

Analysis of postoperative patient outcomes following the intervention of clinician-centered dashboards

Rama Sreepada^{1,2}, Ai Ching Chang^{1,3}, Andrew Poznikoff^{2,4}, James Chen^{2,4}, Norbert Froese^{1,2,4}, Rebecca Munk^{4,5}, Matthias Görge^{1,2}

1. Research Institute, BC Children's Hospital (BCCH), Vancouver, BC, Canada
2. Dept. of Anesthesiology, Pharmacology & Therapeutics, University of British Columbia (UBC), Vancouver, BC, Canada.
3. School of Biomedical Engineering, UBC.
4. Dept. of Pediatric Anesthesia, BCCH.
5. Dept. of Anesthesiology, Kelowna General Hospital, Kelowna, BC, Canada.

BACKGROUND

Anesthesia practice and outcomes are improved with data-driven performance feedback [1, 2]; Individualized feedback is more effective than generalized feedback [3].

A recently established BC Children's Hospital data registry combines perioperative patient data with short-term postoperative outcomes.

An opportunity to develop anesthesiologist-centered dashboards to visualize outcomes on an individual and team level.

OBJECTIVE

To present pilot data comparing postoperative outcomes between two time periods: baseline and post-dashboards deployment.

METHODS

Exempt from REB approval as a quality improvement project.

Data registry contains

- patient information (age, sex, procedure)
- post-anesthetic care unit (PACU) opioid, antiemetics
- 24-hr postoperative pain, nausea, vomiting

Dashboards were designed and deployed in Power BI software in Jul-Aug'21.

Baseline data were available Apr-Jun'21 for PACU outcomes, and Sep'20-Jun'21 for 24-hr postoperative outcomes.

Post-intervention data were available for Sep-Dec'21.

Overall department prevalence rates were compared using Fisher's exact test.

RESULTS

The incidence of PACU and 24-hr postoperative outcomes varied by anesthesiologists are shown in Figure 1.

No difference between baseline and post-deployment periods were identified for the dept. rates of PACU outcomes (Table 1) or 24-hr postoperative outcomes (Table 2), and month-to-month outcomes (Table 3).

CONCLUSION AND FUTURE WORK

Preliminary analyses showed no significant differences for any outcomes – this could be due to low prevalence, sub-optimal dashboard awareness, small sample size, latency in practice change.

We plan to conduct usability surveys and gather additional data to explore seasonal trends.

References

- [1] Br J Anaesth. 2012 Jul;109(1):80–91. [2] Heal Serv Deliv Res. 2015 Jul;3(32):1–248. [3] J Health Serv Res Policy. 2015 Jan;20(1 Suppl):26–34.

Preliminary analyses showed no significant difference in post-operative patient outcomes between the baseline and post-deployment periods.

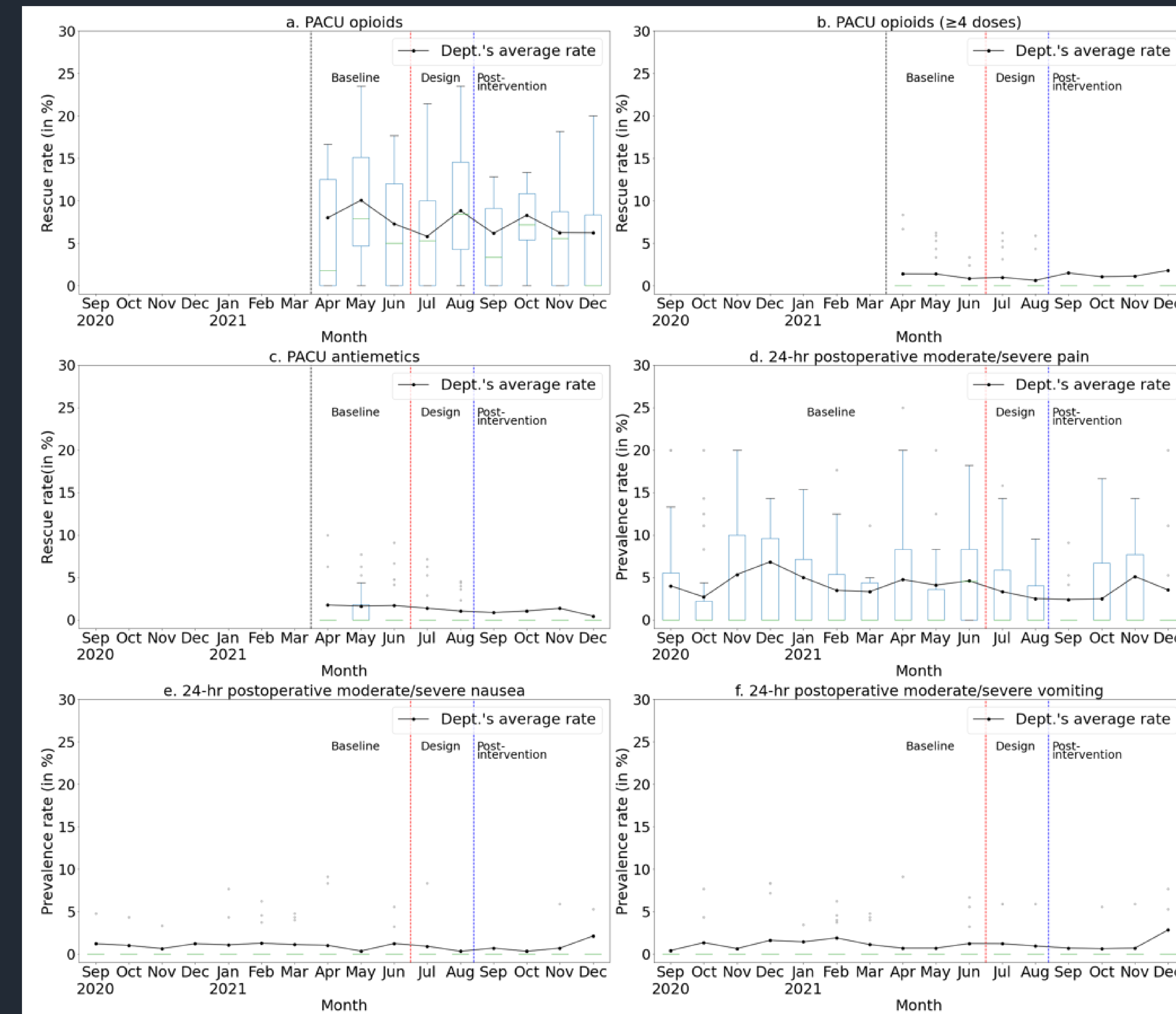
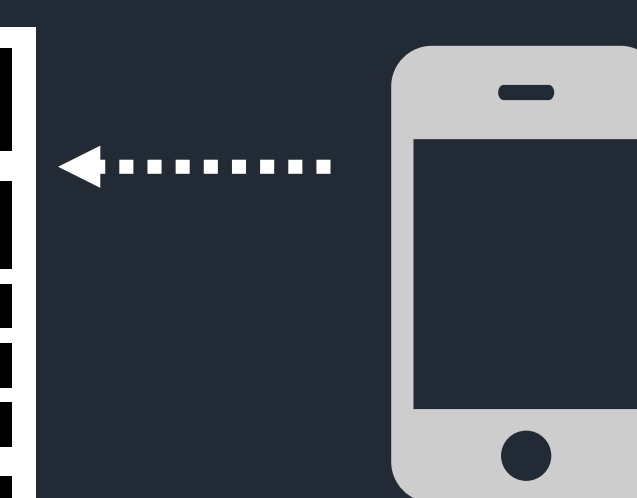


Figure 1: Variability in monthly outcome rates and department's aggregate outcome rates in the PACU including (a) opioid rescue, (b) opioid rescue needing ≥ 4 doses, & (c) antiemetic rescue; and for 24-hr postoperative outcome prevalence rates, including (d) pain, (e) nausea, and (f) vomiting. The department's aggregate outcome rates are plotted as black lines. Anesthesiologist's monthly data are superimposed as box plots; outliers <3 times the standard deviation are plotted as gray dots; others are censored for presentation.



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Contact: Rama Sreepada | Email: rama.sreepada@bcchr.ca

Table 1. Departmental PACU outcome rate compared between baseline and post-deployment periods

	Baseline	Post-deployment	p-value
Period	Apr-Jun'21	Sep-17 th Dec'21	
# Cases	1,203	1,624	
Opioid administration rate	8.5%	6.8%	0.11
Opioid (≥ 4 doses) administration rate	1.2%	1.3%	0.86
Antiemetic administration rate	1.7%	0.9%	0.12

Table 2. Departmental 24-hr postoperative outcome rate compared between baseline and post-deployment periods

	Baseline	Post-deployment	p-value
Period	Sep'20-Jun'21	Sep-17 th Dec'21	
# Cases	2,966	1,052	
Pain	4.3%	3.3%	0.17
Nausea	1.0%	0.8%	0.57
Vomiting	1.1%	1.0%	0.73

Table 3. Departmental 24-hr postoperative outcome rate compared on a month-to-month basis between baseline and post-deployment periods

	Baseline	Post-deployment	p-value
Period	Sep'20	Sep'21	
Pain	4.0%	2.4%	0.32
Nausea	1.3%	0.7%	0.66
Vomiting	0.4%	0.7%	1.0
Period	Oct'20	Oct'21	
Pain	2.7%	2.7%	1.0
Nausea	1.0%	0.3%	0.35
Vomiting	1.4%	0.6%	0.43
Period	Nov'20	Nov'21	
Pain	5.3%	5.1%	1.0
Nausea	0.6%	0.7%	1.0
Vomiting	0.6%	0.7%	1.0
Period	1-17 Dec'20	1-17 Dec'21	
Pain	6.0%	3.5%	0.43
Nausea	1.2%	2.1%	0.66
Vomiting	1.2%	2.8%	0.42

Acknowledgement

Thank you to all PACU nurses who contribute to the BC Children's Hospital Post-Operative Follow Up database.

