

Assessing Adherence to the Apfel Scale in Preventing Postoperative Nausea and Vomiting

Problem Statement

- ❑ Postoperative nausea and vomiting (PONV) is the second most common complication after cardiac surgery
- ❑ Affects 70% of patients postoperatively
- ❑ Increases metabolic demands, aspiration risk, wound dehiscence, electrolyte imbalance, patient discomfort, and prolonged hospital stay
- ❑ The Apfel simplified risk scale:
 - valid and reliable risk assessment tool
 - Guides antiemetic prophylaxis effectively
 - Reduces the PONV incidences

The Apfel Simplified Risk Scale	
Risk Factors	Score
Female	1
Non-smoker	1
History of PONV/motion-sickness	1
Use of opioids	1
<i>Gan et al., 2020</i>	Total score
	0-4

Internal evidence:

- ❑ No standard process for PONV risk assessment
- ❑ Preliminary data: 10% PONV early three months in 2023

Purpose & Goals

To integrate the Apfel scale into the Electronic Health Record (EHR), assess adherence to screening patients for PONV risk using the Apfel scale, administer antiemetics based on the Apfel score, and reduce the incidence of PONV

- ❑ Structure goal: Integration of the Apfel scale within the EHR
- ❑ Process goals:
 - Assessment of 100% eligible patients using the Apfel scale
 - Administration of prophylactic antiemetics for patients with Apfel score ≥ 2
- ❑ Outcome goal: 100% reduction of PONV incidences during the first 48 hours after cardiac surgery

Methods

- ❑ **Setting:** Cardiac surgery intensive care unit at an academic center
- ❑ **Eligible patients:** Adult (>18 years) elective coronary bypass grafting (CABG) and/or valve repair/replacement
- ❑ **Intervention:**
 - Integrated the Apfel scale into the EHR as a part of the order set “CABG/Valve postoperative pathway” and a dot phrase (Smart phrase)
 - Assessment of patients for the risk of PONV using the Apfel scale
 - Administration of antiemetic (Ondansetron- first line) 30 minutes before extubation / spontaneous breathing trial (SBT)
 - Re-dosed antiemetic every four hours during the first 48 hours postoperatively for Apfel ≥ 2
 - Use of antiemetics from different drug classes if PONV despite prophylaxis
- ❑ **Measures:** Data was collected via weekly chart auditing, with the use of run charts and REDCap

Figures

Figure 1 Adherence to using the Apfel scale

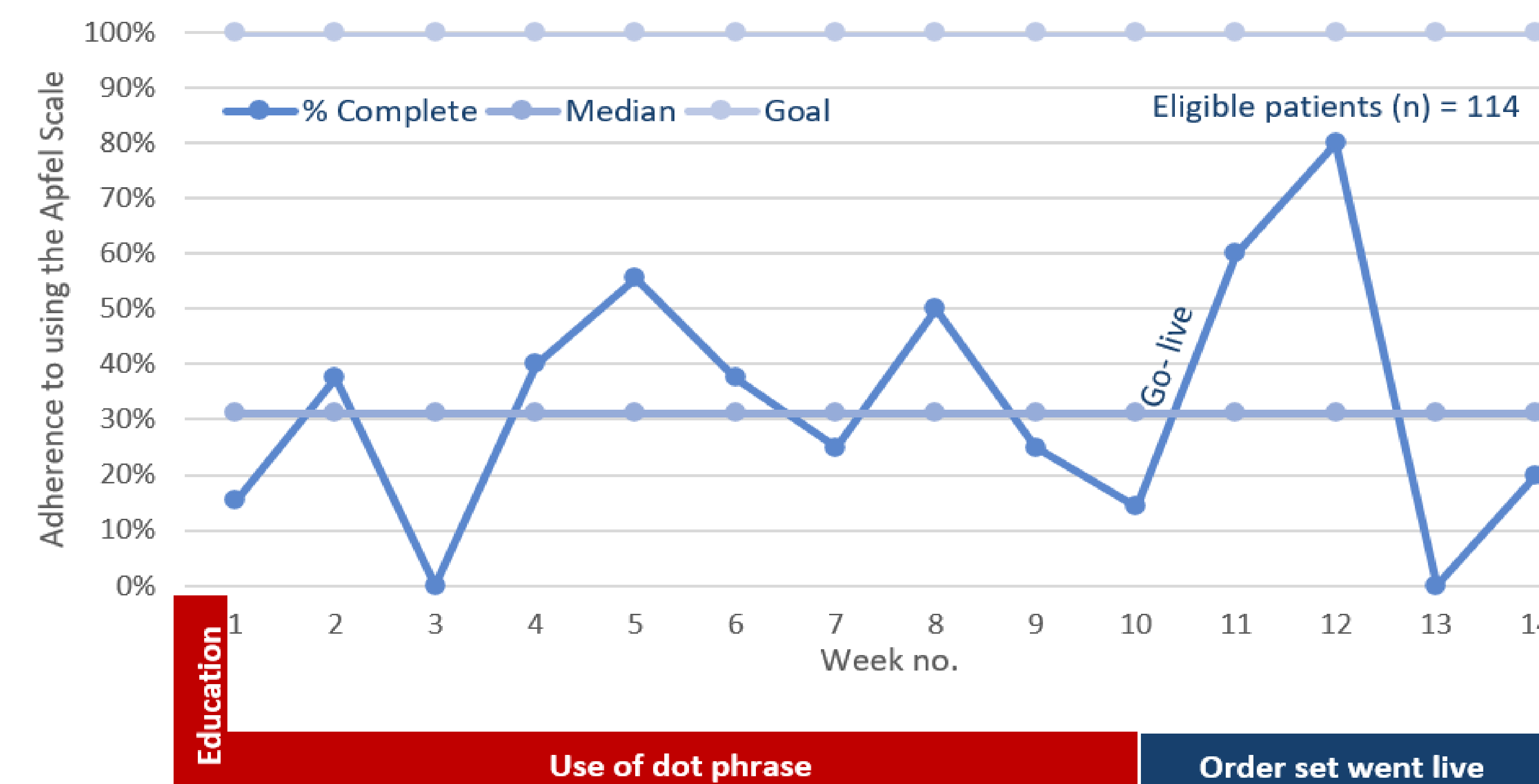
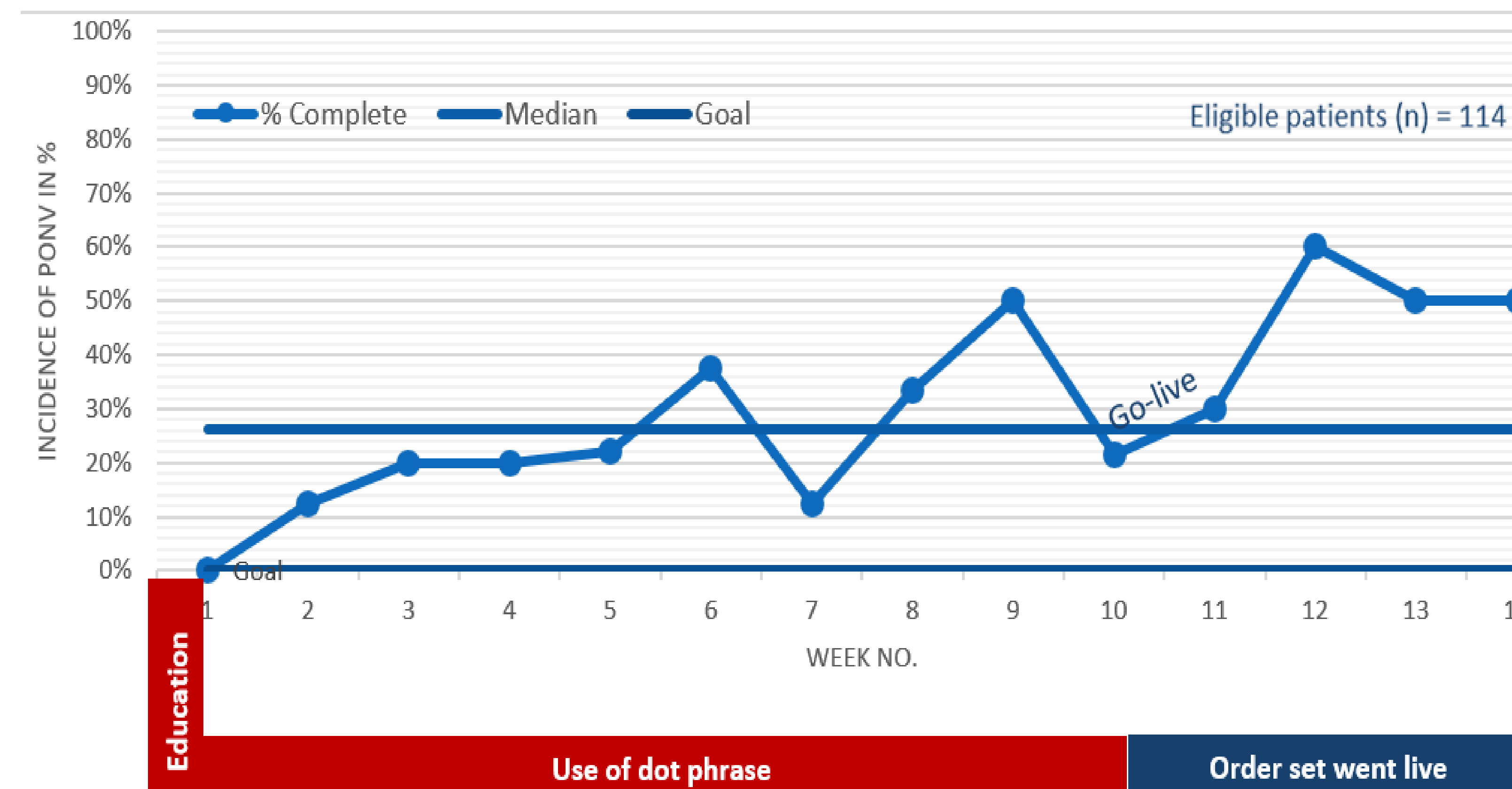


Figure 2 Incidence of PONV



Results

- ❑ 31% (n= 35) of patients were screened (Male 72%, Female 28%) and received antiemetics based on their Apfel score, aged 25-85 (mean 65.15 years)
- ❑ 76% (n=86) received pre-extubation IV Ondansetron irrespective of their Apfel score
- ❑ Overall, 26% (n= 31) of patients experienced PONV (M 65%, F 35%), 84% of them were not screened for PONV risk using the Apfel scale nor re-dosed with prophylactic antiemetics based on their Apfel score
- ❑ Two patients had PONV despite prophylactic use; one had five episodes within 24 hours
- ❑ Average Apfel score: 1.66 (± 0.83); 60% (n=21) with score ≥ 2 received antiemetics

Discussion

- ❑ After an initial upward trend for two weeks (11 & 12) following the order set going live, adherence decreased during weeks 13-14.
- ❑ A higher percentage of male patients underwent cardiac surgery consistent with the demographics typically seen in cardiac surgery populations
- ❑ Low rate of incidence among those who were screened is consistent with evidence-based literature suggesting that risk-identification screening using the Apfel scale can decrease PONV incidences and related complications

Limitations:

- ❑ Delay in the go-live date for the order set
- ❑ Competing priorities: multiple DNP projects, preparation for joint commission, Xenotransplant
- ❑ Visiting fellows/providers unaware of new order set

Conclusion

- ❑ Integration of the Apfel scale into the EHR led to improved adherence, underlining the importance of seamless integration into clinical workflows
- ❑ Many patients experienced PONV without prophylactic treatment despite their risk profile
- ❑ Emphasizes the evidence-based risk stratification, prophylaxis use of antiemetics, and treatment in PONV prevention
- ❑ Ongoing need for improved adherence to PONV prevention protocols in cardiac surgery settings

Sustainability:

Integration of the Apfel scale into the EHR as a part of the order set

Next step,

Part of enhanced recovery after surgery (ERAS) for cardiac surgery pathway across all affiliated institutions

References/Acknowledgement

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