

Watching Hands in the Cookie Jar

A Project for Improving Medication Charge Capture in the Operating Room

C Luce, MD; C Huynh, MSW; T Petersen, PhD; J Srouji, MPA; C Arndt, MD
University of New Mexico Departments of Anesthesiology and Critical Care Medicine

Background

In our anesthesia department, vials or syringes of non-controlled medications are not checked out individually from a pharmacist but removed from a multi-bin drawer with open compartments. The provider logs into the Pyxis system and has access to any medication in the five large drawers (see figure 1), which is meant to provide efficiency of access during active anesthesia care. When an individual medication is vended, a button has to be pressed on a screen to register its removal. Anyone who has access to the Pyxis system may log in and pull a medication, potentially without documenting the removal. Our electronic anesthesia record posts medication administration to the larger medical record, but this does not create a charge for the patient. Medication charging occurs at the point of vending from the Pyxis. It is therefore critical, for accurate billing and inventory, that every medication removed from the open drawers is registered with the Pyxis machine. We had feedback from the Department of Pharmacy that there was a significant amount of lost charges directly related to missing vends. Through a Feedback and Audit system, we hoped to improve charge capture and drug inventory management.



Fig 1: Example of Pyxis Anesthesia Station ED™ and method of medication dispensing.

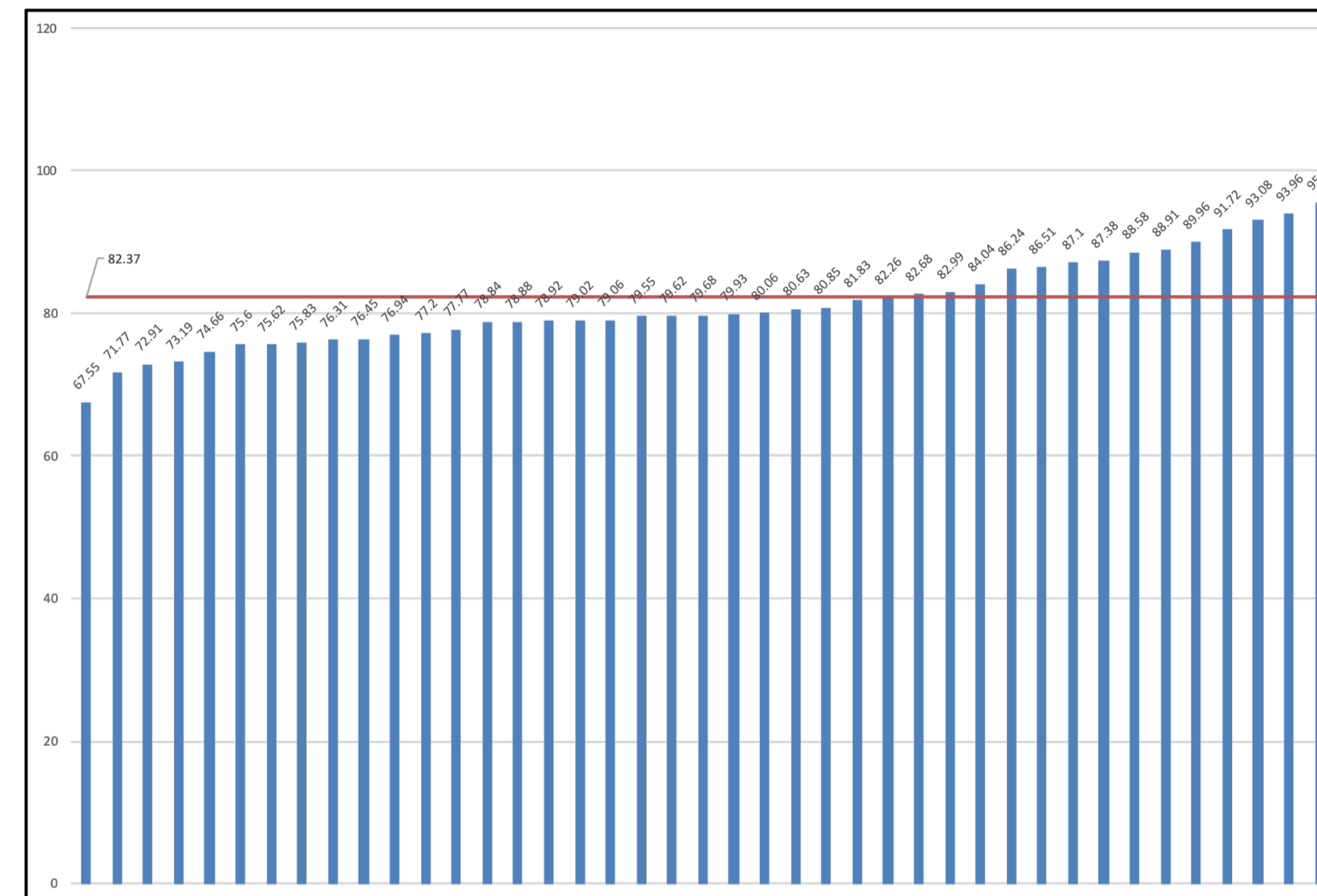


Fig 2: Example of the Feedback and Audit tool, a slide displayed in the anesthesiology breakroom.

Methodology

We reviewed data from our electronic anesthesia record regarding all non-controlled medication administrations, regardless of amount. We then evaluated the Pyxis electronic management system for medication dispersal. Cases were included if performed in the operating suites of the main hospital, labor and delivery, BBRP (pediatric), and the Outpatient Surgical and Imaging Center (OSIS) for a total of 33 anesthetic sites. Exclusion criteria included emergency cases (ASA class “E”), controlled medications (e.g. narcotics), and anesthetics provided in sites other than those listed above (e.g. SRMC, CCOR, and non-OR sites). These data sets were compared, and a discrepancy rate was calculated for every provider in the department. The higher the correlation between the Pyxis vends and the anesthetic record, the higher the “Match Rate”, which could range from 0 to 100%. Output was displayed in a PowerPoint format (see figure 2) and displayed in all call rooms using actual provider names on the X axis and Match Rate on the Y axis. Department average was displayed in a horizontal red line.

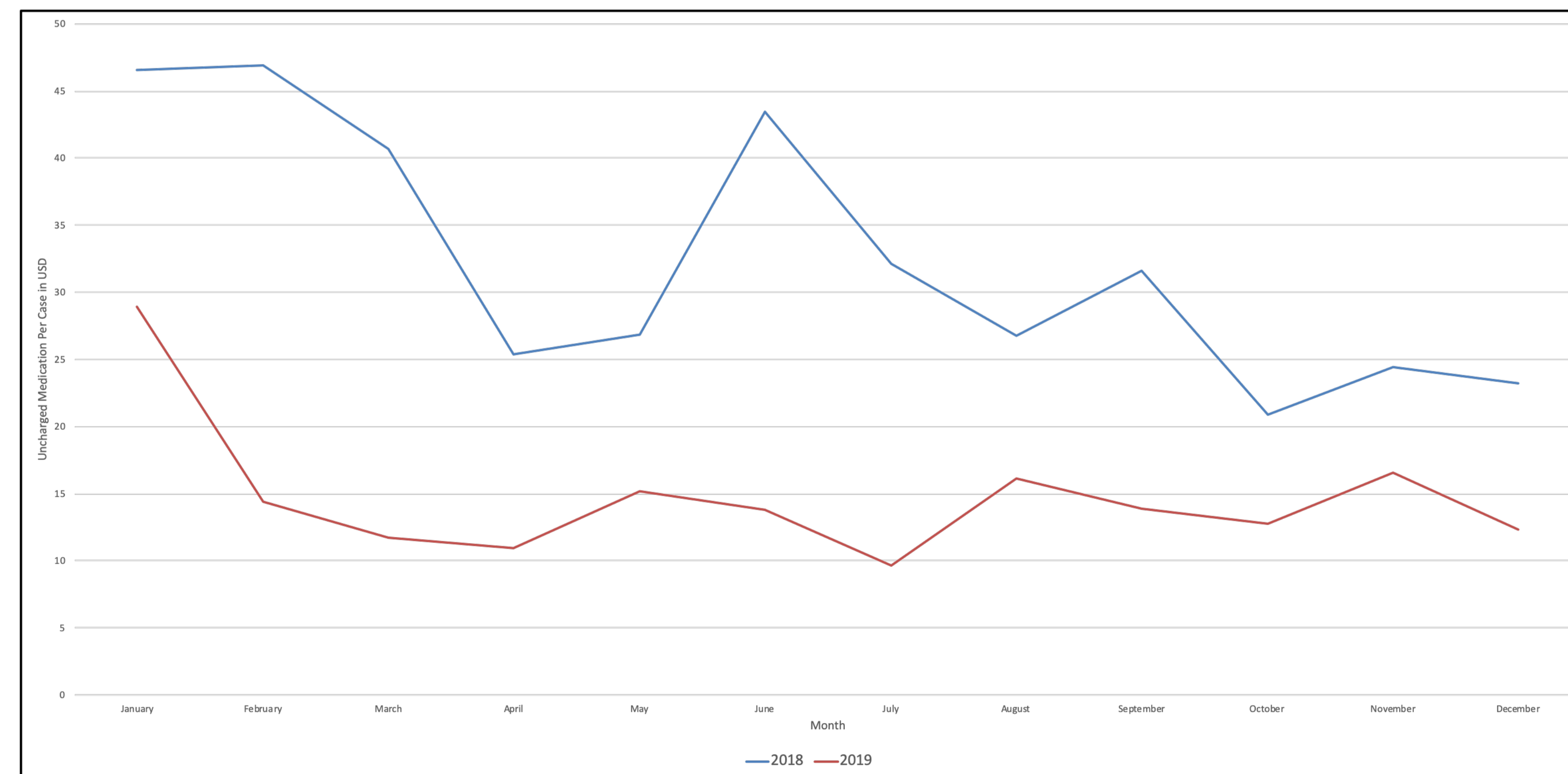


Fig 3: Uncharged medications (\$) per case versus month. Blue = 2018, Red = 2019

Results

Prior to intervention, for the calendar year of 2018, there were 20,421 cases performed in the above-mentioned operating rooms with uncharged medication per case of \$32.14. For the months of November and December of 2018, there was an average provider Match Rate of 77.76%. The following calendar year, after intervention, there were 21,290 cases performed in those same sites with uncharged medication per case of \$14.59 and an average provider Match Rate of 82.12% (see figure 3). This correlates to an absolute improvement in dispensing practice of about 4.4%. Comparing calendar years 2018 and 2019, there was an improvement in billing of approximately \$345,000.

Discussion

It is estimated that the cost of US healthcare approaches 18% gross domestic product, and up to 30% of this may be waste (1). In the field of anesthesiology, other institutions have looked at ways to reduce waste and overall expenditure (2), and have attempted to utilize a similar Feedback and Audit tool (3). A Cochrane review looking at the effects on professional practice when using such a tool showed a median risk difference of 4.3% (4). Using an electronic slideshow with the published names of anesthesia providers and their compliance rates, we were able to demonstrate a similar improvement in dispensing practice of 4.4%, which correlated to improved medication charging of \$17.54 per case and \$345,550 for the calendar year. Limitations of this analysis include unintentional exclusion of certain medications that are commonly utilized, as well as including medications that are not stored in the Pyxis dispenser. Limitations to this review include sustainability, as one institution that utilized an Audit and Feedback tool demonstrated a downward trend in compliance in the post-intervention time frame (3).

References

- Chrank W, Rogstad T, Parekh N. Waste in the US Health Care System: Estimated Costs and Potential for Savings. *Journal of the American Medical Association*. 2019;322(15):1501-1509
- Rinehardt E, Sivarajan M. Costs and wastes in anesthesia care. *Current Opinion in Anaesthesiology*. 2002;25(2):221-225
- Bowdle T, Jelacic S, Nair B, et al. Improve Anesthesia Provider Compliance with a Barcode-Based Drug Safety System. *Anesthesia and Analgesia*. 2019;129(2):418-425.
- Ivers N, Jamtvedt G, Flottorp S, Young JM, Odgaard-Jensen J, French SD, O'Brien MA, Johansen M, Grimshaw J, Oxman AD. Audit and feedback: effects on professional practice and healthcare outcomes. *Cochrane Database of Systematic Reviews* 2012, Issue 6.