AGREEMENT BETWEEN TEMPORAL ARTERY, ORAL, AND AXILLARY TEMPERATURE MEASUREMENTS IN THE PERIOPERATIVE PERIOD

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Introduction
This study was prompted by the desire to find a more efficient way to take temperatures in perioperative services. In the perioperative setting the risk of inadvertent hypothermia is an essential component for caring for the surgical patient. Temperature accuracy and time to obtain a reading was hypothesized to be decreased by the use of the temporal artery thermometer. The TA thermometry use is a noninvasive method of obtaining a patient’s temperature that is comparable to core temperatures.

Identification of the problem
It is estimated that 50-90% of surgical patients experience the adverse effects of hypothermia (Cooper, 2006). The perioperative setting generally obtains temperature readings by oral or axillary method. In the examination of time spent on the post surgical patient especially with attempting temperature readings, it was perceived as a lengthy nursing task. By decreasing the time in obtaining the temperature of the post-surgical patient, hypothermia could be assessed and treated in a timelier manner.

Purpose of the Study
The purpose of the research study was to examine agreement in temperature readings between temporal artery, oral and axillary temperature measurements in the perioperative period to determine time and number of attempts required to obtain the patient’s temperature using each method.

Methodology
A repeated measures comparison of electronic axillary, electronic oral and TA thermometer readings was conducted. After Institutional Review Board approval, a convenience sample of adult patients who were to undergo elective surgery in a community hospital were recruited to participate.

Results
The preoperative mean temperatures recorded by the three thermometer types differed significantly (p<.000). Post hoc analyses indicated the significant difference existed for all three pairings of thermometers (oral versus axillary, oral versus TA, and TA versus axillary). The mean temperatures were 98.0°F (SD=0.3) for oral, 97.6°F (SD=0.7) for axillary, and 98.3°F (SD=0.6) for the TA thermometer. Preoperatively the mean number of seconds to obtain a temperature reading was 2.7(SD=1.2) seconds for the TA thermometer, 9.5(SD=4.5) seconds for the oral mode, and 17.5(SD=10.5) for the axillary mode. Post hoc analyses indicated that significant differences existed for all three
pairings of thermometers (oral versus axillary, oral versus TA, and TA versus axillary) with TA being the fastest, followed by oral, and the axillary method requiring the most time to obtain.

**Discussion**
This study examined the agreement in temperature readings obtained from TA and electronic oral/axillary mode thermometers both preoperatively and postoperatively. Overall, findings indicated that the TA thermometer provided temperature readings in closer agreement with oral readings than were found between our usual two methods of temperature measurement, oral and axillary. This was found in both the preoperative and PACU areas.

**Conclusion**
The findings of this study support the use of the TA thermometer as an acceptable alternative for non-invasive temperature monitoring in the perioperative area. While not assessed directly, findings also suggest that the TA thermometer might be cost-effective. Nursing time can be saved since the TA thermometer records temperatures more quickly than the electronic thermometer in either oral or axillary mode. Potential cost savings related to equipment would be possible since probe covers are not required for TA thermometers. The TA thermometer is cleansed after each use with an alcohol pad. It is hypothesized that use of alcohol pad ($0.01) to clean the TA thermometer is more cost effective compared to the cost of probe covers for oral thermometers ($0.04 each).

**Implications for perianesthesia nurses and future research**
Future research should focus on the performance of the TA thermometer in other populations such as children undergoing surgery who do not require invasive monitoring and adults who receive vasodilators since these patients were excluded from the present study.

**Reference:**
Cooper S. The effect of Perioperative warming on patients’ postoperative temperatures. *AORN J.* 2006;83:1074-1086.