

# Equivalence of Temperature Measurement Methods in the Adult Hematology/Oncology Population

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**Background:** Neutropenic patients often become febrile and require frequent temperature monitoring. Monitoring core body temperature is considered the gold standard for accuracy. Taking oral temperature is the recommended noninvasive practice when core body temperature cannot be obtained; however, neutropenic patients often, for various reasons, are unable to tolerate an oral probe.

**Objectives:** The purpose of this article is to determine the equivalence of temperatures taken via temporal artery, axillary, and oral methods, and to determine the best alternative to the oral method in the adult hematology/oncology population.

**Methods:** A repeated measures equivalence design was used. A convenience sample of 40 data sets (N = 33 inpatients) was tested on a hematology/oncology inpatient unit in a National Cancer Institute–designated comprehensive cancer center in the southeastern United States. A Latin squares design was employed with three possible sequences of measurement. Demographic data were analyzed using descriptive statistics, and equivalence was tested using the two one-sided tests method. Acceptance criterion for difference between methods was set at 0.2°F from the oral method.

**Findings:** The temporal method is a potential noninvasive alternative to the oral method for the adult hematology/oncology population.

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Early recognition of fever in the hematology/oncology population depends on accurate and precise monitoring of body temperature. Fever in these patients is recognized as a hematologic oncologic emergency because it may indicate sepsis or impending septic shock. In the event of sepsis, the initial change in vital signs is often temperature elevation of 100.5°F or higher. The onset of fever requires clinical decisions, initiation of neutropenic fever protocols, and other potentially lifesaving measures.

Measurement of body temperature by the oral method has been an accepted care practice for noninvasive temperature monitoring; however, multiple factors may interfere with

obtaining an accurate reading using the oral method in immunocompromised patients. An alternate method of temperature measurement is needed for this patient population to facilitate early recognition of sepsis and appropriate lifesaving action.

## Background

As a result of treatment or pathologic processes, patients in the hematology/oncology population often experience varying degrees of hematologic deficiencies, including neutropenia. According to Oncology Nursing Society standards (Polovich,