My kid has a terrible cough: Is he ok?

photo by Lexi Logan

We are seeing a lot of coughing kids in the office these days. In general we like coughs. Coughs keep nasty germs from lodging in the lungs. It is hard for parents to tell if a cough is from a cold, an asthma flare, pneumonia, allergies, or something else. Regardless of what is causing your child to cough, even if you think your child has a simple cold, it's important to recognize when your child is having difficulty breathing. Share this information with all of your child's caretakers, including teachers. Too often we get a child in our office with labored breathing which started during school hours but was not recognized until parent pick-up time.

Signs of difficulty breathing:

- Your child is breathing faster than normal.

- Your child's nostrils flare with each breath in an effort to extract more oxygen from the air.
- Your child's chest or her belly move dramatically while breathing—lift up her shirt to appreciate this.
- Your child's ribs stick out with every breath she takes because she is using extra muscles to help her breathe—again, lift up her shirt to appreciate this. We call these movements "retractions."
- You hear a grunting sound (a slight pause followed by a forced grunt/whimper) or a wheeze sound at the end of each exhalation.
- A baby may refuse to breast feed or bottle feed because the effort required to breathe inhibits her ability to eat.
- An older child might experience difficulty talking.
- Your child may appear anxious as she becomes "air hungry" or alternatively she might seem very tired, exhausted from the effort to breathe.
- Your child is pale or blue at the lips.

In this video, the child uses extra chest muscles in order to breathe. He tries so hard to pull air into his lungs that his ribs stick out with each inhalation. Try inhaling so that your own ribs stick out with every breath- you will notice it takes a lot of effort.

https://www.twopedsinapod.org/wp-content/uploads/2016/01/retractions.m4v

For those whose children have sensitive asthma lungs, review our earlier asthma posts. Understanding Asthma Part I explains asthma and lists common symptoms of asthma, including cough, and Asthma Medicine Made Simple tells how to treat asthma, summarizes commonly used asthma medicine, and offers environmental changes to help control asthma symptoms.

Julie Kardos, MD and Naline Lai, MD

Does loud music damage hearing?

photo from pixabay

Dr. Lai’s son practices his saxophone with headphones on, while Dr. Kardos’s son rarely remembers to protect his ears while practicing drums. While admirable that they both practice their instruments, guess which one is more at risk for teen hearing loss?

Sound is described by decibels (loudness) and by frequency (pitch) measured in hertz. An example of a high frequency sound is a person whispering. A very high frequency noise is the sound of a dog whistle. By thirty years old, almost everyone experiences some hearing loss at frequencies above 15 hertz. If you are this age, this is why everyone now seems to mumble at parties. A few years ago, teens capitalized on this

natural hearing loss phenomenon with “mosquito” ringtones—high frequency cell phone rings heard only by younger ears but not by prying adult ears. For kicks, check out your ability to hear high frequencies at this non-scientific site.

Exposure to loud sounds at high decibels hastens the natural progression of high frequency hearing loss. The ringing in the ears after a loud concert or a day of weed-wacking is the “sound” of hearing loss occurring. Damage to the hearing nerve (cochlear nerve) in an ear can occur from a one time exposure to dangerously high decibels or from repetitive exposure over time.

What is the margin of safety?

- Sounds above 85 decibels cause damage.
- Those below 75 decibels rarely cause problems.
- The humming of a refrigerator is 40 decibels.
- Ordinary conversations are 60 decibels.
- City traffic registers at 80 decibels.
- Lawn mowers and hair dryers are around 90 decibels.
- Firecrackers explode at 120-140 decibels.
- After two minutes, exposure to rock concerts (which usually register at 110 decibels) may cause damage.
- For lawn mowing, the permissible exposure time of exposure is some time between 2-4 hours.

This site gives maximum recommended lengths of time for exposure to loud sounds.

When we last published a post on teen hearing loss five years ago, there was concern that amongst teens, high frequency hearing loss was on the rise. Turns out this may not be the case, however, there is still concern that teens are putting themselves at risk for hearing loss from their frequent use of headsets and earbuds. Because of differences in ear buds and how music is recorded, there is no uniform way to regulate the volume reaching your teen’s ears. However, as a general rule

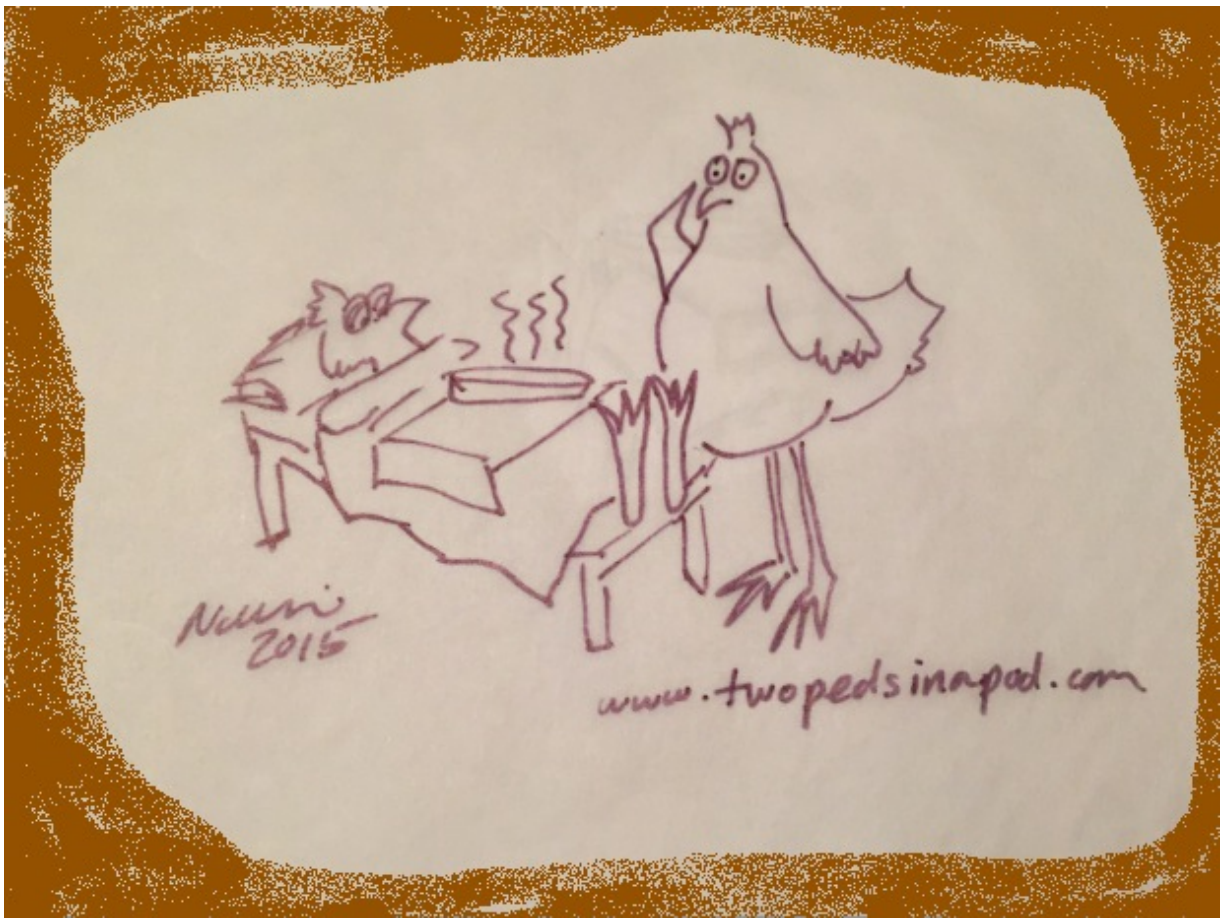
of thumb, if you can hear your teen's music playing when he has ear buds in, it's too loud. Kids should be able to hear normal conversations even when their devices are on. Frequently asked questions about sound settings for Apple devices can be found at the Apple site. Encourage your kids to protect hearing by turning down the sound, and by using ear plugs or sound blocking headphones when appropriate.

Finally, we should mention signs of "selective hearing loss." Many parents describe this form of "hearing loss" in the office. In these cases, a child does not hear her mom admonish "Clean your room," yet hears her mom whisper "Let's go out for ice cream."

Even if your teen can hear, he may not listen!

Julie Kardos, MD and Naline Lai, MD

Does my child have a cold or the flu?



"Now what kind of soup did the doctor recommend? Was that tomato soup? Mushroom Barley?"

Headlines remind us daily that the US is officially in the midst of flu season. We are also in the midst of a really yucky cold season. We have seen numerous kids in our offices with bad colds and others with flu.

Parents ask us every day how they can tell if their child has a cold or the flu. While no method is fool proof, here are some typical differences:

The flu, caused by influenza virus, comes on suddenly and makes you feel as if you've been hit by a truck.

Flu almost always causes fever of 101°F or higher and some respiratory symptoms such as runny nose, cough, or sore throat

(many times, all three). Children, more often than adults, sometimes will vomit and have diarrhea along with their respiratory symptoms, but contrary to popular belief, there is no such thing as “stomach flu.” In addition to the usual respiratory symptoms, the flu causes body aches, headaches, and often the sensation of your eyes burning. The fever usually lasts 5-7 days. All symptoms come on at once; there is nothing gradual about coming down with the flu.

Colds, even really yucky ones, start out gradually.

Think back to your last cold: first your throat felt scratchy or sore, then the next day your nose got stuffy or then started running profusely, then you developed a cough. **Sometimes during a cold you get a fever for a few days.** Sometimes you get hoarse and lose your voice. The same gradual progression of symptoms occurs in kids. In addition, kids often feel tired because of interrupted sleep from cough or nasal congestion. This tiredness leads to extra crankiness.

Usually kids still feel well enough to play and attend school with colds.

The average length of a cold is 7-10 days although sometimes it takes two weeks or more for all coughing and nasal congestion to resolve.

Important news flash about mucus:

The mucus from a cold can be thick, thin, clear, yellow, green, or white, and can change from one to the other, all in the same cold. The color of mucus does NOT tell you if your child needs an antibiotic and will not help you differentiate between a cold and the flu. Here’s a post on sinus infections vs. a cold.

Remember: colds = gradual and annoying. Flu = sudden and miserable.

If your child has a runny nose and cough, but is drinking well, playing well, sleeping well and does not have a fever and the symptoms have been around for a few days, the illness is unlikely to “turn into the flu.”

Fortunately, a vaccine against the flu is available for all kids over 6 months old

This flu vaccine can prevent the misery of the flu. In addition, vaccines against influenza save lives by preventing flu-related complications such as pneumonia, encephalitis (brain infection), and severe dehydration. Even though we are starting to see a lot of flu, it is not too late to get the flu vaccine for your child. Please schedule a flu vaccine ASAP if your child has not yet received one for this season. Parents and caregivers should also immunize themselves. We all know how well a household functions when Mom or Dad have the flu… not very well! Sadly there have been 20 children so far this flu season who died from the flu. In past years many flu deaths were in kids who did not receive the flu vaccine, so please vaccinate your children against the flu if you have not already. Unfortunately, the vaccine isn’t effective in babies younger than 6 months, so it is important to vaccinate everyone who lives or cares for a baby this young.

Be sure to read our article on ways to prevent colds and flu. As pediatricians, we remind you to WASH HANDS, make sure your child eats healthy, gets enough sleep, and avoid crowds, when possible. As moms, we add that you might want to cook up a pot of good old-fashioned chicken soup to have on hand in case illness strikes your family.

Julie Kardos, MD and Naline Lai, MD

Top parenting New Year’s resolutions 2018

A lot of life’s issues boil down to the essentials…eat, sleep, drink, pee, poop, love and learn… for your child and yourself. We are here to help you to carry out your parenting New Year’s resolutions in all of these areas.

1- **Eat** Resolve to help your picky eater become less picky. Become more patient and creative in helping your children eat new foods.

2- **Sleep** Resolve to fix your child's sleep problems. Help create a reasonable bedtime routine for your baby and end night time wakenings, and help your tired teen get better sleep.

3- **Drink** This year resolve to wean your toddler from the bottle/breast to a cup.

3- **Pee** Resolve to help your child avoid urine accidents and gain a better understanding of bed-wetting.

4- **Poop** For parents of newborns: resolve to help your gassy baby. For parents of toddlers: resolve to end the battle of the potty and encourage your child to potty train in a peaceful, non punitive and non-controlling way. Help solve your child's tendency to hold onto poop, which leads to constipation.

5- **Love and Learn** to understand your child's developmental abilities in order to discipline appropriately and have reasonable expectations. Learn how and when to use "time out."For your teen, learn how to talk with them. Help your child learn to "go it alone," and calm test/school work anxiety.

As for us, we resolve to continue to be your source of dependable pediatric advice. We resolve to keep current with pediatric advances, remain honest, and treat your family with respect and care as we help you grow your children into confident, independent adults.

Wishing you health and peace in the New Year,
Drs. Kardos and Lai

Non electronic last minute gift ideas

Still looking for that gift that does not involve screen time? We're reposting our back-to-basics gift ideas post:

0-3 months: Babies this age have perfect hearing and enjoy looking at faces and objects with contrasting colors. Music, mobiles, and bright posters are some age appropriate gift ideas. Infants self-soothe themselves through sucking- if you can figure out what your nephew's favorite type of binkie is, wrap up a bunch-they are expensive and often mysteriously disappear.

3-6 months: Babies start to reach and grab at objects. They enjoy things big enough to hold onto and safe enough to put in their mouths- try bright colored teething rings and large

plastic “keys.” We often see Sophie the Giraffe accompanying babies for their office visits. New cloth and vinyl books will likewise be appreciated; gnawed books don’t make great hand-me-downs.

6-12 months: Around six months, babies begin to sit up. Intellectually, they begin to understand “cause and effect.” Good choices of gifts include toys with large buttons that make things happen with light pressure. Toys which make sounds, play music, or cause Elmo to pop up will be a hit. For a nine-month-old old just starting to pull herself up to a standing position, a water or sand table will provide hours of entertainment in the upcoming year. Right now you can bring winter inside if you fill the water table with a mound of snow. Buy some inexpensive measuring cups and later in the summer a toddler will enjoy standing outside splashing in the water.

12-18 months: This is the age kids learn to stand and walk. They enjoy things they can push while walking such as shopping carts or plastic lawn mowers. Include gifts which promote joint attention. Joint attention is the kind of attention a child shares with people during moments of mutual discovery. Joint attention starts at two months of age when a parent smiles at their baby and their baby smiles back. Later, around 18 months, if a parent points at a dog in a book, she will look at the dog then look back at the parent and smile. A child not only shows interest in the same object, but will acknowledge that both she and the parent are interested. Joint attention is thought to be important for social and emotional growth.

18-24 months: Although kids this age cannot pedal yet, they enjoy riding on toys such as “big wheels” “Fred Flintstone” style. Dexterous enough to drink out of a cup and use a spoon and fork, toddlers can always use another place setting. Toddlers are also able to manipulate shape sorters and toys where they put a plastic ball into the top and the ball goes down a short maze/slide. They also love containers to collect things, dump out, then collect again.

Yes, older toddlers are also dexterous enough to swipe an ipad, but be aware, electronics can be a double edged sword– the same device which plays karaoke music for your daddy-toddler sing-along can be transformed into a substitute parent. The other day, a toddler was frightened of my stethoscope in the office. Instead of smiling and demonstrating to her toddler how a stethoscope does not hurt, the mother repeatedly tried to give her toddler her phone and told the child to watch a video. Fast forward a few years, and the mother will wonder why her kid fixates on her phone and does not look up at the family at the dinner table. Don't train an addiction. A device can be entertainment, learning, and communication but it is NOT a source of comfort.

2-3 years: To encourage motor skills, offer tricycles, balls, bubbles, and boxes to crawl into and out of. Choose crayons over markers because crayons require a child to exert pressure and therefore develop hand strength. Dolls, cars, and sand boxes all foster imagination. Don't forget those indestructible board books so kids can "read" to themselves. By now, the plastic squirting fish bath toys you bought your nephew when he was one are probably squirting out black specks of mold instead of water- get him a new set. Looking ahead, in the spring a three- year-old may start participating in team sports (although they often go the wrong way down the field) or in other classes such as dance or swimming lessons. Give your relatives the gift of a shin guards and soccer ball with a shirt. Offer to pay for swim lessons and package a gift certificate with a pair of goggles.

3-4 years: Now kids engage in elaborate imaginary play. They enjoy "dress up" clothes to create characters- super heroes, dancers, wizards, princesses, kings, queens, animals. Kids also enjoy props for their pretend play, such as plastic kitchen gadgets, magic wands, and building blocks. They become adept at pedaling tricycles or even riding small training-wheeled bikes. Other gift ideas include crayons, paint, markers, Play-doh®, or side-walk chalk. Children this age understand rules and turn-taking and can be taught simple card games such as "go fish," "war," and "matching." Three-year-olds recognize colors but can't read- so they can finally play the classic board game *Candyland*, and they can rote count in order to play the sequential

numbers game *Chutes and Ladders*. Preschool kids now understand and execute the process of washing their hands independently… one problem… they can't reach the faucets on the sink. A personalized, sturdy step stool will be appreciated for years.

5-year-olds: Since 5-year-olds can hop on one foot, games like Twister® will be fun. Kids this age start to understand time. In our world of digital clocks, get your nephew an analog clock with numbers and a minute hand… they are hard to come by. Five-year-olds also begin to understand charts– a calendar will also cause delight. They can also work jigsaw puzzles with somewhat large pieces.

8-year-olds: Kids at this point should be able to perform self help skills such as teeth brushing. Help them out with stocking stuffers such as toothbrushes with timers. They also start to understand the value of money so kids will appreciate gifts such as a real wallet or piggy bank. Eight-year-olds engage in rough and tumble play and can play outdoor games with rules. Think balls, balls, balls- soccer balls, kickballs, baseballs, tennis balls, footballs. Basic sports equipment of any sort will be a hit. Label makers will also appeal to this age group since they start to have a greater sense of ownership.

10-year-olds: Fine motor skills are quite developed and intricate arts and crafts such as weaving kits can be manipulated. Give a "cake making set" (no, not the plastic oven with a light bulb) with tubes of frosting and cake mix to bake over the winter break. Kids at this age love doodling on the long rolls of paper on our exam table. Get a kid a few rolls of banner paper to duplicate the fun. Buy two plastic recorders, one for an adult and one for a child, to play duets. The instrument is simple enough for ten-year-olds or forty-year-olds to learn on their own. Ten-year-olds value organization in their world and want to be more independent. Therefore, a watch makes a good gift at this age. And don't forget about books: reading skills are more advanced at this age. They can read chapter books or books about subjects of interest to them. In particular, kids at this age love a good joke or riddle book.

Tweens: Your child now has a longer attention span (30-40 minutes) so building projects such as K'nex models will be of interest to her. She

can now also understand directions for performing magic tricks or making animal balloons. This is a time when group identity becomes more important. Sleepovers and scouting trips are common at this age so sleeping bags and camping tents make great gifts. Tweens value their privacy – consider a present of a journal with a lock or a doorbell for her room. It's already time to think about summer camps. Maybe you can convince the grandparents to purchase a week for your child at robotics camp or gymnastics camp this year.

Teens: If you look at factors which build a teen into a resilient adult, you will see that adult involvement in a child's life is important. We know parents who jokingly say they renamed their teens "Door 1" and "Door 2," since they spend more time talking to their kids' bedroom doors than their kids. Create opportunities for one-on-one interaction by giving gifts such as a day of shopping with her aunt, tickets to a show with her uncle, or two hours at the rock climbing gym with dad.

Encourage physical activity. Sports equipment is always pricey for a teen to purchase- give the fancy sports bag he's been eying or give a gym membership. Cool techy trackers like Fitbit will always appreciated or treat your teen to moisture wicking work-out clothes.

Sleep! Who doesn't need it, and teens often short change themselves on sleep and fall into poor sleep habits. Help a teen enjoy a comfortable night of rest and buy luxurious high thread count pillow cases, foam memory pillows, or even a new mattress. After all, it been nearly 20 years since you bought your teen a mattress and he probably wasn't old enough at the time to tell you if he was comfortable. Since a teen often goes to bed later than you do, a remote light control will be appreciated by all.

Adolescence is the age of abstract thinking and self awareness– Google "wall decals" and find a plethora of inexpensive ways to jazz up his or her room with inspiring quotes.

Enjoy your holiday shopping.

Naline Lai, MD and Julie Kardos, MD

Update on teen meningococcal (meningitis) vaccines

Olga Pasick, mom of a teen who died of meningococcal disease, shares her personal experience and information about the updated guidelines.

I wish I had known the importance of vaccination for meningococcal disease before it was too late for my son. Back in September of 2004, David was a happy, healthy 13 year old, who came down with flu-like symptoms one evening. He first felt cold, then spiked a high fever, and vomited throughout the night. In the morning we called the pediatrician to have him seen. Everything ached, and he needed help getting dressed. That's when I noticed purplish spots on his chest and arms. I didn't know how serious that symptom was.

As soon as the doctors saw him, they knew he had meningococcal

disease. He was rushed to the ER for a spinal tap and treatment. Unfortunately, the disease spread quickly and his organs failed. David died within 24 hours of first developing those flu-like symptoms from a potentially vaccine-preventable disease. Unbelievable… and heartbreaking.

Meningococcal disease is spread through respiratory droplets, such as coughing or sneezing, or through direct contact with an infected person, such as kissing. About 1 in 10 people are carriers, and don't even know it. It doesn't affect everyone. It is difficult to diagnose because symptoms are similar to the flu, and include high fever, headache, stiff neck, nausea, vomiting, exhaustion, and a blotchy rash. The disease spreads quickly and within hours can cause organ failure, brain damage, amputations of limbs, and death.

The Centers for Disease Control and Prevention and the American Academy of Pediatrics recommend meningococcal vaccination for all 11-18 year olds. The newest recommendation is for permissive use (recommended on a case by case basis) of a type of meningococcal vaccine called meningococcal serotype B. The serotype B vaccine is for ages 16-23, with a preferred age of 16-18. This recommendation joins the long-standing recommendation that all adolescents get meningococcal A, C, W and Y vaccine (this one vaccine protects against these four serotypes) at age 11-12 with a booster dose at 16. The newer serotype B vaccine is particularly important for older adolescents and young adults because it is the most common cause of meningococcal disease in this age group. No vaccine is 100% effective, but it is the best preventative measure we can take.

Because of my experience, I became a member of the National Meningitis Association's (NMA) Moms on Meningitis (M.O.M.s) program. We are a coalition of more than 50 mothers from across the country whose children's lives were drastically affected by this disease, and are dedicated to supporting meningococcal prevention.

Visit the NMA website for more information and to view powerful personal stories of those affected. Talk to your doctor about vaccination. It could save a life. How I wish those recommendations were in place years ago.

Olga Pasick
Wall, New Jersey

Note: In the United States, you may know the meningococcal A, C, W and Y vaccine as either Menactra® or Menveo®. The serogroup B meningococcal vaccine you may recognize as either Bexsero® or Trumenba®.

Flu vaccine myth busters

Ben's runny nose, as depicted by Ben

The good news is that there was only a smattering of influenza (flu) cases across the United States over the summer. The great news is that according to the Centers for Disease Control, most of the detected strains are covered in this year's vaccine.

If you're still hesitant to vaccinate your family, let's talk frankly about some myths we sometimes hear about flu vaccines:

If my friend's child has flu symptoms, I'll just avoid their house to avoid catching the flu
False. According to the CDC , you are infectious the day before symptoms show up. So it is TOO LATE to avoid only those already sick.

My family never gets the flu so it's not necessary to get the vaccine.
False and dangerous. Saying "My child and I have never had the flu so we don't need the flu vaccine" is like saying, "I've never a car accident so I won't wear my seat belt."

I got the flu shot last year and then I got sick. So the flu shot must have made me sick.
Our condolences. True, you were sick. **But this statement is False,** because the illness was not caused by the flu vaccine. Vaccines are not real germs, so you can't "get" a disease from the vaccine. But to your body, vaccine proteins appear very similar to real germs and your immune system will respond by making protection against the fake vaccine germ. When the real germ comes along, pow, your body already has the protection to fend off the real disease.

It is important to realize that the vaccine takes about 2 weeks to take effect in your body. So, if you were unlucky enough to be exposed to someone with the flu and then got the vaccine the next day, you still have a good chance of coming down with the flu. Unfortunately, the vaccine will not have had a chance to work yet.

Please know, however, there is a chance that for a couple days after a vaccine, you will ache and have a mild fever. The reason? Your immune system is simply revving up. But no, the flu vaccine does not give you the flu.

No one dies from the flu anymore, do they? Flu is just not that dangerous, so my child does not need a flu shot. I will just take my chances with flu.

False! A total of 107 influenza-associated pediatric deaths were reported for the 2016-2017 season. In past seasons up to 90% of children who died from flu did not receive a flu vaccine. So please, vaccinate yourself and your children.

The vaccine coverage is awful.
Not the case this year. On the other hand, even if coverage was spotty, look at it this way– if half of the flu out there was covered, that's a lot fewer people that won't give your kid the flu.

Naline Lai, MD and Julie Kardos, MD

rev Oct. 10, 2017 see comments

Got little kids? One must-have number to put in your

phone: Poison Control

The number to put in your phone when you have little ones? Poison Control: **1-800-222-1222**. Text “POISON” TO 797979 to save the contact information in your smartphone.

Did your toddler eat dog poop? Or a berry from your backyard bush? Did you give the wrong medication to your child? **Call Poison Control**.

Experts at Poison Control will direct your next step. They have access to extensive data on poisoning, and they can give you that information much quicker than a drug-manufacturer or pharmacist or even your own doctor. **The call is free**.

One of Dr. Lai’s kids ate a mushroom from the yard when she was 20 months old—she called Poison Control. A mom asked Dr. Lai about carbon monoxide exposure—she called Poison Control. If doctors have a question about any ingestion or poisoning—we call Poison Control. But don’t wait for us to call, go ahead yourself and call.

People often jump first to the internet for information. However, a small 2013 study found that the internet is NOT the best place to research questions about toxins. Many sites fail to direct readers to the Poison Control Center, and those who do, fail to supply the proper phone number – again, that's **1-800-222-1222**. If you do want to use the internet, use www.PoisonHelp.org which is a product of the American Association of Poison Control Centers

If your child needs emergent treatment, surfing the internet for what to do next wastes precious time. Don't reach for your phone to "google it." In the case of a possible poisoning, reach for your phone and make a CALL.

It could be life-saving.

Julie Kardos, MD and Naline Lai, MD

Pediatric tidbits-probiotics, sport burnout and more

In front of “The Bean” in Chicago

We’re back from the American Academy of Pediatrics National Conference and Exhibition in Chicago—sharing with you some tidbits from the forefront of pediatrics:

New high blood pressure guidelines are here. Starting at age 3 years, children should have their blood pressure checked annually, more often if they have certain medical conditions such as diabetes or kidney disease. The cutoff for “high blood pressure” has been lowered so more and more, you may notice your pediatrician scrutinizing your child’s blood pressure.

We’ve noticed many more over-use injuries from kids who play the same sport year round. We were reminded that most professional athletes played multiple sports in high school and some even up through college. Specialization in a particular sport leads to more injuries, burnout, depression, and anxiety. If you feel that sports rule your child’s life,

remember this good rule of thumb: for high school kids, keep training under 16 hours a week. For the younger kids, keep the total number of hours per week playing organized sports under an hour per week for each year of age. For example, an 8 year old should spend no more than 8 hours per week playing organized sports.

Probiotics are ubiquitous these days, but are they helpful? In viral diarrhea, probiotics can be mildly helpful, and may shorten the duration of diarrhea by about a day. Probiotic therapy is showing promise for treating colic, but not for treating eczema. For more information see the International Scientific Association of Probiotics and Prebiotics.

If your child scalds himself, put the burn under COLD running tap water for *20 minutes* to stop further injury. This treatment is effective for up to 3 hours after a burn.

A cautionary word about herbs: Know that herbs are not regulated by the FDA (Food and Drug Administration). Companies that supply herbs are under no obligation to show that the product works. Additionally, the company that sells the herb does not have to show that the herb is safe or effective, and cannot claim that the product can cure or prevent anything. Additionally there are no manufacturing standards to adhere to, which means you do not know how much herb or for that matter, any other contaminants, are in the herbs that you buy.

Julie Kardos, MD and Naline Lai, MD

Cell phones, routers and electromagnetic radiation

At college drop off last week, my husband noticed an object that looked suspiciously like a router in our kid's dorm room. Vaguely aware that routers emit some sort of radiation, I turned to environmental medicine expert Dr. Alan Woolf for information, here is what he shared:

Q: My daughter has a wireless router within 2 feet of where she sleeps. Is this a problem?

A: The answer to the question is unfortunately not a straightforward ‘no problem’. Routers are one of a number of devices, including tablets, cell phones, and cell towers, that give off electromagnetic radiation (EMR) or radiofrequency radiation (RFR). In 2013 more than 6.8 billion mobile phones were registered.

Animal studies of EMR/RFR shows some biological effects, but it is uncertain whether these are applicable to humans. Human studies (and there have been many) have been either inconclusive or negative and are frequently confounded by problems with their design. However one well-controlled, blinded 2015 study of 31 adult females (average age: 26 years) holding 3G mobile phones near their heads for 15 minutes showed evidence of changes in their brain waves on EEG. Whether these changes were long-lasting or of any health import are unanswered questions. The International Agency for Research on Cancer (IARC), part of the United Nations’ World Health Organization, said in June 2011 that a family of frequencies that includes mobile-phone emissions is “possibly carcinogenic to humans.”

Federal agencies, such as the NIOSH, FCC and FDA, have set safety standards for mobile phones, routers, cell towers, etc. that are inclusive of safety factors for EMR/RFR emissions for humans; no commercial devices can be sold in the U.S. that do not comply with such standards. RFR energy levels from Wi-Fi equipment in all areas accessible to the general public, including school settings, are required to meet Federal exposure guidelines. The limits specified in the guidelines are based on an ongoing review of thousands of published scientific studies on the health impacts of RFR energy. Levels of RFR energy emitted from Wi-Fi equipment are typically well below these exposure limits. As long as exposure is below these established limits, there is no convincing scientific evidence that emissions from this equipment are dangerous to schoolchildren or to adults. There is no scientific evidence

of long-term or cumulative health effects of RFR in children.

Wireless routers in commercial use are very low energy devices and are not a safety concern. Still, It seems prudent to keep some distance away from EMR/RFR emitters when chronic exposure is likely. The strength (and therefore dose) of EMR/RFR is exponentially inversely proportional to distance from the emission. Apple Inc. itself recommends, for example, that mobile phones be held at least 5/8 inch away from the body, or that Bluetooth-type headphone devices be used to keep the head away from the phone emitter.

In reality, EMR/RFR waves are all around us (just see what happens when your cell phone is 'searching' for a signal—sometimes it finds half a dozen or more in your vicinity). Unfortunately the medical safety science has not kept up with advances in the technology and so there continue to be uncertainty and unanswered health questions concerning their safety.

Alan Woolf, MD, MPH

We thank Dr. Woolf for his insight, and Dr. Lai is happy to report that her daughter gets great wi-fi reception. Alan Woolf, MD, MPH is Professor of Pediatrics, Harvard Medical School (HMS), attending physician at Boston Children's Hospital (BCH) and has authored over 250 original reports, scientific reviews, chapters, and other publications, many of them on topics concerning children's poisoning and toxic environmental exposures. Among other accolades he is a past-president of the American Association of Poison Control Centers (AAPCC), and immediate past-president of the American Academy of Clinical Toxicology (AACT). Dr. Woolf has also served as external consultant to the World Health Organization's International Program in Chemical Safety and as a member of the National Advisory Committee for Acute Exposure

Guideline Levels for Hazardous Substances, EPA. He was recently chosen as a member of the General Hospital & Personal Use Device Panel of the Food & Drug Administration (FDA) and also serves as a consultant to the Medical Devices Advisory Committee of the Center for Devices and Radiological Health of the FDA.