

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

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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-dashboard 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.

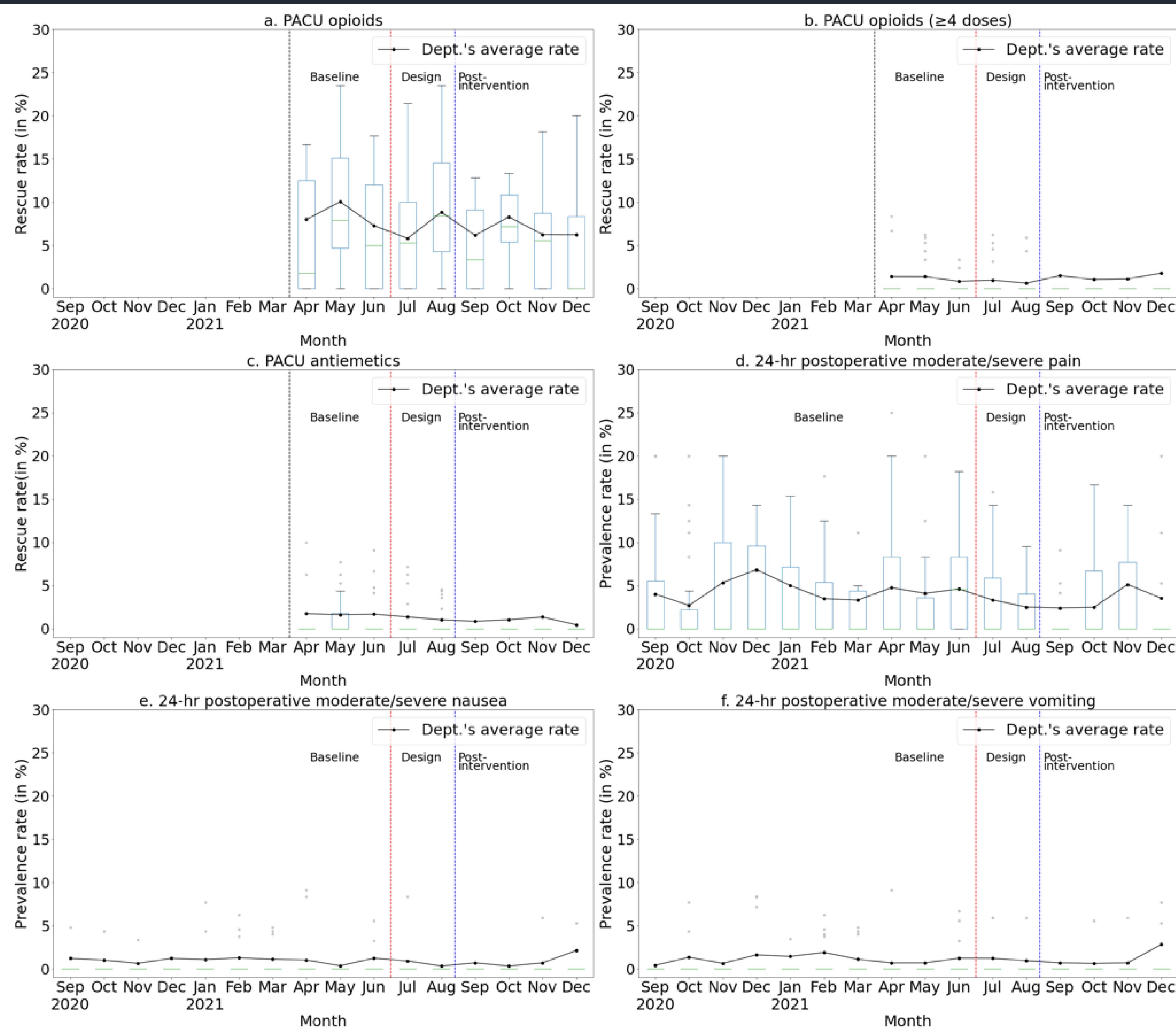


Figure 1: Variability in monthly outcome rates and department's aggregate outcome rates in the PACU including (a) opioid rescue, (b) opioid rescue needing ≥ 4 doses, & (c) antiemetic rescue; and for 24-hr postoperative outcome prevalence rates, including (d) pain, (e) nausea, and (f) vomiting. The department's 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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Table 1. Departmental PACU outcome rate compared between baseline and post-deployment periods

	Baseline	Post-deployment	p-value
Period	Apr-Jun'21	Sep-17th 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-17th 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.

