TEMPERATURE MEASUREMENT

PURPOSE
Accurate measurement of body temperature is essential as alterations in temperature may indicate potentially life-threatening processes.

POLICY STATEMENTS
The definitive route (oral, rectal) for temperature measurement should be used unless contraindicated:
- When an accurate temperature is required, or
- If the screened temperature (axilla) is not consistent with the clinical assessment.

Recommended temperature measurement techniques (Canadian Pediatric Society, 2000, re-affirmed 2015)

<table>
<thead>
<tr>
<th>Age</th>
<th>Recommended technique</th>
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</thead>
<tbody>
<tr>
<td>Birth to 2 years</td>
<td>1. Rectal (definitive)</td>
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<tr>
<td></td>
<td>2. Axilla (screening low risk children)</td>
</tr>
<tr>
<td>Over 2 years to 5 years</td>
<td>1. Rectal (definitive)</td>
</tr>
<tr>
<td></td>
<td>2. Axilla, tympanic (or temporal artery if in hospital) (screening)</td>
</tr>
<tr>
<td>Over than 5 years</td>
<td>1. Oral (definitive)</td>
</tr>
<tr>
<td></td>
<td>2. Axilla, tympanic (or temporal artery if in hospital) (screening)</td>
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</tbody>
</table>

Rectal temperatures are contraindicated in the following circumstances:
- Patients who are neutropenic or immunosuppressed
- Patients with bleeding disorders or thrombocytopenia or on anticoagulant therapy
- Patients with perirectal bleeding, pain, infection
- Patients with diarrhea or with stool present in the rectum
- Patients who have had rectal/anal surgery
- Patients who have a history of psychological trauma

SITE APPLICABILITY
Temperatures can be measured using the rectal, axilla or oral methods in all clinical areas unless contraindicated as above.

Temporal artery temperatures are currently only done in the Pediatric Intensive Care Unit (PICU).

PRACTICE LEVEL/COMPETENCIES
Measuring temperature is a foundational pediatric competency.

DEFINITIONS
Normal temperatures by site of measurement:
- Oral: 35.5-37.5
- Axilla: 36.5-37.5
- Rectal: 36.6-38
- Temporal: 36.3-37.8

Fever is generally* defined as a temperature:
- Above 38°C oral
- Above 37.5°C axilla
- Above 38°C rectal
- Above 37.7°C temporal

*NOTE: these values may differ within individual patient populations.

EQUIPMENT
- Appropriate thermometer
- Disposable probe cover
- Disposable gloves
- Disinfectant wipe
- Lubricant (for rectal measurement only)

**PROCEDURE**

<table>
<thead>
<tr>
<th>Procedure Step</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>DETERMINE</strong> frequency of measuring temperature based on:</td>
<td>Vital signs should be monitored as often as necessary considering the patient’s condition and status.</td>
</tr>
<tr>
<td>a. Prescriber’s order</td>
<td></td>
</tr>
<tr>
<td>b. Nurse’s clinical judgment</td>
<td></td>
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<tr>
<td>c. Unit standard</td>
<td></td>
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<tr>
<td>d. As required for a particular procedure or medication</td>
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<tr>
<td>2. <strong>DETERMINE</strong> optimal route for measuring temperature based on child’s age, condition and ability to cooperate.</td>
<td>See comparison table for advantages and disadvantages of each route.</td>
</tr>
<tr>
<td><strong>NOTE:</strong> in critically ill patients, continuous temperature monitoring may be indicated on an individual case basis. Refer to unit specific protocols/guidelines as appropriate.</td>
<td></td>
</tr>
<tr>
<td>3. <strong>PERFORM</strong> hand hygiene.</td>
<td>Reduces transmission of microorganisms.</td>
</tr>
<tr>
<td>4. <strong>ASSEMBLE</strong> equipment. <strong>SELECT</strong> appropriate probe (oral/axilla vs. rectal).</td>
<td>Reduces risk of cross-contamination.</td>
</tr>
<tr>
<td>5. <strong>IDENTIFY</strong> patient and <strong>EXPLAIN</strong> procedure.</td>
<td>Ensures identification mechanism is present to prevent treatments, medications, and procedures to wrong child.</td>
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<tr>
<td>6. <strong>OBTAIN</strong> measurement.</td>
<td>Establishes temperature measurement.</td>
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</tbody>
</table>

**NOTE:** Do not leave child unattended while measuring temperature

<table>
<thead>
<tr>
<th>Route</th>
<th>Oral</th>
<th>Rectal</th>
<th>Axilla</th>
<th>Temporal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WAIT</strong> 20-30 minutes after child has finished eating or drinking</td>
<td><strong>GLOVE</strong></td>
<td><strong>INSERT</strong> probe completely and firmly into a probe cover.</td>
<td><strong>INSERT</strong> probe completely and firmly into a probe cover.</td>
<td><strong>BRUSH</strong> hair aside from exposed forehead and away from ear.</td>
</tr>
<tr>
<td><strong>ENSURE</strong> child is not chewing gum or candy</td>
<td><strong>LUBRICATE</strong> tip of rectal probe of electronic thermometer with lubricant</td>
<td><strong>SET</strong> thermometer to AXILLARY mode (Welch-Allyn) or MONITOR mode (Alaris-IVAC).</td>
<td><strong>PLACE</strong> probe flush on center of forehead and DEPRESS red button.</td>
<td></td>
</tr>
<tr>
<td><strong>INSERT</strong> probe completely and firmly into a probe cover.</td>
<td><strong>POSITION</strong> child in prone, supine or side lying with the hips flexed depending on child’s present status and condition.</td>
<td><strong>PLACE</strong> thermometer probe as high as possible in the axilla and verify that the probe tip is completely surrounded by axillary tissue.</td>
<td><strong>SLIDE</strong> probe slowly across the forehead into the hairline.</td>
<td></td>
</tr>
<tr>
<td><strong>PLACE</strong> the probe tip into the sublingual pocket where the richest blood supply is located in either</td>
<td><strong>SEPARATE</strong> the buttock with thumb and forefinger of one hand and with the other hand, gently <strong>INSERT</strong>.</td>
<td><strong>FOLD</strong> the child’s arm snugly across the chest to hold the thermometer in place.</td>
<td><strong>LIFT</strong> probe from forehead (continue to keep red button depressed) and <strong>TOUCH</strong> probe behind ear.</td>
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</tbody>
</table>
the right or left posterior pocket (heat pocket) at the base of the tongue and ask child to close his/her lips around it. Remind him/her not to bite down or talk, and to relax and breathe normally through the nose.

the lubricated rectal thermometer probe, inclined toward the child's umbilicus, through the anal sphincter into the rectum about 1.25-2.5 cm. Stop if you feel any resistance. Do not insert the thermometer more than 2.5 cm.

halfway down the mastoid process (the bone in back of the ear) and slide down to the soft depression behind the earlobe.

**HOLD** the probe in place until device indicates completion and keep the probe tip in contact with tissue at all times.

**STEADY** the thermometer with your hand and leave the probe in place until the device indicates completion.

**RELEASE** button and read temperature.

**HOLD** the patient's arm and the probe in place until device indicates completion (Welch/Allyn) or for 5 minutes if on MONITOR mode (Alaris-IVAC).

**NOTE:** For infants, one measurement is all that is required: either slide slowly across forehead or maintain skin contact behind ear until numbers stop.

Alternate sites may be used if forehead/ear not available: refer to training materials for instructions.

**EJECT** probe cover from probe and dispose.

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**REMOVAL** gloves.

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7. **WIPE** thermometer, probe and cord with disinfectant wipe and **REPLACE** thermometer in holder

Routine infection control practices; reduces transmission of microorganisms and risk of cross contamination.

8. **PERFORM** hand hygiene.

9. **NOTIFY** physician or health care team as appropriate.

Communication of temperature measurement to additional members of the health care team. Assists with meeting Professional Standards for documentation and legal requirements.

**DOCUMENTATION**

**RECORD** temperature measurement in appropriate record indicating:

- Date and time
- Temperature
- Route
- Child’s response if unusual
- Any other pertinent actions or observations

**REFERENCES**


