

KEY POINTS

1. The goal of taking a temperature is to determine the patient's core body temperature. Some sites are more representative of the core body temperature than others.
 - a. Tympanic membrane temperatures are most accurate method if performed correctly.
 - b. Rectal temperatures are highly accurate but with a significant delay during rapid core changes, e.g., during cooling interventions.
 - 1) Rectal devices increase the risk of infection and mucosal injury. Strictly avoid unless physician order obtained.
 - 2) Dedicate rectal thermometers to the patient due to the potential risk of transmission of *Clostridium difficile*.
 - c. Oral temperatures from the posterior sublingual pockets accurately measure core body temperature.
 - 1) Factors interfering with accuracy include hot/cold foods and fluids, smoking, gum chewing and mouth breathing.
 - 2) Contraindicated in young children, unconscious/confused/uncooperative patients and patients at risk for seizure.
 - d. Axillary temperatures are the most convenient method but are highly unreliable in measuring core temperature, except in babies less than 3 months.
 - e. Temporal artery temperatures are unreliable for measuring core body temperatures because of the potential of been affected by ambient skin temperature and moisture.
2. Several types of devices measure temperature:
 - a. Glass thermometers containing mercury should not be used as glass/mercury cause undue risk to patients and the environment. Glass thermometers may also break in hot vehicles.
 - b. Electronic probe thermometers with digital displays run on batteries that can become weak. Used for oral, rectal or for axillary temperatures.
 - c. Infrared devices measure tympanic membrane and temporal artery temperatures, obtaining results very quickly.
 - d. Disposable thermometers are plastic strips or films that change color to indicate temperature change. Different strips are made for oral use or to be applied to the skin (forehead). They are considered highly unreliable.
3. Operator error – not placing device correctly – is a significant risk and will provide inaccurately low temperatures.
4. Elevated temperatures can indicate:
 - a. Infection.
 - b. Drug reaction.
 - c. Excessive heat exposure.
 - d. Hyperthyroidism.
 - e. Severe medical conditions, e.g., cancer.

- f. Severe injury, e.g., mi, cva, trauma.
5. Low body temperatures (less than 96 °F) can indicate:
 - a. Hypothyroidism.
 - b. Sepsis (overwhelms the immune system).
 - c. Low body temperature can cause drowsiness.
6. Temperature variations can occur after:
 - a. Vigorous exercise: wait 1 hour.
 - b. Hot/cold bath/shower: wait 30 minutes.
 - c. Smoking/eating/drinking: wait 20 – 30 minutes.
7. Core body temperature can vary by < or > 2 °F from "normal" due to the effects of:
 - a. Age (elderly run lower body temperatures).
 - b. Circadian rhythm (temperature is lowest in early morning and highest in late afternoon).
 - c. Effect of exercise on metabolism.
 - d. Effect of meals on digestive system.
 - e. Hormonal effects, e.g. ovulation.
 - f. Effect of ambient temperature.
8. Normal temperature ranges in degrees Fahrenheit by route:

Route	Adult	Adult over 65
Oral	97.6 – 99.6	96.4 – 98.5
Rectal	98.6 – 100.6	97.1 – 99.2
Axillary	95.3 – 98.4	96.0 – 97.4
Ear	96.6 – 100.2	96.4 – 98.8

EQUIPMENT

- Gloves (if contact with mucous membranes possible)
- Alcohol wipes or cool water/soap (for cleaning)
- Thermometer: digital probe or infrared device
- Manufacturer's instructions for device (if available)
- Disposable probe covers (if required for device)
- Lubricant (if taking rectal temperature)

PROCEDURE

1. Perform hand hygiene. Identify the patient according to agency policy. Explain procedure. Adhere to standard precautions. Assemble equipment.
2. Determine best route to take temperature. Check orders.
3. Assure thermometer probe/scanner tip is clean by rubbing probe vigorously with alcohol wipe.
4. Attach probe cover, unless thermometer is for patient's personal use.
5. Oral temperature:
 - a. Turn digital thermometer on, as indicated on thermometer or in manufacturer's instructions.
 - b. Instruct patient to place the digital probe in "pocket" underneath on either side at the back of the tongue and to close lips tightly around it.
 - c. Leave the thermometer in place as specified by manufacturer, usually 3 minutes or until it beeps.

- d. Remove the thermometer and read temperature.
 - e. Discard probe cover.
 - f. Clean probe with alcohol wipe before putting away.
6. Rectal temperature:
- a. Assist patient to side-lying position facing left.
 - b. Apply a thin film lubricant or petroleum jelly to the probe.
 - c. Separate the buttocks, and locate the anus.
 - d. Turn digital thermometer on, as indicated on thermometer or in manufacturer's instructions.
 - e. Insert thermometer aiming for umbilicus about:
 - 1) 4 cm for adult.
 - 2) 3 cm for child.
 - 3) Stop immediately if resistance is felt.
 - f. Leave the thermometer in place for the required time or until thermometer beeps. Hold probe entire time.
 - g. Remove the thermometer and read temperature.
 - h. Clean probe with alcohol wipe before putting away.
 - i. After using a digital thermometer rectally, ensure that it is marked "For Rectal Use."
7. Axillary temperature:
- a. Turn digital thermometer on, as indicated on thermometer or in manufacturer's instructions.
 - b. Place the thermometer under the axillary fold with the probe tip in the center of the armpit.
 - c. Press the arm against the body and leave the thermometer in place for the required amount of time or until it beeps.
 - d. Remove the thermometer and read temperature.
 - e. Clean probe with alcohol wipe before putting away.
8. Tympanic membrane (ear) temperature:
- a. Attach the disposable cover to the probe.
 - b. Turn thermometer on, as indicated on thermometer or in manufacturer's instructions.
 - c. Pull the earlobe back for older child or adult.
 - d. Center the probe tip in the ear, pushing gently inward toward the eardrum.
 - e. Press the "on" button to display the temperature.
 - f. Remove thermometer and read temperature.
 - g. Dispose the used probe cover.
 - h. Clean probe with alcohol wipe.
9. Temporal artery (forehead) temperature:
- a. Ensure the patient's forehead is dry.
 - b. Press the soft cup of the thermometer's scanner firmly against the center of the patient's forehead.
 - c. Press the button to turn the thermometer on.
 - d. Slowly slide the scanner laterally over the patient's forehead until it slides onto patient's hair line.
 - e. Keep button pressed while:
 - 1) Lifting it and then,
 - 2) Touching it to patient's neck, just behind earlobe.
 - f. Release the button.
 - g. Read the temperature before lifting from neck.
 - h. Clean the scanning sensor with an alcohol wipe.
10. Alert the physician for temperatures outside normal parameters. Request individualized parameters if needed. Recommendations for abnormal parameters include:
- a. Temp < 97 °F or > 100.4 °F.
 - b. Temp 2.5°F < or > patient's baseline body temperature (elderly frequently have a low core body temperature and 99.5° F represents fever and infection).

PATIENT/CAREGIVER EDUCATION

1. Teach the patient/caregiver:
 - a. How to take temperature, if indicated by patient's diagnosis.
 - b. Temperature parameters, and when to notify the nurse or physician about temperature.
 - c. Educate patients with low temperature to avoid placing hot water bottles or objects close to the skin as this may cause burns or other physical harm to the skin

DOCUMENT according to agency policy

1. Document in the patient's record:
 - a. Temperature, route, any abnormal conditions affecting temperature.
 - b. All instructions given to patient/caregiver about how to take temperature.
 - c. All communication with team members about results.
2. Adjust plan of care as appropriate and communicate changes per agency policy.

SUPPORTING EVIDENCE

- Grainger, A. (2013). Principles of temperature monitoring. *Nursing Standard*, 27(50), 48-55.
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- Singler, K. Bertsch, T. Heppner, J., Kob, R., Hammer, K., Biber, R., Sieber, C., & Christ, M. (2013). Diagnostic accuracy of three different methods of temperature measurement in acutely ill geriatric patients. *Age and Ageing*, 42, 740 – 746.
- Sund-Levander, M., & Grodzinsky, E. (2013). Assessment of body temperature measurement options. *British Journal of Nursing*, 22(15), 880 – 888.