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# Accuracy of Temporal Thermometer

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# Accuracy of Temporal Thermometer

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## BACKGROUND / INTRODUCTION

- Research on temperature readings shows core body temperatures, such as temporal artery (TA) thermometer readings, are more accurate than peripheral temperature readings such as those obtained from tympanic thermometers (Dunleavy, 2010).
- Purpose: to determine accuracy and consistency of body temperature readings with temporal artery thermometers in comparison to tympanic thermometers.

## PICO QUESTION

- In the adult Medical-Surgical population, do temporal thermometers provide a more accurate and consistent measurement than tympanic thermometers?

## EVIDENCE

- No discomfort for the patient (Allegaert, et. al, 2014).
- TA thermometers performed as better surrogate for brain temperature than tympanic thermometer (Bridges, et. al, 2009).
- Speed, easy to use, and lack of contact with body fluids (Dunleavy, 2010).
- Most reliable, less invasive way to measure temperature (Furlong, et. al, 2015).

## METHODS

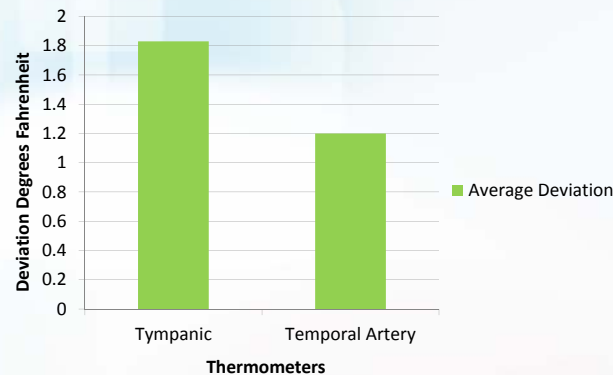
- Three experts (Nurse Residents) trained in use of the product.
- Obtained temporal and tympanic readings within 1 minute of each other over the course of 4 weeks.
- Temperature readings obtained and recorded every 4 hours.
- Tympanic readings converted to core body temperature by adding 0.8° F (Pompei, 1999).
- Average deviations calculated from both tympanic and temporal artery thermometers.

## OUTCOMES

- TA thermometer provides a more accurate and consistent measurement of body temperature than tympanic thermometers.
- TA thermometers are easy to clean and use.
  - Alcohol swab used to cleanse TA probe vs. single-use probe covers used for tympanic thermometers
- TA thermometers are more cost effective than tympanic thermometers.
  - Cost of each probe cover for tympanic thermometers: \$0.035
  - Cost of each alcohol swab to cleanse TA thermometers: \$0.01
  - Total cost of probes for FY '15: \$69,525.68
  - Total cost of alcohol swabs for FY '15: \$19,864.48

## RESULTS

Average Deviation of Thermometers



- Results from calculating deviations
  - Expert 1: tympanic 1.71 ° F – TA 1.13 ° F
  - Expert 2: tympanic 1.91 ° F – TA 1.03 ° F
  - Expert 3: tympanic 1.87 ° F – TA 1.44 ° F
    - Average Deviation of Thermometers:
      - Tympanic 1.83 ° F
      - Temporal 1.2 ° F

## CONCLUSIONS

- There is less deviation of temperatures using the TA thermometer than the tympanic thermometer.
- The benefits of TA thermometers are:
  - Consistency in temperature readings
  - Cost effectiveness
  - Lifetime warranty



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