

Less Is More: Adapting Low Flow Anesthesia Into Practice

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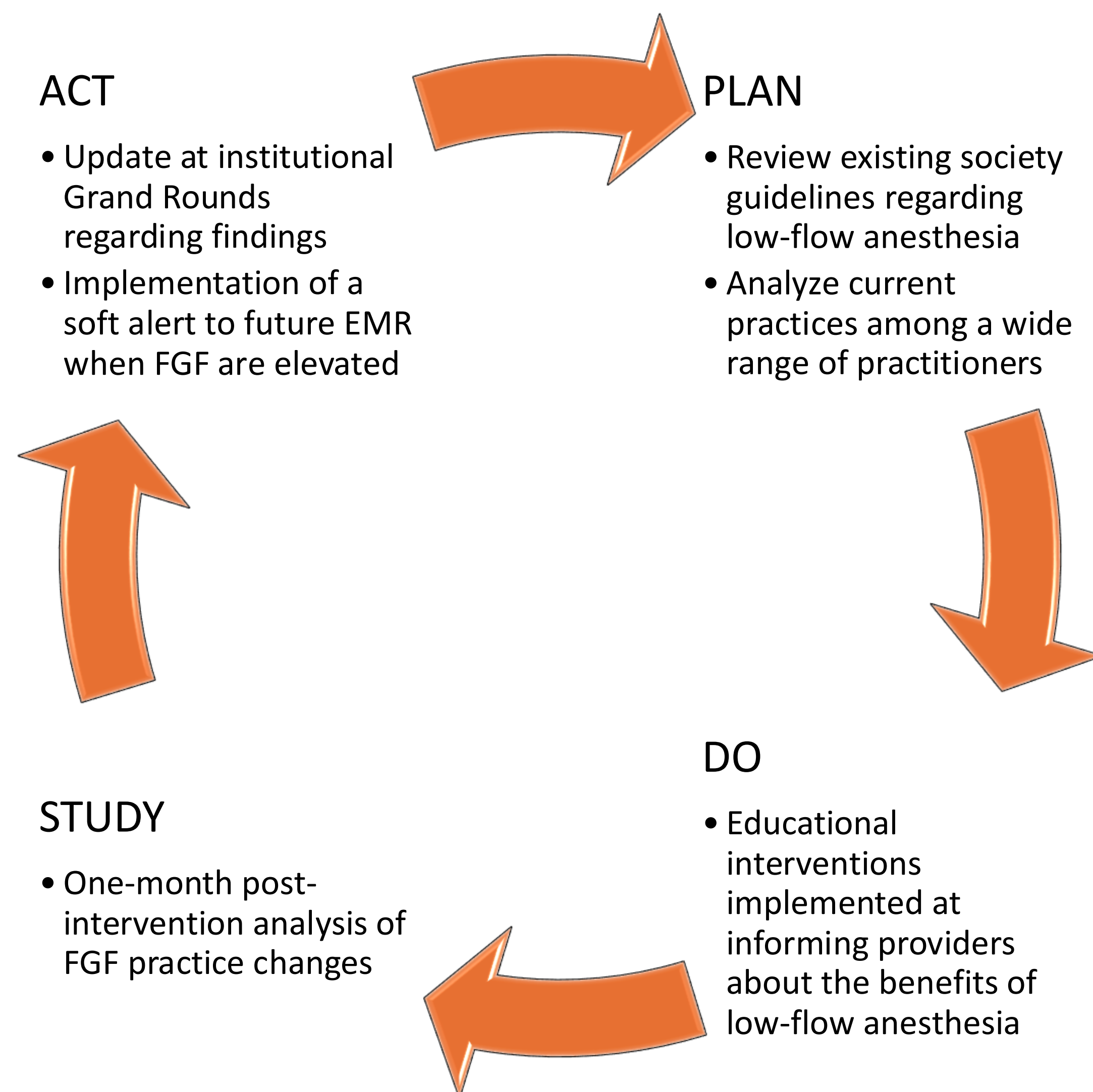


INTRODUCTION

Low fresh gas flow (FGF) anesthesia, wherein ventilator fresh gas flow is significantly lower than a patient’s minute ventilation, has physiologic, financial, and environmental benefits. Concerns over compound A often discourages anesthesiologists from administering sevoflurane at FGF < 2L/min despite several studies failing to show an association between low FGF and nephrotoxicity in humans^{1,2}. In this QI project, we aimed to reduce the average FGF rate at our quaternary care center by at least 25% and dispel misconceptions surrounding low FGF anesthesia and sevoflurane.

METHODS

We analyzed 149 cases representing 48 different anesthesia providers over a one-month period. Exclusion criteria included TIVA cases, supraglottic airway cases, and cases in which high fresh gas flow was required. We then implemented a multifaceted education initiative which included didactic presentations on the environmental impact of volatile agent waste and the safety of low FGF anesthesia, written educational material, and distribution of an online simulation course by the Anesthesia Patient Safety Foundation on the practice of low FGF anesthesia³. One month after the intervention, 155 cases representing 76 providers were collected and analyzed. The exclusion criteria were the same. A Plan, Do, Study, Act (PDSA) framework was used to guide this project.



RESULTS

	Mean FGF rate (L/min)	Range (L/min)	Variability	% cases using FGF <1.9L/min
Pre-Intervention	2.5	0.62-10.0	1.9	18.2%
Post-Intervention	1.8*	0.89-4.0	0.3	45.8%*

*indicates statistical significance, p<0.001

DISCUSSION

After implementation of our quality improvement initiative, the average fresh gas flow rate at our institution was reduced by 28%. Just under half of the total cases studied used low FGF post-intervention compared to 18% of cases pre-intervention. Both the average flow rate and the proportion of cases using low FGF were statistically significant indicating that our project did meet its goal to reduce FGF rates by 25%. There were some limitations to this study. We randomly obtained data from 48 and 76 providers in the pre- and post-intervention stages, respectively. However, our institution has a large number of providers spanning a wide range of credentials and training. Although this was a representative sample, including a larger group of participants could provide more statistical power. Additionally, the observation period for this study was one month which may have been too short as the educational content was still fresh in providers' minds. To mitigate this, we have provided an update on our project during departmental Grand Rounds five months after post-intervention collection to serve as a reminder. We also plan to add a soft alert to our future EMR to inform providers when their fresh gas flows are excessively elevated.

REFERENCES

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