

Core Temperature Dataset Introduction

Abstract

This dataset contains information on 7908 participants in a 2005-2014 retrospective cohort study of intraoperative core temperature during colorectal surgery and its association with risk of surgical site infection (Walters et al, 2020). There are two primary predictor measurements of core temperature and three infection outcomes. Covariate data is also available, including demographics, comorbidities, in-hospital surgical sequelae, and in-hospital mortality. Statistical analysis of study data included locally weighted scatterplot smoothing (LOESS) for data visualization, single and multiple predictor logistic and Cox proportional hazards regression with splines, and Bonferroni correction. Walters et al. (2020) found that core temperatures below 35.5 °C (hypothermia) is associated with increased risk of serious infectious complications.

Background

Surgical hypothermia (defined as core temperature $< 36^{\circ}\text{C}$) is known to cause coagulopathy (abnormal bleeding), delayed drug metabolism, prolonged recovery, and thermal discomfort. Less well understood is whether wound infections, specifically surgical site infections (SSIs), are also associated with intra-operative hypothermia. This is important, as surgical site infections (SSIs) are a major source of morbidity, mortality, prolonged hospitalization, and healthcare cost. The overall risk of SSI is 1–3%, generally, but is substantially higher, 10-15%, for patients undergoing colorectal surgery. Research published to date suggest that moderate hypothermia causes SSIs and various other complications. However, some of these studies are outdated (the surgical procedures described are no longer performed) and many are missing sufficient intraoperative temperature data. Thus, it is unknown whether mild hypothermia or normothermic temperatures influence infection risk. Walter et al (2020) explored the relationship between intraoperative core temperature and a composite of serious wound and systemic infections in adults having colorectal surgery in a novel study design that included repeated measurements of intra-operative core temperature.

Study Objective

The study objective was to evaluate the relationship between time weighted average (TWA) core temperature and serious wound and systemic infections developing within 30 days of colorectal surgery, overall and after taking into account covariate information.

Study Design

Retrospective, single center cohort study

Subjects & Variables

7908 subjects were analyzed with 47 total variables (9 numeric; 38 categorical)

Study participants are adult patients who underwent colorectal surgery at the Cleveland Clinic between January 2005 and December 2014. Inclusion criteria were: 1) surgery duration greater than one hour; 2) general anesthesia; 3) esophageal core temperature monitoring for greater than 30 minutes (without more than a 30 minute disruption); and 4) sufficient baseline and outcome data. There are two primary predictor variables,

time weighted average (TWA) core temperature; and final temperature at the end of surgery. There are three outcome variables: 1) presence of serious infection; 2) presence of superficial infection; and 3) length of hospital stay.

Additional Information

Surgery type was not recorded for a subset of patients and are thus missing. Some observations in the BMI and LastReadingTemp variable appear to have been incorrectly reported, meaning outliers may result from incorrect inputs (human error).

Citation(s)

Walters, Michael J., et al. "Intraoperative Core Temperature and Infectious Complications after Colorectal Surgery: A Registry Analysis." *Journal of Clinical Anesthesia*, vol. 63, Aug. 2020, <https://doi.org/10.1016/j.jclinane.2020.109758>.

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