a lack of incentives. Hospitals allocate budgets to departments based on past expenditures and as a result, departments have no incentive to reduce operating costs, as this would translate into budget reductions the following year. Ultimately, the beneficiaries of tray reduction will determine uptake. Do savings benefit the hospital bottom-line, surgical departments, insurers, or patients?

Department size plays a role in surgical tray reduction. As Cichos and colleagues acknowledge, achieving consensus on surgical instruments is easier in smaller departments. None amongst the three surgeons requested instruments.
that had been removed from trays. In larger departments, a
greater diversity of surgeon preferences may pose challenges
and hinder tray reduction efforts.
Perhaps the most important barrier to more widespread
implementation of tray reduction is a lack of agency
amongst support staff. Cichos and colleagues allude to
the challenges faced by surgical support staff, and the
power imbalance that prohibits them from addressing the
accumulation of instruments.
“Surgeons are particular about their surgical tools… Most
surgical scrub nurses error on having too many instruments on
their back table instead of too few to avoid an angry surgeon
asking for an urgently needed instrument during a critical part
of an operation. This culture has led to an increasing number of
instruments on most surgical trays that are rarely used”.
Cichos and colleagues observed a 70% reduction in the
total weight of the trays. The potential benefits to nurses,
sterile processing personnel and other staff who handle
surgical trays are obvious. Less musculoskeletal strain, easier
instrument retrieval and increased job satisfaction could
result. Beyond the direct cost savings, this additional value
should be of interest to hospital administrators. Indeed,
those who stand to benefit most are least empowered to
lead tray reduction efforts. Thus surgeons, chairs, chiefs
and chief operating officers owe it to staff to initiate lean
processes, to their benefit and the ultimate benefit of the
patients.

Acknowledgements
None.

Footnote
Conflicts of Interest: The author has no conflicts of interest to
declare.

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Cite this article as: John-Baptiste A. Who really benefits from
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