

DEFINITION

- A cough is the sound made when the cough reflex suddenly forces air and secretions from the lungs
- A coughing spell or attack is over 5 minutes of continuous, uncontrollable coughing
- Caution: You must rule out respiratory distress in these calls
- COVID-19 infections can present with these respiratory symptoms. If the child is not vaccinated AND COVID-19 exposure is possible, use the COVID-19 protocol for these clinical presentations. It will adequately cover triage and care advice. If you need more detailed information, use 2 protocols.

INITIAL ASSESSMENT QUESTIONS

Note to Triager - Respiratory Distress: Always rule out respiratory distress (also known as working hard to breathe or shortness of breath). Listen for grunting, stridor, wheezing, tachypnea in these calls. How to assess: Listen to the child's breathing early in your assessment. Reason: What you hear is often more valid than the caller's answers to your triage questions.

1. ONSET: "When did the cough start?"
2. SEVERITY: "How bad is the cough today?"
3. COUGHING SPELLS: "Do they go into coughing spells where they can't stop?" If so, ask: "How long do they last?"
4. CROUP: "Is it a barking, croupy cough?"
5. RESPIRATORY STATUS: "Describe your child's breathing when they're not coughing. What does it sound like?" (e.g., wheezing, stridor, grunting, weak cry, unable to speak, retractions, rapid rate, cyanosis)
6. CHILD'S APPEARANCE: "How sick is your child acting?" "What are they doing right now?" If asleep, ask: "How were they acting before they went to sleep?"
7. FEVER: "Does your child have a fever?" If so, ask: "What is it, how was it measured, and when did it start?"
8. CAUSE: "What do you think is causing the cough?" Age 6 months to 4 years, ask: "Could they have choked on something?"

- Author's note: IAQ's are intended for training purposes and not meant to be required on every call.

TRIAGE ASSESSMENT QUESTIONS**Call EMS 911 Now**

Severe difficulty breathing (struggling for each breath, unable to speak or cry because of difficulty breathing, making grunting noises with each breath)

Triage Tip: Listen to the child's breathing.

Child has passed out or stopped breathing

R/O: apnea, anaphylaxis, cough syncope

Lips or face are bluish (or gray) when not coughing

R/O: cyanosis and need for oxygen

Sounds like a life-threatening emergency to the triager

See More Appropriate Protocol

Stridor (harsh sound with breathing in) is present

[Go to Protocol: Croup \(Pediatric\)](#)

Hoarse voice with deep barking cough and croup in the community

[Go to Protocol: Croup \(Pediatric\)](#)

Choked on a small object or food that could be caught in the throat

[Go to Protocol: Choking - Inhaled Foreign Body \(Pediatric\)](#)

Previous diagnosis of asthma (or RAD) OR regular use of asthma medicines for wheezing

[Go to Protocol: Asthma \(Pediatric\)](#)

Age < 2 years and given albuterol inhaler or neb for home treatment to use within the last 2 weeks

[Go to Protocol: Bronchiolitis Follow-up Call \(Pediatric\)](#)

COVID-19 suspected by triager (such as known COVID in household)

[Go to Protocol: COVID-19 - Diagnosed or Suspected \(Pediatric\)](#)

Wheezing is present, but NO previous diagnosis of asthma or NO regular use of asthma medicines for wheezing

[Go to Protocol: Wheezing - Other Than Asthma \(Pediatric\)](#)

Coughing occurs within 21 days of whooping cough EXPOSURE

[Go to Protocol: Whooping Cough Exposure \(Pediatric\)](#)

Influenza suspected by triager (such as known influenza in household)

[Go to Protocol: Influenza \(Flu\) - Suspected \(Pediatric\)](#)

Measles suspected (measles exposure in prior 3 weeks)

[Go to Guideline: Measles - Diagnosed or Suspected \(Pediatric\)](#)

Go to ED Now

Choked on a small object that could be caught in the throat

[R/O: airway FB](#)

Coughed up blood (more than blood-tinged sputum)

[R/O: pneumonia, FB, tuberculosis](#)

Retractions - skin between the ribs is pulling in (sinking in) with each breath (includes suprasternal retractions)

[R/O: pneumonia](#)

Oxygen level <92% (<90% if altitude > 5000 feet) and any trouble breathing

Age < 8 weeks with fever 100.4 F (38.0 C) or higher by any route (rectal reading preferred)

Fever and weak immune system (sickle cell disease, HIV, chemotherapy, organ transplant, adrenal insufficiency, chronic steroids, etc)

[R/O: serious bacterial infection. Note: if available, refer to established specialist.](#)

Go to ED/UCC Now (or to Office Now per Practice Policy)

Difficulty breathing present when not coughing

Triage Tip: Listen to the child's breathing.

Rapid breathing (Breaths/min > 60 if < 2 mo; > 50 if 2-12 mo; > 40 if 1-5 years; > 30 if 6-11 years; > 20 if > 12 years old)

R/O: respiratory distress. Caution: do not attribute abnormal RR to fever.

Lips have turned bluish during coughing, but not present now

R/O: bronchiolitis, FB, or pertussis

Can't take a deep breath because of chest pain

R/O: pneumonia, pleurisy

Stridor (harsh sound with breathing in) is present

R/O: croup

Age < 3 months old (Exception: coughs a few times)

R/O: pneumonia, chlamydia, pertussis

Drooling or spitting out saliva (because can't swallow) (Exception: normal drooling in young children)

R/O: peritonsillar abscess, retropharyngeal abscess

Dehydration suspected (e.g., no urine in > 8 hours, no tears with crying, very dry mouth, tired appearing, etc)

Age 8 -12 weeks with fever 100.4° F (38.0° C) or higher by any route (rectal reading preferred)

High-risk child (e.g., underlying heart, lung or severe neuromuscular disease)

Reason: high risk for respiratory distress

Child sounds very sick or weak to the triager

Reason: severe acute illness or serious complication suspected

Go to Office Now

Wheezing (purring or whistling sound) occurs

Fever > 105° F (40.6° C)

R/O: serious bacterial infection

Age < 1 year and milk intake < 50% of normal amount

R/O Dehydration

Discuss With PCP and Callback by Nurse Within 1 Hour

Oxygen level <92% (90% if altitude > 5000 feet) and no trouble breathing

Note to triager: abnormal reading needs to persist or occur more than once

See in Office Today

Chest pain that's present even when not coughing

R/O: pleurisy

Continuous (nonstop) coughing

R/O: asthma

Blood-tinged sputum coughed up more than once

Age < 2 years and ear infection suspected by triager

Reason: recognizes child too young to report earache

Fever returns after going away > 24 hours and symptoms worse or not improved

R/O: otitis media or sinusitis (if symptoms better, probably onset of new URI)

Age < 3 months and triager concerned about difficulty feeding

See in Office Today or Tomorrow

Earache

R/O: otitis media

Sinus pain (not just congestion) persists > 48 hours after using nasal washes (Age: 6 years or older)

R/O: sinusitis

Age 3-6 months and fever with cough

Fever present > 3 days

R/O: pneumonia

See in Office Within 3 Days

Vomiting from hard coughing occurs 3 or more times

Coughing has kept home from school for 3 or more days

Pollen-related cough not responsive to antihistamines

R/O: asthma

Nasal discharge present > 14 days

R/O: strep rhinitis in infants, sinusitis, allergic rhinitis

Whooping cough in the community and coughing lasts > 2 weeks

Cough has been present > 3 weeks

R/O: asthma, exercise-induced bronchospasm, FB, smoking in teens

Concerns about vaping or smoking

Reason: discuss health risks with HCP

Triager thinks child needs to be seen for non-urgent problem

Caller wants child seen for non-urgent problem

Home Care

Cough (lower respiratory infection) with no complications

Pollen-related cough (allergic cough)

Home Care Advice for Cough

1. **Reassurance and Education - Cough:**
 - It doesn't sound like a serious cough.
 - Coughing up mucus is very important for protecting the lungs from pneumonia.
 - We want to encourage a productive cough, not turn it off.
2. **Hard Coughing Treatment:**
 - **Age** less than 1 year: Keep your baby well hydrated with breast milk or formula. Reason: makes it easier to cough up mucus.
 - **Age** 1 year and older: For hard coughing, use **Honey** 1/2 to 1 tsp (2 to 5 ml). Reason: soothes the throat and loosens the cough.
 - **Age** 6 years and older: For hard coughing, use **Cough Drops** (throat drops) or hard candy. Reason: decreases the tickle in the throat. Note: also continue honey.
 - **Caution:** avoid cough drops before 6 years. Reason: risk of choking.
 - Mild coughing doesn't need any treatment except staying well hydrated.
3. **OTC Cough Medicine - Not Advised:**
 - OTC cough medicines are not approved by the FDA until 6 years of age.
 - Reasons: not safe and can cause serious side effects. Also, no proven benefit for children.
 - Finally, honey has been shown to work better. Caution: Avoid honey until 1 year old.
 - Triager Advice: If the caller insists on using one and the child is over 6 years old, use one with dextromethorphan (DM).
 - Follow the dosing instructions on the package.
 - Indication: Give only for severe coughs that interfere with sleep, school or work.
 - Don't use under 6 years of age. Reason: cough is a protective reflex.
4. **Coughing Attacks - Warm Mist and Fluids:**
 - Any age: Breathe warm mist (such as with shower running in a closed bathroom).
 - Age 1 year and older: Also sip some warm clear fluids, such as apple juice or herbal tea (such as chamomile or lemon tea with honey).
 - Reason: Both relax the airway and loosen up any phlegm.
 - What to Expect: The coughing attack should stop. But, your child will still have their baseline cough.
5. **Vomiting from Coughing:**
 - For vomiting that occurs with hard coughing, reduce the amount given per feeding (e.g., in infants, give 2 oz. or 60 ml less formula)
 - Reason: Cough-induced vomiting is more common with a full stomach.
6. **Encourage Fluids:**
 - Encourage your child to drink adequate fluids to prevent dehydration.
 - This will also thin out the nasal secretions and loosen the phlegm in the airway.
7. **Humidifier:**
 - If the air is dry, use a humidifier (reason: dry air makes coughs worse).

8. **Fever Medicine:**
 - For fever above 102° F (39° C), give acetaminophen (e.g., Tylenol) or ibuprofen.
 - For fevers 100-102 F (37.8 to 39 C), fever medicines are not needed. Reason: Fever turns on your body's immune system. Fever helps fight the infection.
9. **Avoid Tobacco Smoke:**
 - Active or passive smoking makes coughs much worse.
10. **Contagiousness:**
 - Your child can return to day care or school after the fever is gone and your child feels well enough to participate in normal activities.
 - For practical purposes, the spread of coughs and colds cannot be prevented.
11. **Expected Course:**
 - Viral coughs normally last 2 to 3 weeks.
 - Antibiotics are not helpful.
 - Sometimes your child will cough up lots of phlegm (mucus). The mucus can normally be gray, yellow or green.
12. **Call Back If:**
 - Difficulty breathing occurs
 - Wheezing occurs
 - Fever lasts over 3 days
 - Cough lasts over 3 weeks
 - Your child becomes worse
13. **Extra Advice - Runny Nose with Lots of Discharge: Blow or Suction the Nose**
 - The nasal mucus and discharge is washing viruses and bacteria out of the nose and sinuses.
 - Having your child blow the nose is all that is needed. Teach your child how to blow the nose at age 2 or 3.
 - For younger children, gently suction the nose with a suction bulb.
 - If the skin around the nostrils becomes sore or irritated, apply a little petroleum jelly twice a day. Cleanse the skin first with water.
 - **Call Back If:** Nasal discharge lasts over 14 days.
14. **Extra Advice - Nasal Saline to Open a Blocked Nose:**
 - Use saline (salt water) nose drops or spray to loosen up the dried mucus. If you don't have saline, you can use a few drops of bottled water or clean tap water. (If under 1 year old, use bottled water or boiled tap water.)
 - **Step 1:** Put 3 drops in each nostril. If under 1 year old, use 1 drop at a time.
 - **Step 2:** Blow (or suction) each nostril separately, while closing off the other nostril. Then do other side.
 - **Step 3:** Repeat nose drops and blowing (or suctioning) until the discharge is clear.
 - **How Often:** Do nasal saline rinses when your child can't breathe through the nose.
 - **Age Limit:** If under 1 year old, use no more than 4 times per day. Before breast or bottle feedings are a good time.
 - Saline nose drops or spray can be bought in any drugstore. No prescription is needed.
 - Reason for nose drops: Suction or blowing alone can't remove dried or sticky mucus. Also, babies can't nurse or drink from a bottle unless the nose is open.
 - Other option: use a warm shower to loosen mucus. Breathe in the moist air, then blow (or suction) each nostril.
 - For young children, can also use a wet cotton swab to remove sticky mucus.
15. **Extra Advice: Pollen-Related Allergic Cough - Antihistamines**
 - Reassurance: Pollens usually cause a reaction in the nose and eyes. In some children with hay fever, cough is one of the main symptoms.
 - Antihistamines can bring an allergic cough and nasal allergy symptoms under control within 2

hours.

- Long-Acting (LA) antihistamines, such as Zyrtec or store brand cetirizine that last up to 24 hours, are preferred. Age limit: 6 months and older.
- Cetirizine dosing for 6 months to 2 years (US): 2.5 mL (2.5 mg) every 24 hours. For 2 years and older, follow package directions for dosing.
- Canada: Zyrtec is Reactine. Do not use under 2 years unless advised by a doctor.
- The key to hay fever control is to give antihistamines every day during pollen season.

16. **Extra Advice - Vomiting Medicines during Coughing Fits:**

- For medicines that are vomited during coughing, give them again when coughing is under better control.
- If vomited prescription medicine due to coughing, repeat the dose if given within the last 60 minutes.
- For over-the-counter medications, use nurse judgment whether repeat dose is needed or not. May repeat vomited dose once within the last 60 minutes.

FIRST AID

N/A

BACKGROUND INFORMATION

Matching Pediatric Care Advice (PCA) Handouts for Callers

Detailed home care advice instructions have been written for this protocol. If your software contains them, they can be sent to the caller at the end of your call. Here are the names of the pediatric handouts that are intended for use with this protocol:

- Cough - Allergic
- Cough - Viral (Age 0-1)
- Cough - Viral (Age 1-5)
- Cough - Viral (Age 6-21)
- Coughs and Colds: Medicines or Home Remedies?
- Croup
- Fever - How to Take the Temperature
- Fever - Myths Versus Facts
- Acetaminophen (Tylenol) Dosage Table - Children
- Ibuprofen (Advil, Motrin) Dosage Table - Children

Causes of Cough

- **Common Cold.** Most coughs are part of a cold that includes the lower airway. The medical name is viral bronchitis. The bronchi are the lower part of the airway that go to the lungs. Bronchitis in children is always caused by a virus. This includes cold viruses, influenza and croup. Bacteria do not cause bronchitis in healthy children.
- **Sinus Infection.** The exact mechanism is unknown. It may be that post-nasal drip irritates the lower throat. Or pressure within the sinus may trigger the cough reflex.
- **Allergic Cough.** Some children get a cough from breathing in an allergic substance. Examples are pollens or cats. Allergic coughs can be controlled with allergy medicines, such as Benadryl.
- **Asthma.** Asthma is the most common cause of chronic coughs in children. In adults, it's smoking.
- **Air Pollution Cough.** Fumes of any kind can irritate the airway and cause a cough. Tobacco smoke is the most common example. Others are auto exhaust, smog and paint fumes.
- **Exercise Induced Cough.** Running will make most coughs worse. If the air is cold or polluted,

coughing is even more likely.

- **Serious Causes.** Pneumonia, bronchiolitis, whooping cough and airway foreign body (object)

Cough Variant Asthma

- Asthma is the most common cause of chronic cough in children.
 - Some 25% of children with asthma only cough and never wheeze (called cough variant asthma).
 - The cough is usually dry (nonproductive). Coughing spells can come on suddenly.
 - The coughing spells have the same triggers as asthma attacks.
 - The lung exam and all asthma tests are normal.
 - Cough variant asthma is treated with asthma meds. It responds best to inhaled steroids.
- Antihistamines sometimes help.

Respiratory Distress Severity

- **Mild:** no SOB at rest, mild SOB with walking, speaks normally in sentences, can lay down flat, no retractions.
 - **Moderate:** SOB at rest, speaks in phrases, prefers to sit (can't lay down flat), mild retractions.
 - **Severe:** severe SOB at rest, speaks in single words, struggling to breathe, severe retractions.
- (Exception: These symptoms are transient and only present when coughing).

Respiratory Distress (also known as Working Hard to Breathe or Shortness of Breath)

- Always rule out respiratory distress. Listen for grunting, stridor, wheezing, tachypnea in respiratory calls.
- How to assess: Listen to the child's breathing early in your assessment. Reason: What you hear is more valid than the caller's answers to your triage questions.
- Reason: It's the leading cause of ED under-referral and adverse outcomes in the first 3 years of life.

Trouble Breathing: How to Discuss Respiratory Distress with Callers

- Trouble breathing is a reason to see a doctor right away.
- Here are symptoms to watch for:
- Struggling for each breath or shortness of breath
- Tight breathing so that your child can barely speak or cry
- Ribs are pulling in with each breath (called retractions)
- Breathing has become noisy (such as wheezes)
- Lips or face turn a blue color

Fever Does Not Cause Tachypnea (Increased Respiratory Rates)

- Tachypnea should not be attributed to fever.
- Tachypnea is caused by lung disease (such as pneumonia or bronchiolitis) until proven otherwise. It's often the earliest sign of mild respiratory distress and often hypoxia.
- In infants, significant nasal congestion can lead to tachypnea which can be resolved by suctioning. In young infants, obligate nasal breathing can be a factor.
- It can also be caused by metabolic acidosis, such as DKA..
- Evidence: In a cohort of over 235,000 pediatric patients presenting to emergency and urgent care, there was no association between elevated temperature and changes in respiratory rate.
- Reference: Heal C, Harvey A, Brown S, et al. The association between temperature, heart rate, and respiratory rate in children aged under 16 years attending urgent and emergency care settings. Eur J Emerg Med. 2022 Sep 6;29(6):413-416.

Sputum or Phlegm

- Yellow or green phlegm is a normal part of the healing process of viral bronchitis.
- This means the lining of the trachea was damaged by the viral infection and is being coughed up as new mucosa replaces it.
- Bacteria do not cause bronchitis in healthy children. Purulent sputum is a poor predictor for bacterial superinfection. Antibiotics are not indicated for the yellow or green phlegm seen with colds.
- The main treatment of a productive cough is to facilitate it with good fluid intake, a humidifier (if the air is dry) and warm chicken broth or apple juice for coughing spasms (if over age 1).

Productive Coughs Don't Help with Etiology

- Dry coughs usually turn into wet (productive) coughs during the course of a lower respiratory tract infection.
- Few coughs remain only dry or only wet.
- The amount of mucus production does not help determine etiology.
- There are no nonproductive cough organisms or productive cough organisms.
- That is why there are no separate Productive Cough and Non-Productive Cough guidelines.

Coughing up Blood-Tinged (Blood-Streaked) Sputum

- In adults, coughing up blood-tinged sputum is serious until proven otherwise. Lung cancer, pulmonary emboli and such must be considered.
- In normal children, coughing up blood-tinged sputum is rare. When it happens, it's usually benign and transient.
- It mainly occurs in teens with a forceful hacking cough (or coughing fits) that damages the larynx or trachea (a micro-tear). If it only occurs a few times, the patient does not need to be seen.
- Because this "reason for call" is rare in pediatrics, this triage question is not included in all the respiratory protocols.
- Safety of this decision: It is unlikely that a parent or patient would not spontaneously mention their concern about any blood seen in the sputum. The triage inquiry needs to focus on recognizing respiratory distress. In addition, there often are too many triage questions for triage nurses to ask in the respiratory protocols.
- Hopefully, this perspective explains why a coughing up blood question is only included in a few protocols such as this one.

Congestion - Types

Congestion means different things to different people. None of the causes are usually urgent. Ask a few questions to determine which of the following 4 protocols would be most helpful:

- **Colds:** Use for nasal congestion. This is a common problem for infants.
- **Cough:** Use for chest congestion or "rattles" (vibrations) in the chest.
- **Ear Congestion:** Use for a blocked ear, muffled hearing or ear popping sensation.
- **Sinus Pain or Congestion:** Use for a blocked sinus, sinus pressure or head congestion.

Benign Causes of Noisy Breathing without Respiratory Distress

- Mechanism: Noisy breathing is due to vibrations set up somewhere in the airway (nose, throat, vocal cords, windpipe, bronchi or lungs)
- Rattling Sounds: Rattling sounds are due to vibrations from mucus pooling in the lower throat or larynx (not the lungs). These transmitted sounds can be eliminated by coughing or swallowing. Temporarily placing an infant on his stomach (prone) while observed often helps. Many parents are needlessly concerned about a "rattly chest". (See Cough)
- Snorting Sounds: Most of these daytime sounds are from vibrations in the nose - usually partial

blockage by nasal mucus. If the snorting makes your child uncomfortable, the problem can be eliminated by warm water or saline nose drops and nasal suction. (See Colds)

Continuous or Nonstop Coughing: How to Define

- **Caution:** Don't directly ask the caller, "Is the coughing continuous or nonstop?" You will commonly trigger a positive response that is false. Instead ask questions about what the cough keeps the child from doing (function).
- **First:** To qualify as continuous coughing, the coughing needs to greatly interfere with function.
- The baby or child is not able to sleep for more than a 30 minutes at a time. Then he's fully awake and crying again. Coughing during sleep does not count.
- The baby or child cannot drink adequate fluids. In babies, formula intake is less than half of normal intake. Recent research found this to be associated with hypoxia.
- The baby or child is not able to play.
- **Second:** The severe, tight coughing should be heard at the time of the call. In fact, for any respiratory call about a child less than 2 years old, our policy is that the nurse needs to listen to the child's breathing over the phone. Listening early in assessment may help reduce call time.
- **Third:** The baby or child must fail to improve on standard treatment advice before referring them to be seen urgently. That means they have already tried warm fluids, honey (if 1 year or older), warm mist, nasal suctioning with saline drops.
- Reasons for seeing these children: Many of them are hypoxic, especially if they are infants.

Dextromethorphan Cough Medicines

- The most common cough suppressant in OTC cough medications is dextromethorphan. Usually the letters 'DM' appear in the name. An example is Robitussin DM.
- Some research (Kelly 2004) suggests that dextromethorphan is no better than placebo at reducing the severity and frequency of coughing in children.
- These protocols do not recommend the use of DM cough medicines for any age group.
- The care advice in these protocols only supports DM containing cough syrups only if the caller insists on using one and the child is age 6 or older. The rationale for this is: patients may benefit from the placebo effect of DM, many parents demand a recommendation for a cough syrup even after being told about honey, and generally DM has no serious side effects.
- Cough drops can often be substituted for cough syrups after age 6. While some would consider them a placebo similar to cough medicines, they may actually reduce coughing by soothing an irritated throat. In addition they have the advantage of portability. While cough drops with DM are available, they offer no advantage over plain cough drops and are not worth the added expense.
- It is important to note that dextromethorphan has become a drug of abuse. This problem has been seen most commonly in the adolescent population. Overdose symptoms can range from giggling, euphoria, to hallucinations or coma. (See Substance Use protocol for details)

Codeine Medications for Coughs - Never Recommend in Children or Teens

- Prescription cough syrups containing codeine have long been available. It is available OTC in some states.
- An FDA advisory panel (2015) recommended that codeine not be used for the treatment of cough in children under the age of 18. Also do not prescribe codeine products to breastfeeding mothers.
- Reasons to not use: risk of serious side effects. In overdose, it has the unpredictable risk of respiratory depression, slowed breathing and respiratory arrest. Mechanism: Some patients have the gene to rapidly convert codeine to morphine. Also, codeine and hydrocodone are opioids. Exposure to opioid drugs can increase the risk of future opioid addiction.
- Resource: Tobias JD. AAP Committee on Drugs. Pediatrics 2016.

Cough and Cold Medicines: FDA Recommendation (October 2008)

In October 2007, the AAP and other experts testified before the FDA about the safety of cough and cold medicines for young children. According to FDA data from 1969 to 2006, adverse reactions included 54 deaths from decongestants and 69 deaths from antihistamines. To put this in perspective, that's 3.3 reported deaths per year. The majority occurred in children younger than 2 years of age. In January 2008, the FDA issued a strong recommendation that parents "not use OTC cough and cold products to treat infants and children less than 2 years of age". In October 2008, the FDA supported changing this cutoff to 6 years of age. These recommendations have been implemented within the related guidelines. In addition, the information has been added to all the Dosage Tables for OTC medicines.

- Under 6 years of age: advise callers that OTC cough and cold medicines should never be used in this age group because of potential serious side effects. They also lack efficacy. (FDA recommendation October 2008)
- Over 6 years of age: advise callers that the best treatment for coughs is honey or cough drops. The best treatment for nasal congestion is nasal washes with saline drops or spray. However, if a parent wants to use a cough or cold medicine, help them calculate a safe dosage. (FDA advisory panel has no recommendation at this time)
- For all ages, discourage the use of multiple-ingredient cough and cold medicines. (Reason: risk of overdosage).

Honey as a Cough Syrup: Proven Efficacy

- A 2007 study compared the efficacy of honey to DM to no treatment for nocturnal coughing.
- Honey consistently scored the best for reducing cough frequency and cough severity. It also scored best for improving sleep.
- DM did not score significantly better than no treatment at all.
- The study group contained 105 children age 2 to 18 years.
- The dose of honey used was ½ tsp (2 ml) for 2-5 year-olds, 1 teaspoon for 6 to 11 year-olds, and 2 tsp for 12 to 18 year-olds. A single dose was given at bedtime.
- One explanation for how honey works is that sweet substances naturally cause reflex salivation and increased airway secretions. These secretions may lubricate the airway and remove the trigger (or tickle) that causes a dry, nonproductive cough.
- Paul IM. Arch Pediatr Adolesc Med. 2007; 161(12):1140-1146.
- A 2012 study compared the efficacy of honey to a placebo. Honey showed the most improvement in cough frequency and severity during the night.
- Study group: 300 children age 1 to 5 years.
- Dosage of honey: 10 ml given as a single dose 30 minutes before bedtime.
- Cohen HA. Pediatrics 2012; 130:465-471.

Honey and Infantile Botulism

- Honey has a small association with infantile botulism.
- Mechanism: Clostridium botulinum spores are present in some honey products.
- Age of onset: 1 to 44 weeks (median: 15 weeks).
- Incubation period after consuming spores: 3-30 days
- Presenting symptoms: constipation, weak suck, weak cry, ptosis, droopy face. Progresses to generalized weakness.
- Therefore, honey is not recommended for any child less than 12 months of age in these protocols for any symptom.
- In the US: An average of 110 cases of botulism is reported in the US annually, 70% are infantile botulism.
- In Canada: 57 cases of infantile botulism were reported from 1983-2018 to the British Columbia Centre for Disease Control. That's 2 cases per year.
- Cause: Honey is a minor cause. Approximately 10% of cases of infantile botulism are associated with honey. The other 90% are either idiopathic or associated with blowing dust (especially in areas

of active housing development). Botulism spores are found ubiquitously in all soil. They are also present fairly uniformly in vacuum cleaner contents.

- Source: AAP Redbook

Antibiotics for Cough

- Acute Bronchitis: In healthy people, acute bronchitis is viral and part of a cold. Antibiotic therapy provides no benefit. There is no effect on duration of illness, severity of symptoms or return to school.
- Common Cold: Colds are caused by viruses. No medicine, "shot", or antibiotic will cure an uncomplicated cold.
- Pneumonia: Pneumonia in childhood is 90% viral and 10% bacterial. Antibiotic therapy is only helpful for bacterial pneumonia.
- Whooping Cough (Pertussis): Whooping cough is caused by a bacteria (*Bordetella pertussis*). Treatment with antibiotics is indicated when whooping cough is diagnosed.

Vaping

- Talk with your child about the dangers of vaping.
- Vaping can cause severe lung injury. The lung damage can be permanent.
- Vaping can even cause death.
- Vaping tobacco also causes nicotine addiction.
- The legal age to purchase vaping products is 21 in the US.
- Encourage your teen to avoid vaping. If they have started, urge them to quit.
- Warning: Never use home-made or street purchased vaping solutions. Reason: they have caused most lung damage

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