



# Clinical Update

## For Telephone Triage Nurses

March 2018

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Phobia

TA Thermometry

### Did You Know...?

- ❖ *Modern digital thermometers can record temps very quickly.*
- ❖ *TA temps take 2 seconds.*
- ❖ *Inexpensive AX or rectal thermometers can also take the temp in under 10 seconds.*



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### Rectal Thermometry to Confirm Fever in Babies Under 3 Months: The Evidence Behind the Practice

The pediatric guidelines have always recommended rectal temperatures in babies under 3 months to confirm fever. Some users question this advice as possibly out-of-date or harmful. The concerns expressed to us are:

- Hospital nurseries and clinics no longer take routine rectal temps. Instead, these sites now use non-invasive peripheral thermometry. So, why do we suggest rectal readings?
- Can't rectal temp-taking cause rectal perforation? If so, isn't this dangerous advice?

This update explores the literature, current practice, and expert opinion that support rectal thermometry as a safe way to accurately validate fever in young infants.

As recently as 2013, the AAP and ACOG state "controversy still exists whether to obtain rectal or axillary temperatures in newborns. Of concern is the risk of perforating the rectum".<sup>3</sup> In most newborn nurseries, the temp is taken axillary. Axillary readings are fine for screening newborns. They yield an adequate approximation of a rectal temperature in healthy full-term neonates.<sup>3,6</sup> An axillary reading of 100.4° F (38.0° C) or higher can also be accepted as evidence of fever.

In medical settings such as an ED, a PCP office or even a nursery, if an axillary reading is questioned, most health care providers will check a rectal temperature in babies younger than 12 weeks to get an accurate core temperature. The rectal reading will be used to guide clinical decision-making and what level of work-up needs to be done. Exception: Rectal temps are contraindicated in children with certain high-risk conditions (e.g., bleeding disorders, neutropenia, NEC). Axillary (AX) or Temporal Artery (TA) readings are recommended for this specialty population.

### Rectal Perforations from Taking a Rectal Temperature: Excessive Worry

Rectal perforation from rectal thermometry is very rare. The last article regarding this complication was written in 1978.<sup>1</sup> It reported 3 cases, and one was caused by a broken glass thermometer. All were newborns in the nursery. A review of the literature by Morley (1992)<sup>5</sup> found 20 case reports of rectal perforation over the previous 30 years. The causes of these cases were only presumed to be glass thermometers, but some may have been spontaneous perforations. Again, they all occurred in newborns while in the hospital. Morley estimates the risk of rectal perforation with a glass thermometer as less than one per 2 million babies. *Of note, there are no case reports of rectal perforation caused by rectal temperatures taken by a parent in the home setting.*

Perspective: Up until the 1990's, most parents took all temperatures in children under 4 years of age rectally with a glass thermometer. This reminds us that the incidence of perforation was almost nonexistent. This temp-taking process also took at least 2 minutes. Now, digital thermometers further reduce perforation risk because they record temps quickly (seconds) and won't break.

A survey of 12 Denver community pediatricians about rectal perforation from thermometers uncovered no cases during their training or careers. The same was true for a survey of 12 pediatric emergency medicine physicians at Children's Hospital Colorado. All 24 pediatricians also ordered rectal temps when needed on young infants with reported fevers. The combined clinical experience of this group approaches 500 years. (Schmitt, 2018)

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When done properly, perforation also shouldn't happen. In newborns, perforation does not occur until the thermometer is inserted more than 2 cm.<sup>1</sup> That is the location of the peritoneal cavity. The instructions in the Fever Before 3 Months guideline have always been to insert thermometer ½ inch (12 mm) or less. That keeps it in the anal canal. In addition, the parent is cautioned to never force the thermometer against any resistance.

In our current guidelines, we only request a rectal temp during the first 3 months of life. Beyond this age, a precise fever level generally is not needed. In older children, even tactile fevers (unless they are prolonged) are often adequate for clinical decision-making.

### Temporal Artery Thermometers: Guideline Changes Coming in 2018

Many parents also now have temporal artery (TA) thermometers at home. These are also called forehead thermometers. TA thermometers are also used in over half of pediatric practices. Studies on the accuracy of TA thermometers in febrile children and infants are not in total agreement. Most of the recent literature has concluded that TA temps are not as accurate as rectal readings.<sup>2, 4, 6</sup> Interestingly, many of these recent TA articles conclude a rectal temperature is the only way to get an accurate reading in febrile infants. Also, these current studies do not even mention rectal perforation as a concern.

However, TA readings are usually more accurate than axillary (AX) readings.<sup>2</sup> So, in 2018, we have decided to include TA thermometry readings as clinically appropriate for screening young infants. The fever definition for both TA and rectal temps will be the same: 100.4 ° F (38.0 ° C) or higher.

A note about other thermometers: Pacifier thermometers are not accurate and should not be used. Tympanic membrane (TM) thermometers should not be used in children younger than 6 months.

### Evidence-Based Summary for Safe Triage

- ✓ All babies from birth to 90 days with a fever need to be evaluated urgently in a medical setting. Some will need a septic work-up.
- ✓ Triage nurses don't want to refer young infants who appear and act well into the ED unless they have true fever.
- ✓ AX or TA temperatures can be used to screen infants. Readings of 100.4° F (38.0° C) or higher are accepted as a fever without the need for a rectal temp.
- ✓ For AX readings above 99.0° F (37.2° C) but below 100.4° F (38.0° C), rectal temperatures remain the gold standard and are needed for accurate assessment in this age group.
- ✓ This is safe practice based on literature review and expert opinion.

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