

PACU Core Temperature Improvement

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Element 1: Purpose

Beginning in 2018, CMS (Centers for Medicare and Medicaid Services) required reporting temperature in PACU as a quality metric for ASCQR (Ambulatory Surgery Center Quality Reporting). The ASC-13 Normothermia Outcome assesses the percentage of patients having surgical procedures under general or neuraxial anesthesia of 60 minutes or more in duration who are normothermic within 15 minutes of arrival in the post-anesthesia care unit (PACU). Performance at our orthopedic surgery center showed a compliance of 87.1% in 2017 for temperatures recorded in the PACU at 36 degrees Celsius or higher.

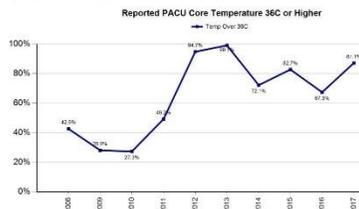
Element 2: Performance Goal

The benchmark for this metric is >95%. The ASCQR measures are pay-for-reporting measures through CMS that determine bonus payments for practices and physicians based on quality metrics. The reporting period for normothermia began January 1, 2018 and will affect payment in 2020. Above benchmark performance on all ASCQR measures will ensure appropriate payment for our surgical center.

Element 3: Data Collection Plan

This project was performed using the DMAIC (define, measure, analyze, improve, control) process improvement method. Our data collection plan was decided on by the group and included metrics for both the define phase where we dug deep into what the problem was through gathering voice of the customer data, process mapping, and collection of data through our anesthesia quality database, Fides. Core temperature data had been collected in an ongoing manner on every case since 2008, so we were able to see several years' worth of temperature data.

Element 4: Evidence of Data Collection



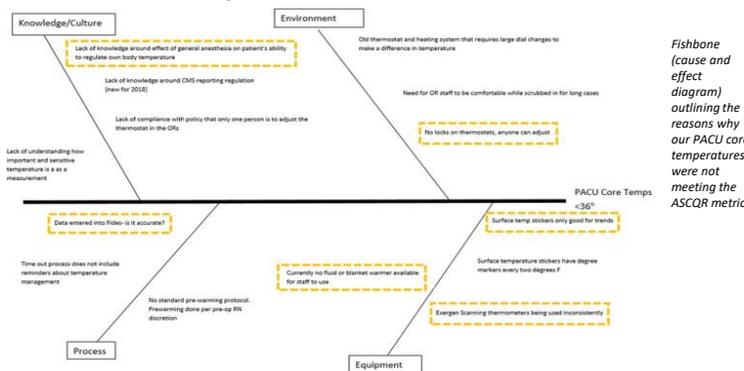
SUPPLIERS	INPUTS	PROCESS	OUTPUTS	CUSTOMERS
<ul style="list-style-type: none"> Patients Surgeons Anesthesiologists Circulating RN Scrub Tech Facilities 	<ul style="list-style-type: none"> Fluids Blankets Environmental Temperature Thermostats Scanning Thermometer Surface Temperature Sticker Prep on Extremities Gowns 	<ul style="list-style-type: none"> See Below 	<ul style="list-style-type: none"> Temperature in OR Temperature in PACU Patient Satisfaction Compliance with CMS Measure Surgical Site Infection (SSI) Rate 	<ul style="list-style-type: none"> Patients Surgeons Anesthesiologists



Element 5: Data Analysis

674 Patient Records Reviewed (Paper Record)

- 11 Patients did not have a temperature recorded
- 2 temperatures were illegible
- 7% of records transcribed incorrectly onto anesthesia quality data form
- 4% records had illegible PACU RN names



Fishbone (cause and effect diagram) outlining the reasons why our PACU core temperatures were not meeting the ASCQR metric

- Recovery form does not include area for nurses to document a second temperature reading, form does not reflect ASC metric parameters
- Forehead temperature strips are easy to use but very inaccurate
- Focused education needed since nurses may be unaware of need to prevent hypothermia
- Nurses are documenting temperatures in PACU in Fahrenheit, may not understand how that translates to Celsius

Element 6: Comparison with Goals

Through analysis, we found several factors were contributing to our low adherence to post-operative normothermia parameters. We performed a multi-voting exercise where each team member was able to weigh areas where they thought the greatest impact would be felt with plan-do-study-act cycles. We then planned our PDSA cycles based on our ability to purchase new equipment and roll out education to staff.

Element 7: Corrective Action

- PDSA 1:** Inservice new thermometer. Implement pre-op baseline temperature monitoring for all MAC/general cases
- PDSA 2:** Create and display educational poster for staff on importance of temp monitoring, conversion from Fahrenheit to Celsius, proper documentation of temperatures
- PDSA 3:** Thermostat locks
- PDSA 4:** Discontinue use of temperature strips
- PDSA 5:** Implement new blanket and fluid warmer

Ex: Educational poster created for PACU staff outlining the importance of normothermia to prevent complications for ambulatory surgery patients. Education was combined with the purchase of new equipment and closer monitoring of thermostats.

Why is Perioperative Temperature Management So Important?

Most general anesthetics produce a profound dose-dependent reduction in the core temperature, triggering cold defenses.

Hypothermia can cause vasoconstriction, shivering, and is unpleasant for patients.

Prevalent side effects from perioperative hypothermia include:

- ↑ Surgical site infections
- ↑ Coagulopathy
- ↑ Increased blood loss
- ↑ Increased duration of anesthesia and neuromuscular blockade agents
- ↑ Extended PACU recovery
- ↑ Increased cost of care

Is shivering bad for patients?

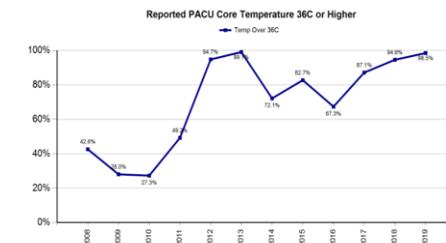
Shivering increases oxygen demand, which can cause hypoxia. Shivering also increases oxygen consumption, increasing O2 requirements. Increased O2 requirements, which demand more oxygen, can lead to increased oxygen consumption. As a result, shivering during anesthesia can lead to increased oxygen requirements, which can lead to increased oxygen consumption.

How can we prevent hypothermia?

- Keep the OR room temperature at or below 68-72 degrees Fahrenheit
- Pre-warm patients with blankets, warm fluids, and forced air warming systems
- Actively warm the patient during surgery
- Check temperature using the Esophageal Temp or Core Temp. Target temperature should be maintained within 1.5 degrees Celsius

Element 8: Re-Measurement

Using Fides, the anesthesia quality reporting database managed by our company, we have been able to track PACU core temperatures since the implementation of our quality improvement project. Adherence to the ASCQR metric has increased to 94.6% in 2018 and improved to 98.5% in 2019.



Element 9: Additional Corrective Action and Measurement

No additional corrective actions have been needed since implementing our quality improvement project. An annual competency for staff on the use of the new thermometers, and ongoing monitoring of adherence to the ASCQR metric is performed by reviewing data on a quarterly basis.

Element 10: Communication of Findings

Members of the surgery center staff were alerted to the findings of this project throughout the course of the work through their participation in gathering voice of the customer data, education, and feedback on the PDSA cycles. When the project was completed, the success of the work was celebrated with the printing of a large, academic-style poster that was displayed in the break room. Additionally, our marketing team put together a video featuring the project team members. The video was shared widely to celebrate the success of the project.



Still from video created by the marketing department