



Finding the Best Method of Temperature Measurement: Focusing on Accuracy

Gyrath, Kristen BSN, RN; Hein, Corynne BSN, RN; Shin, Sarah BSN, RN
4 Acute Care

Introduction

When working on a surgical floor it is important to have accurate temperature readings in order to identify post-operative signs and symptoms of infection. On our particular floor the methods of temperature readings are temporal and tympanic. In our clinical practice we have found that the two methods vary in accuracy, and have been proven to be inaccurate.

PICO

P: Adult patient's in an acute care setting

I: Temperature route

C: Temporal versus tympanic

O: Accurate measurement of patient temperature

Question: What is the most accurate method of temperature reading on our acute care setting?

Methods

A search of recent studies was conducted to include the following databases:

- CINAHL, PubMed

The search was conducted using the following words:

- Temperature
- Temporal
- Tympanic
- Infection

Results

Two articles from the conducted search were used.

Accuracy of Different Devices To Measure Temperature from Medsurg Nursing

Accuracy of Noninvasive Core Temperature Measurement in Acutely Ill Adults from Biological Research for Nursing

Medsurg Nursing Journal

Method Comparison Design

Methods tested included:

- Oral disposable
- Tympanic
- Temporal

Comparison of temperature routes against oral electronic (in table below)

Device	Standard Deviation	Difference >1 ° Celsius
Oral	.69	2%
Tympanic	.79	18%
Temporal	.67	6%

Conclusion: All device results were found to be significantly different from the reference device with tympanic thermometer showing the greatest variation.

Biological Research for Nursing

Literature Review

Methods Reviewed included:

- Oral
- Tympanic
- Temporal

Literature supports:

- Oral measurements as accurate at measuring core temperature
- Tympanic measurements demonstrated greater variability compared to oral temperatures
- Temporal measurements were found to be well outside their established accuracy standard

Discussion

The staff on 4AC has access to tympanic and temporal thermometers. It is standard practice for this floor to use only these two routes to obtain a proper temperature. It was found through research that these are not the best methods to determine a proper temperature in acutely ill patients. This is significant to 4AC because infection risk is higher due to the nature of the illness or injury requiring hospitalization. Oral thermometers were shown to be more effective in determining an accurate temperature in acutely ill patients.

Conclusions

By addressing our PICO question we discovered that our acute care setting was not using the best temperature method. Being a surgical floor it is imperative that we use the most accurate temperature method in order to prevent future infections in our patient population. We would benefit the most from using an oral electronic thermometer because it is best practice and most suitable for our floor. Based on the literature review we found oral temperature readings to be the most accurate measure of core body temperature. Many acute care settings historically have not used this method because of the concerns of outside factors affecting oral temperature reading such as oxygen therapy, warmed and cooled inspired gases, and respiratory rates.

References

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