

## KEY POINTS

- Respiratory distress is the most common pathway to a fatal outcome in children less than 2 years of age.
- Listen to the child's breathing early in your assessment. It may convince you the child needs to be seen urgently, without asking any additional triage questions.
- Be attentive to the words the caller is using to describe their child's breathing.
- Do not attribute a fast respiratory rate to fever.
- Fever does not cause retractions or tight breathing.

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## Pediatric Respiratory Assessment Refresh!

Completing an accurate respiratory assessment on all young children with respiratory symptoms is essential for safe triage. Missing breathing trouble in this age group is a top cause of under-referral for call centers. Moreover, respiratory distress is the most common pathway to a fatal outcome in children less than two years of age. Young infants with any respiratory illness can rapidly develop distress and hypoxia. Reason: airway resistance is inversely proportional to airway diameter and a little swelling can block small airways. It is not uncommon for some infants with lower respiratory infections (e.g., bronchiolitis, pneumonia, COVID-19, etc.) to need re-evaluation after recently being seen in the ED or pediatrician's office. They may need oxygen due to disease progression.

### Parents May Not Recognize Trouble Breathing

Telephone triage nurses have the added challenge of sorting out the respiratory status without being in the same room as the patient. While one parent gives many details of their child's breathing, another parent may downplay the seriousness of their child's illness. Yet another parent may use incorrect medical terminology (such as "wheezing") to describe their child's breathing. "Parent-reported" symptoms may or may not be reliable in helping identify children with serious respiratory infections. A 2011 study on children between the ages of 3 months and 12 years indicated only half of parents reported the presence of breathing difficulty in children whom the nurse assessed as having respiratory distress. In the same study, nurse-assessed respiratory distress was determined to be a useful predictor of serious respiratory infection (Blacklock et al., 2011).



To prevent patient harm and risk, it is critical that pediatric telephone triage nurses recognize the presence of symptoms of respiratory distress. This newsletter focuses on pediatric respiratory assessment in children less than two years of age. Use of the established tools in place provide structure and guidance to the nurses' clinical decision making and help nurses achieve their main objective: to determine the most appropriate level of care within the most appropriate time frame.

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## Where Does the Triage Nurse Start? Chief Complaint: “trouble breathing”

**RULE OUT 911 SYMPTOMS:** Ask yourself: Could this child stop breathing enroute? A 911 dispatch team can easily check oxygen level and provide oxygen support on transport, unlike transport by family car. Consider the need for EMS 911 option whenever you send child with respiratory distress to the ED.

- Severe difficulty breathing (struggling for each breath, unable to cry or speak, grunting sounds, severe retractions)
- Slow, shallow, weak breathing
- Age < 1 year and stops breathing > 20 seconds (long pauses in breathing)
- Bluish (or gray) lips or face present
- Note: apnea risk is always highest for infants less than 6 months of age with respiratory distress

**LISTEN TO THE CHILD’S BREATHING EARLY IN YOUR ASSESSMENT:** Listen to an infant or toddler’s breathing for 15 – 30 seconds OR ask to speak with a verbal child. What you hear is almost always more valid than the caller’s answers to your triage questions.

- It’s preferable for the child to be in a quiet environment. Ask the caller to reduce background noise level as needed. Turn off the TV.
- It’s most helpful for child to be engaged in a quiet activity or even sleeping.
- For infants or toddlers, specifically instruct caller to hold the phone up to the infant’s mouth and nose. If on a cell phone, may need to request the caller to take the RN off “speaker phone” to reduce echo and background noise. Also, consider a landline if available and the nurse can’t hear the child on the cell phone.
- For verbal children, ask the child to sing a song (e.g., Happy Birthday) or have a brief conversation about their activity that day to assess for shortness of breath with conversation.
- Another option may be to request the caller to send the nurse a short video clip of their child’s breathing as supported by your software platform.
- If you think the child is likely not in distress, consider a 2<sup>nd</sup> attempt later in the call. Do the same if background noise or crying interferes with your initial listening attempt.
- If unable to listen clearly, document your attempt to listen and inability to make a clinical determination.
- Document observations: respiratory rate, presence of inspiratory/expiratory wheezing, inspiratory/expiratory stridor, or grunting. If abnormal sounds are present, include whether they are constant or intermittent.
- Finally, listening EARLY before you ask all the triage questions could save you lots of time.

## Initial Assessment Questions

**RESPIRATORY STATUS:** Describe your child's breathing.

- Use open-ended questions such as “What are you **hearing** and **seeing** with your child's breathing?”
- Avoid leading questions such as “You don't hear any wheezing, right?”
- Listen to *understand*, not simply to reply.
- Allow the caller to use his/her own words. Most callers will take less than 1-2 minutes to tell their story.
  - Identify “red flag descriptions” of what caller is **hearing**:
    - Examples from actual calls: breathing heavy, breathing fast, panting, out of breath, grunting each breath, purring with every breath, breathing sounds wet, raspy breathing, trouble catching breath at times, trouble getting air in, pushing air out harder than normally does, pushing with effort to get air out, taking short breaths between talking.
    - Moaning with each breath in babies may also be an ominous sign.
  - Identify “red flag descriptions” of what caller is **seeing**:
    - Examples from actual calls: stomach pumping in/out more, struggling because I see it in his neck, lips became bluish with coughing so hard.
  - Ask additional questions to clarify the meaning of any “red flag descriptions”: “Tell me more about that.”
- Ask about presence of retractions: Request caller to look at child's bare chest. “Is the skin pulling in at their chest (between the child's ribs or underneath their rib cage), abdomen, or neck?”
- Ask about presence of nasal flaring: “Are your child's nostrils opening wider (like a raging bull) with every breath?” If caller is not clear about the question, remind them when they look at themselves in the mirror, their nostrils do not flare open wider with every breath.
- Consider high-risk factors for respiratory distress: Prematurity, previous hospitalizations for respiratory illness, need for oxygen in the past and/or any lung or cardiac illness may all put a child at higher risk for hospitalization.
- Do not attribute an abnormal respiratory rate (isolated tachypnea without dyspnea) to fever. Although high fevers can cause small increases in respiratory rate, there is no reliable conversion factor. Also, never attribute *increased work of breathing* such as retractions or tight breathing to fever. These are usually symptoms of early respiratory distress or hypoxia, especially in bronchiolitis, and require an emergent evaluation.

**FEEDING AND HYDRATION STATUS:** Decreased feeding is a reliable marker for increasing respiratory distress.

- Ask about difficulty with breast or bottle feeding: “Is your baby interrupting the feeding to stop and take a breath (or cough)?”
- It’s also helpful to know if the caller is using saline and suction to clean their child’s nose *before* feedings.
- If formula fed, “How many ounces has your baby taken in the last 24 hours?” Formula intake less than half of normal intake may be associated with hypoxia (Corrard et al., 2013).
- Ask about hydration status: “How many wet diapers has your child had today?” Increased work of breathing will lead to increased insensible fluid losses.

**ACTIVITY LEVEL:** Symptoms of respiratory distress often awakens a child from sleep.

- Ask about the presence of irritability, agitation, or restless sleep.
- Ask about activity level: “Is your baby alert, awake and making eye contact? Is your baby vigorous with their cry, suck and movement?”
- Ask about the child’s ability to participate in routine activities such as play.
- Ask about the child’s ability to rest comfortably between feedings or during the night.

### Determine the Degree of Respiratory Distress

<b>Mild</b>	Rapid respiratory rate (usually a first sign)	If wheezing present, is mild.
<b>Moderate</b>	Labored breathing, retractions, nasal flaring	If wheezing present, audible, tight and persistent
<b>Severe</b>	Struggling to breathe, severe retractions and possible cyanosis. Agonal breathing may precede apnea.	If wheezing present, severe and loud. Or child may be too tight to hear it.

Tachypnea is usually the earliest sign of respiratory distress. Caution: It is important to note that you can also have increased work of breathing *without* having tachypnea. Normal respiratory rates for children depends on their age. When upset or crying, the respiratory rate normally increases 10 to 20 breaths per minute. If the respiratory rate is high and the child seems well, consider a call back to recheck the respiratory rate while the child is at rest. The following rates in non-crying children are abnormally fast:

- 2 months or younger: > 60 breaths per minute
- 2 to 12 months: > 50 breaths per minute
- 1 to 5 years: > 40 breaths per minute

## The Value of Assessing (Counting) Respiratory Rates (RR)

Determining the RR is especially important for patients under 2 years of age with a cough. The triage nurse may be able to count the child's respiratory rate when listening to child's breathing on the phone EARLY in the assessment. Otherwise, some callers may be able to count their child's respiratory rate if given specific instructions such as "Place your hand on your child's chest and count out loud each time the chest rises. We are going to count for 30 seconds. Tell me when you are ready. I will tell you when to start counting." Triage nurses can use a personal device or bookmark an analog clock on their computer to record time.

A QI outcome study done at Children's Hospital Colorado demonstrated that telehealth nursing assessment of tachypnea was confirmed by ED nursing assessment over 60% of the time. (Massaro 8/2017). Nurses selected the breathing fast triage question and referred in patients with viral bronchiolitis and pneumonia who otherwise might have been missed given the absence of other signs of respiratory distress.

## Some Final Thoughts

- ✓ Respiratory illness in children under 2 years of age accounts for a large percentage of calls to offices and after hours call centers every year. The upcoming winter viral season will prove no different.
- ✓ The COVID-19 pandemic is still with us. Influenza is predicted to make a strong showing. And with more children returning to in person learning or childcare, those under 11 years of age unvaccinated for COVID-19, and the relaxation of pandemic mitigation strategies, we are on the verge of a perfect storm.
- ✓ We hope you take this opportunity to review pediatric respiratory assessment and clinical decision making with your teams.
- ✓ Finally, encourage all your callers to get their flu and COVID-19 vaccines!

## References

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- Image source (page 1): [www.healthychildren.org](http://www.healthychildren.org).