Effect analysis of New Clinical Thermometer in Neonatal Department

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Abstract

To compare three different Clinical Thermometers, in terms of safety, accuracy and effectiveness.

Methods: The study was conducted to 100 neonate subjects (55 male babies and 45 female babies)

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Results: With the Mercurial Thermometer and Digital Thermometer no statistical significance was found P>0.05, however using the New Thermometer comparing it with Mercurial and Digital, there was a statistically significant difference of P>0.05 in the core body temperature.

Conclusion: The Subject New Thermometer may lead to; Lesser Nursing Time, Less Cross Infection, Less Pollution. A Quick, Safe, Accurate way of taking body temperature monitoring

Background

The history of the calculation of body temperature is from the 16th century when Santorio invented the first thermometer in the world to test oral temperature using the thermal expansion theory for air.

The policy of thermal expansion of mercury was used to make it at the beginning of the 20th century, which ensured the accuracy of body temperature measurement, so it has been widely used in the clinic to date. The electronic thermometer began to be used in the aerospace industry with the development of science and technology, and it developed rapidly during SARS.

The mercury thermometers were also banned and sold since 2000. In the United States, France, Denmark, the United Kingdom and Dutch nationals. The WHO launched the Global Medical Mercury Elimination Program in 2013, which aims to reduce global demand for mercury thermometers and glass thermometers filled with mercury by 70 per cent in 2017. The mercury-filled glass thermometer project was also listed as a restricted item by the Chinese Government. However, medical institutions still prefer mercury thermometers, due to the long tradition of using mercury thermometers.

Too high or too low body temperature can affect children's disease outcome, so accurate temperature measurement plays a crucial role in assessing and tracking children's illness and treatment improvements. Clinical temperature measurement to make more use of mercury thermometer. Still, breaking, slipping, and mercury poisoning safety hidden trouble is easy for newborns to not advocate.

The electronic thermometers are detectable quickly and easily. They also cost a great deal more than mercury thermometers, which have been around for years scientists considered it the "gold standard" for determining body temperature. There were doubts, however, regarding electronic thermometer measurements

Methods

Design: A new, battery-operated reusable electronic thermometer appliances composed of a thermistor and a Bluetooth unit. The model provides a smart thermometer, which includes: the clinical The thermometer body of different shapes of the cartoon, locates this interior smart Clinical Thermometer device. The intelligence device consists of: a reminder is connected to the module to gather the human temperature collection module. It executes the conversion module changeable with its set details with the module of set.

The analytics module analyzes the conversion module data, links to it, and communicates the report data with a conversion module analysis module. The sensor continuously records the temperature and transmits the information to a mobile device equipped with a specific application. The thermometer has a measurement range of 25–45 °C and ±0.05 °C (35–38.5 °C) and ±0.1 (< 35 °C and > 38.5 °C), respectively, according to the manufacturers.

Subjects and setting

Evaluate if the neonate's skin is intact and remove dietary influence. The ambient temperature was 24 °C to 26 °C, the temperature was 30.6 °C to 34.4 °C and the relative humidity was 65% to 70%. Drop the mercury thermometer below 35 °C, simultaneously put it in warm water at 40 °C and remove after 3 min. Choose thermometer with a reading difference < 0.2 °C and a glass tube with no crack. The three parts of the neck, left armpit, and pulmonary artery surface projection area. Measured the same topic at the same time, obey the normal temperature measurement activity protocol.

Discussion

Because of its solid glass construction and reliable mercury output Mercury thermometer is the conventional "gold standard." It therefore has the advantages of accurate indication, high stability, low price and user-friendly. Yet mercury thermometer's downside is easy to break down, and environmental contamination is more serious, the measuring time is longer, the infant is not easy to embrace, disinfection is slow, reading is not intuitive. The reading of the electronic thermometer, by contrast, is intuitive, easy to use, and high precision. However, electronic parts, battery power, and other factors easily affect the precision of the indicator.
On the one hand, this study has certain limitations, since the sensor has insufficient contact area with the skin during the measurement of temperature, skin on the trunk loses more heat and bone, skin and body fat impede the transfer of heat from within. The difference is not statistically important on calculated temperature values the new Neck Thermometer. Under the left axis (P beneath 0.05), the differential between digital and mercury thermometers is not statistically important (P Standard 0.05). Because the arteries in your neck and the left axle has plenty of blood, so less heat is lost in a relatively closed space which enables them to wrap around better.

To get more accurate data on core body temperature, we need to adapt further to changes in market demand and execute thoroughly data, electronic, content, and network research. Continuous body temperature measurement of the newborn can take 24 hours, can be constant monitoring temperature, can be observed temperature change curve, can export temperature history, can operate without a button, will also alarm intelligent thermometer, accurate first-hand clinical data collection in real-time, express condition analysis, and judgment. Digital, electronic, information, network undoubtedly adds a lot of convenient ways to neonatal clinical research.

References


