



Intraoperative Hypothermia: Effects of Pre-warming in Colorectal Surgery Patients

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Introduction

Perioperative hypothermia (core temperature (T) less than 96°F) has been linked to adverse myocardial outcomes, surgical site infections (SSI), bleeding, and increased length of hospital stay. Evidence-based guidelines published by the American Society of Perianesthesia Nurses (ASPAN) recommend pre-warming to decrease redistribution hypothermia occurring after induction of anesthesia.

Background

Currently, patients undergoing surgery are not pre-warmed according to ASPAN guidelines. Pre-warming includes warming of peripheral tissues or surface skin before induction of anesthesia (Hooper et al., 2010). Systematic reviews conducted on the effectiveness of pre-warming suggested forced-air warming as an effective method to decrease perioperative hypothermia.



References

Brito Poveda, V., Clark, A. M., & Galvão, C. M. (2013). A systematic review on the effectiveness of prewarming to prevent perioperative hypothermia. *Journal of Clinical Nursing, 22* (7/8), 906-918. doi:10.1111/j.1365-2702.2012.04287.x

Hooper, V. D., Chard, R., Clifford, T., Fetzer, S., Fossum, S., Godden, B., & ... Wilson, L. (2010). Clinical practice guideline: ASPAN's evidence-based clinical practice guideline for the promotion of perioperative normothermia. *Journal of Perianesthesia Nursing, 25* (6) 346-365. doi:10.1016/j.jopan.2010.10.006

Quality Question

Does using forced-air warming in the pre-operative area decrease intraoperative hypothermia in patients undergoing colorectal surgeries?

Methods-PDSA

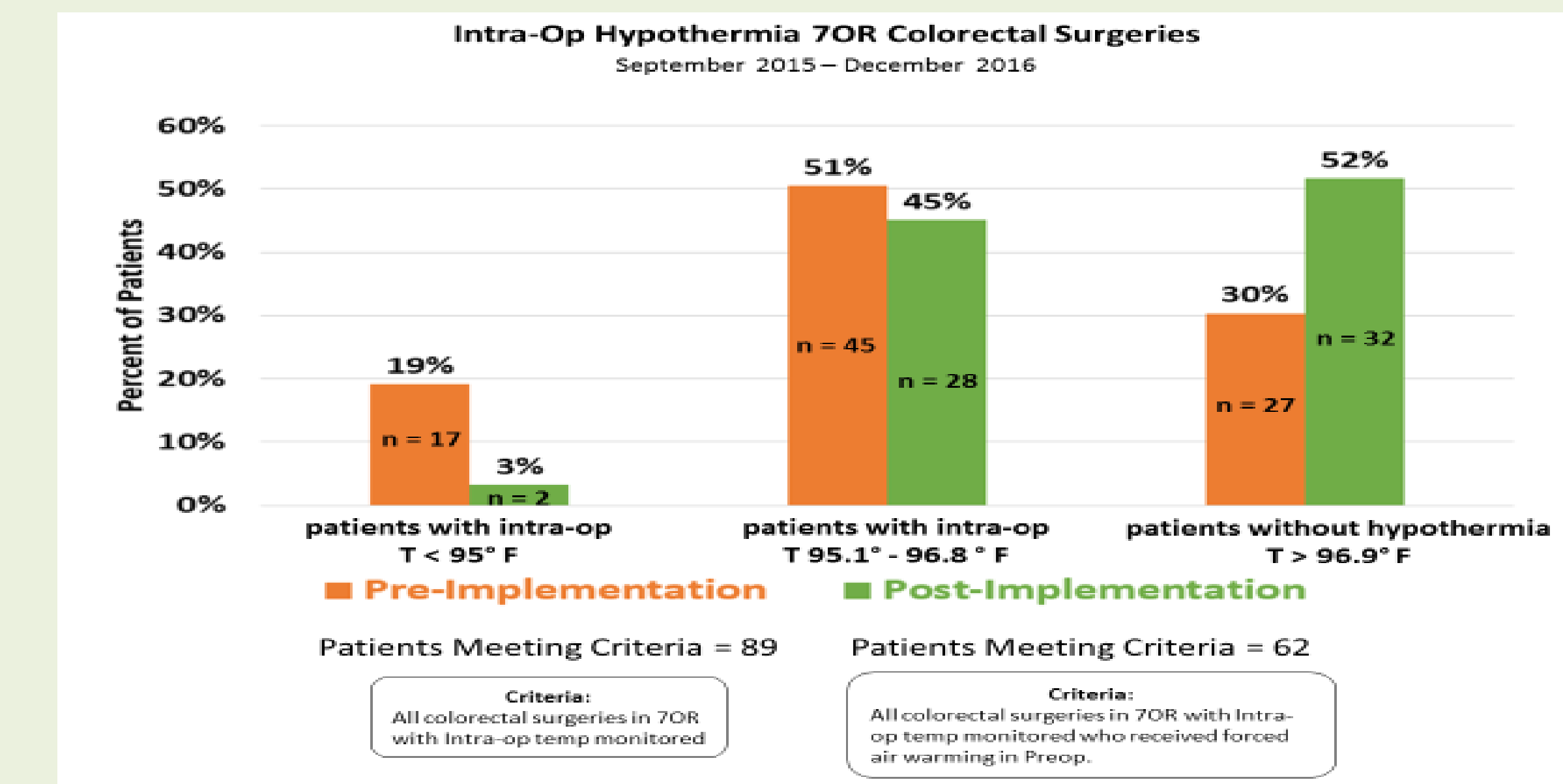
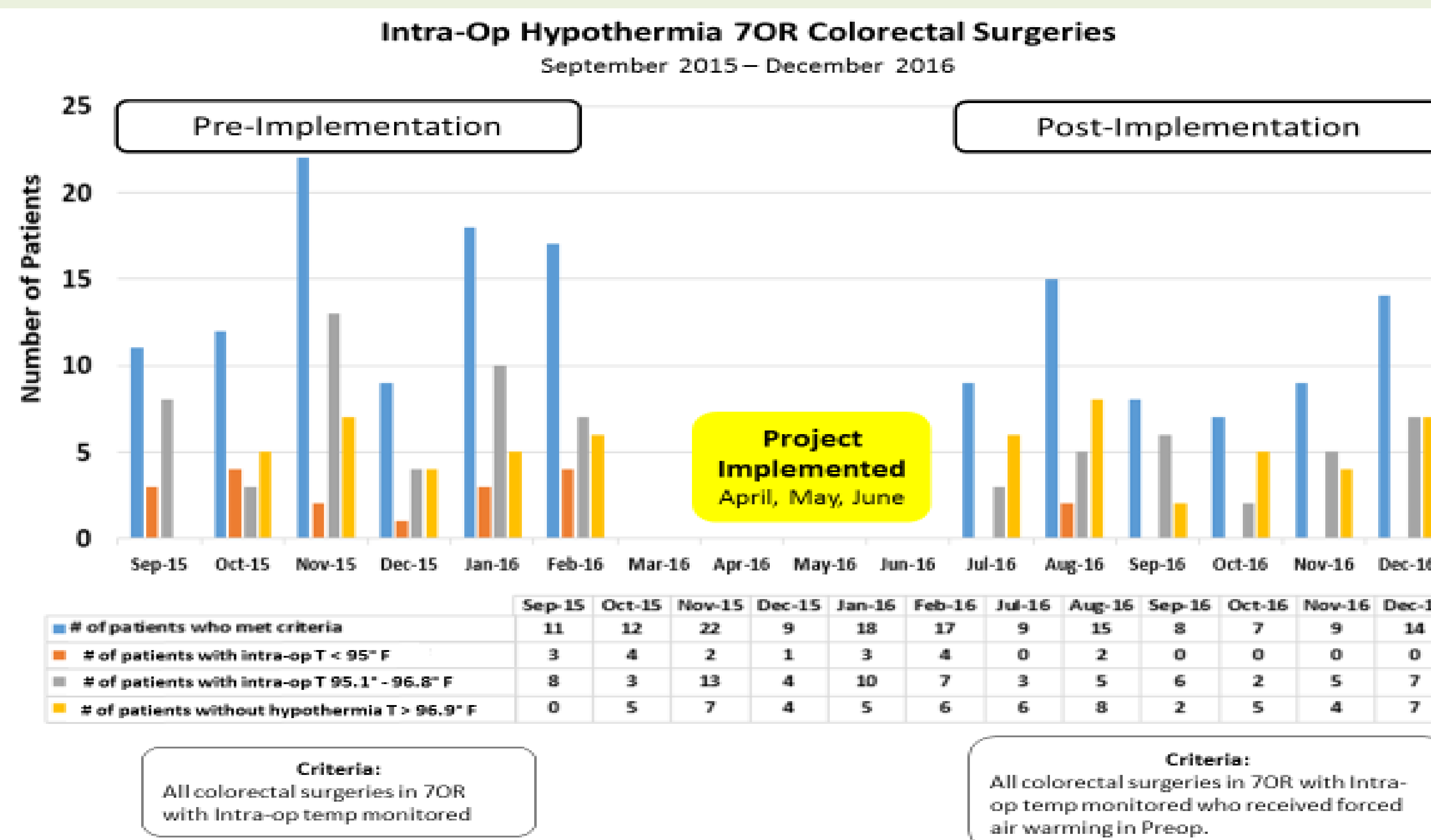
Plan-A guideline for pre-warming patients was developed based on literature review, and was approved by the colorectal SSI prevention team.

Do-The nurses were educated on the approved guideline. The test of change was implemented for all colorectal surgery patients in the 7th floor pre-operative unit starting June 2016 to December 2016.

Study-Compliance was ensured through direct observation and documentation review. When non-compliance was observed, the authors used the opportunity as 'teaching moments' and provided real time education.

Act- The data was extracted from electronic health record for the number of patients who developed intraoperative hypothermia (two or more intraoperative hypothermic temperature readings). Patients who developed intra-op hypothermia were divided into two groups (intra-op T<95°F and intra-op T 95.1 - 96.8°F) and compared to the pre-implementation phase.

Results



Conclusion

The most positive effect was that patients with intra-op T<95°F decreased to 3% from 19%, and the patients without intra-op hypothermia improved to 52% from 30% after pre-warming. However there were no changes in patients with intra-op T 95.1 - 96.8°F, which can be attributed to more patient's shifting from T< 95 to T> 95.1°F after pre-warming.

Implications

Pre-warming using forced-air warming can decrease drastic drops in temperature <95°F and can reduce intra-op hypothermia in colorectal surgery patients.

Future Plans

The pre-warming can be extended to patients undergoing other surgeries involving intra-op body heat loss. Studies can be done to understand if pre-warming has positive effect in decreasing SSI and length of stay in PACU.

Limitations

The sample size for post implementation was low compared to pre-implementation phase. The data needs to be monitored for longer period to ensure results are sustainable. Additionally, the duration of pre-warming was not controlled to avoid OR delays.

Acknowledgements

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