

ASPIRE FEATURED MEASURE: NORMOTHERMIA

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ASPIRE (Anesthesiology Performance Improvement and Reporting Exchange) is a national anesthesia quality improvement (QI) collaborative and is the QI arm of the Multicenter Perioperative Outcomes Group (www.mpog.org). Over 20 hospitals across Michigan are members of ASPIRE. As part of a partnership with the Michigan Society of Anesthesiologists, we are pleased to share our third featured measure article.

An important focus for ASPIRE is perioperative normothermia and reducing the adverse effects of hypothermia during anesthesia care. The normothermia bundle includes two process of care measures and one outcome measure to assist sites in tracking compliance with interventions and measuring success in preventing hypothermia. The following measures form the bundle:

1. Providing Active Warming (Temp 01)
2. Measuring **Core** Temperature (Temp 02)
3. Perioperative Temperature Outcome (Temp 03)

In this issue, we discuss information and performance for our Active Warming (Temp 01) measure.

APPROPRIATE TEMPERATURE MONITORING

Both general and neuraxial anesthesia causes vasodilation, thus redistributing body heat from the core to peripheries. This redistribution can lead to hypothermia. Redistribution of body heat from the core to the periphery can decrease core temperature 1-1.5 degrees Celsius during the first hour of anesthesia.⁵⁻⁷ Pediatric patients are more likely to develop perioperative hypothermia due to a high surface area to weight ratio and inability to regulate their own temperature.¹ Core temperatures outside the normal range pose significant risks to patients. Published research has correlated impaired wound

healing, adverse cardiac events, altered drug metabolism, and coagulopathies with unplanned perioperative hypothermia. Hypothermia triggers vasoconstriction and subsequent tissue hypoxia which impairs wound healing. In addition, hypothermia may also impair neutrophil function, reducing the body's natural protection against infection.⁵⁻⁷ These adverse outcomes can result in prolonged hospital stays and increased healthcare expenditures. Active warming techniques provide the best results for reducing cutaneous heat loss and preventing hypothermia.^{1-4,8-10}

DISCUSSION

ASPIRE sites participating in Michigan (and around the country) have used a variety of quality improvement techniques to improve their performance. These changes include applying warming devices in the preoperative area before the patient is draped in the operating room. This workflow change allows the anesthesia providers and nursing team to easily access the warming blanket or gown to apply active warming before the procedure. In addition, quality champions have presented the ASPIRE data to their departments to increase awareness and provide education about the risks of hypothermia and recommend strategies for prevention. Checklists in the electronic health record can trigger providers to apply and document active warming measures. ASPIRE recently developed the Surgical Site Infection toolkit which incorporates literature to highlight the relationship between hypothermia and infection. The toolkit includes a PowerPoint presentation for Quality Champions to share with their colleagues (<https://mpog.org/quality/toolkits/>). We are encouraged that overall, performance across ASPIRE sites is improving, and the toolkit is available to download for anyone interested in reducing perioperative hypothermia.

PERFORMANCE FOR TEMP 01

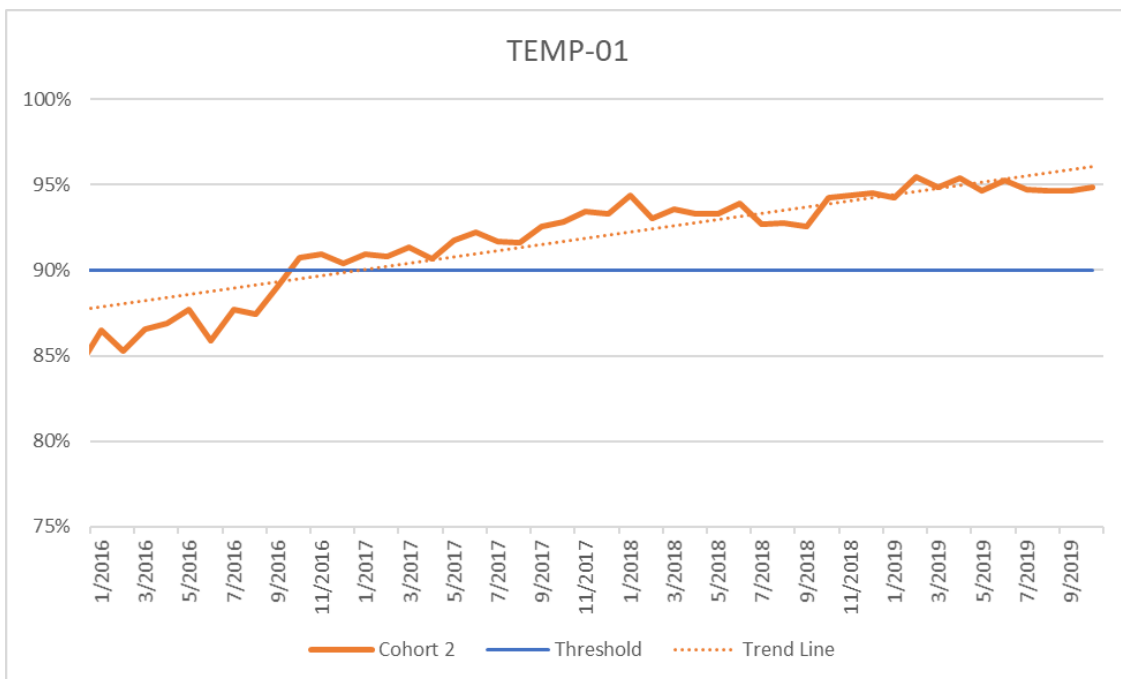


Figure A. Performance trend from 2016-2019 for TEMP 01 for the second cohort of ASPIRE Sites in Michigan (sites that joined in 2016)

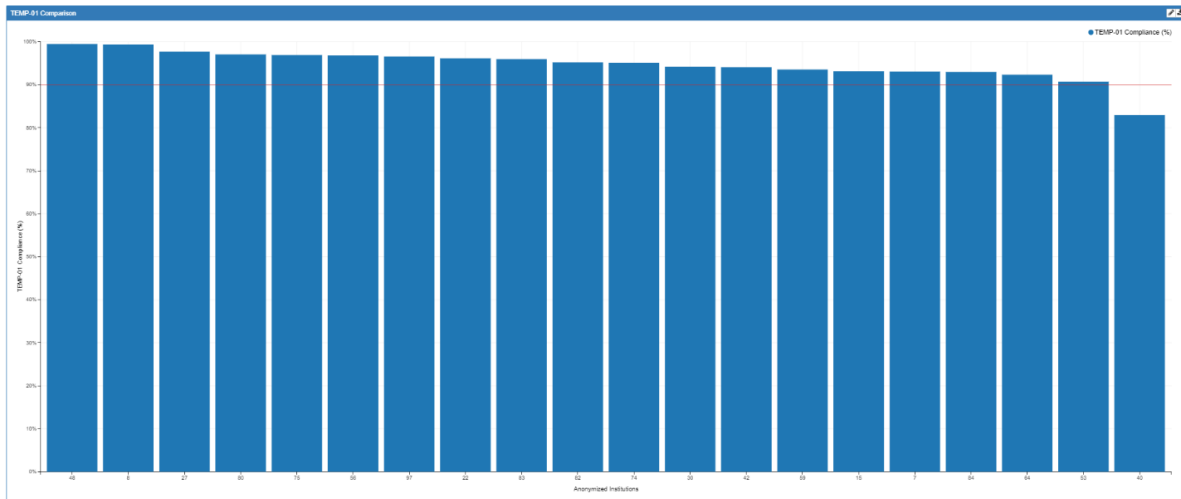


Figure B. Across all ASPIRE sites, performance varies from approximately 83%-99% Goal performance for this (and most other ASPIRE measures) is greater than 90%.

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