



# HEALTHY CHILD

from The Children's Hospital at  
Monmouth Medical Center

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## Pediatric Obesity: A Growing Problem

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Childhood obesity is the most prevalent nutritional disorder in the U.S. It is also becoming a major health problem worldwide. Obesity is defined in adults as individuals who have a Body Mass Index (BMI =  $\text{kg/m}^2$ )  $> 30$ . Children who have a BMI  $> 2$  standard deviations above the mean for height and gender (NIH graph for BMI) are considered obese. Those who have a BMI in the 90th to 95th percentile (90% to 95%) are overweight. Use this tool to calculate BMI:

$$\text{BMI} = \left( \frac{\text{Weight in Pounds}}{(\text{Height in inches}) \times (\text{Height in inches})} \right) \times 703$$

1. 15.5% of children 12-19 years old have a BMI  $> 95$  %
2. 15.3% of children 6-11 years old have a BMI  $> 95$  %
3. 10.4% of children 2-5 years old have a BMI  $> 95$  %
4. By 1998 the prevalence of BMI  $> 85$  % reached
  - 35% in Hispanic and African American children
  - 20% in Caucasian children
5. The economic burden of childhood obesity has increased 3-fold in the past 20 years, reaching \$127 million per year
6. 10 to 15% of all children in the United States 6-17 years of age are obese

Across the world, the rate of children and adolescents who are overweight and obese is increasing by alarming numbers. The complications of obesity, which had previously been observed in adults, are now being seen with common frequency in children, including type 2 diabetes mellitus, hypertension, hyperlipidemia, gallbladder disease, fatty liver, sleep apnea, and orthopedic complications.



Dr. Teitelbaum and patient.

## Obesity: The Genetic Component

Many genes are known to have an effect on body weight. The basic premise is that the body seeks to maintain a steady weight. The hypothalamus and surrounding structures produce chemicals and hormones that stimulate appetite and decrease energy expenditure as well as produce different chemicals and hormones that decrease appetite and increase energy expenditure. The stomach and small and large intestines also play similar roles in increasing and decreasing appetite. As of now these genes and their products control us. We do not control them.

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# Inflammatory Bowel Disease (IBD) and Your Child

Jonathan Teitelbaum, M.D., Section Chief of Pediatric Gastroenterology and Nutrition, The Children's Hospital at Monmouth Medical Center



Dr. Schwartz and patient.

Inflammatory bowel disease (IBD) is a chronic disorder in which there is irritation to the lining of the intestine. Overall the disease affects 7 in 100,000 people. While classically not thought of as a pediatric disease, approximately 25% of all patients with IBD are diagnosed prior to 20 years of age.

Historically IBD is divided into two distinct diseases, Crohn's disease and ulcerative colitis. Crohn's disease can affect any part of the intestinal tract including the mouth, food pipe (esophagus), stomach, small intestine, large intestine and the anus, whereas ulcerative colitis only affects the large intestine.

## Searching for a cause

The cause of IBD remains unclear although in general it is thought to be the result of uncontrolled regulation of the immune system of the intestines. Such dysregulation is likely the result of an underlying genetic defect and subsequent environmental events that trigger the disease. Indeed, the single greatest risk factor for developing IBD is having a first degree relative with the condition, thus increasing one's risk 30-100 fold over the general population.

One specific gene abnormality called IBD1 locus (or NOD2/CARD15) increases one's risk for developing Crohn's disease. This gene normally allows the immune system to keep bacteria within the intestine under control; thus when the body cannot do this, the immune system becomes out of balance leading to the intestinal irritation. Genes in ulcerative colitis appear to be less important than in Crohn's disease.

## Symptoms of the condition

Patients with Crohn's disease typically have irritation of the end of their small intestine (terminal ileum) and their large intestine in 40-60%, just the small intestine in 20-30%, or just their colon in 20%. This in turn affects the types of complaints these patients have prior to diagnosis. Belly pain is a common feature occurring in 75%, typically with discomfort in the lower part of the abdomen on the right. Diarrhea is present in 65% and in Crohn's disease may not have visible blood unless the colon is involved. Weight loss or a lack of weight gain is also common (65%).

Patients with ulcerative colitis typically seek medical attention due to bloody diarrhea and crampy belly pain. There is usually a sense of urgency to get to the bathroom, and patients may even awake in the middle of the night to have diarrhea. It is usually described as proctitis (where just the last few inches of the large intestine are irritated), left sided colitis (where the bottom third is irritated), or pancolitis (where the entire colon is irritated).

Both forms of IBD can result in joint complaints (pain in knees, ankles, elbows, back), fevers, rashes (typically on the shins), red painful eyes, or sores in the mouth. Patients with Crohn's disease can have irritation around their anus with large inflamed tags (extra pieces of skin), deep fissures (cuts), or fistulas (draining sores around the anus).

IBD is distinct from irritable bowel syndrome (IBS) where patients may have chronic belly pain and diarrhea but no true irritation to the lining of the intestine. Physicians usually focus on warning signs in patients with belly pain that prompt further testing. The warning signs include persistent vomiting, bloody diarrhea, pain in a specific location far away from the belly button, weight loss or poor weight gain, and a family history of IBD. Testing would include blood tests looking for anemia, a sedimentation rate which indicates inflammation in general, and a low protein level. Stool testing can also ensure there is no infection in the intestine, test for microscopic amounts of blood and other chemicals indicating irritation of the intestine.

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Once the doctor is suspicious that a patient may have IBD, he/she are typically referred to a Pediatric Gastroenterologist with special training in diseases that affect the intestine. Endoscopy which entails the use of a camera on the end of a tube is then used to look in the intestine (through the mouth to see the esophagus, stomach and the beginning of the small intestine) and colonoscopy (to see the large intestine and end of the small intestine). Seeing the irritation with the camera and taking samples to look at under the microscope will often confirm the diagnosis. Other tests include x-rays, CT scans, or a camera pill that takes pictures of the small intestine to detect irritation of the parts of the intestine that regular endoscopy cannot reach.

## Disease Treatment

Treatment of the disease typically involves the use of chronic medications. The type of medicine the doctor chooses depends on the type, location, and severity of disease. These medicines include aspirin-like medicines that help to coat the intestine and calm the irritation, antibiotics which change the type of bacteria living in the intestine, steroids and other drugs (e.g. methotrexate, 6-mercaptopurine, infliximab) that suppress the immune system. Diet does not appear to play a large role in the treatment of this disease although for Crohn's disease a very restrictive liquid diet has been proven beneficial.

Surgery is often needed in Crohn's disease due to complications in which the irritation causes narrowing of the intestines, collections of pus outside the intestines (an abscess), or connections between the intestine and organs like the bladder, muscle, or vagina. In ulcerative colitis surgery the large intestine is removed cures, which the disease. In children with ulcerative colitis approximately 20% require surgical removal of the entire large intestine within 5 years of diagnosis.

The disease typically causes periods of exacerbation between periods of wellness. The disease has a profound effect on quality of life, at times interfering with socializing and ones ability to attend school secondary to pain and diarrhea. Pediatric gastroenterologists very closely follow patient's weight and height to try to get the child's adult height to be as close as possible to their potential. Medicines are used to keep the disease under control and try to avoid surgery.

Recent advances have resulted in a better understanding of IBD and its causes as well as the development of new drugs to help keep the disease under control.

*For a referral to a pediatrician or specialist from The Children's Hospital at Monmouth Medical Center, please call 1.888.SBHS.123.*

At The Children's Hospital at Monmouth Medical Center, Jonathan Teitelbaum, M.D., is the Section Chief of Pediatric Gastroenterology and Nutrition. He cares for a group of over 100 children with IBD and has started the first support group in New Jersey for children with IBD and their parents. He is active in research involving IBD and his work has been published in medical journals and presented at national conferences. He is on the Board of Trustees of the New Jersey Chapter of the Crohn's and Colitis Foundation of America, and has been named to The American Board of Pediatrics (ABP), sub-board for Gastroenterology.



# Developing an Individual Medical Action Plan for Your Child's Special Health Needs

Every day, in every school, children with special health needs require medications, treatments or adaptations to their environment. According to the Department of Education, students with complex medical conditions, such as epilepsy, hemophilia or asthma, should have individual Medical Action Plans that give specific instructions for coordinating care and can be given to all appropriate school personnel. These plans reduce family anxiety by thinking ahead about potential problems.

## Getting Started

First, work with your child's physician to write a personalized Medical Action Plan, including step-by-step instructions for preventing and handling medical emergencies.

Next, meet with your child's school nurse who will assist in carrying out your plan of care, treatment goals and communication of your child's progress. The school nurse can develop school-specific emergency care plans and coordinate medications and treatment for the school setting. A copy of the Medical Action Plan should be kept in school files and be available to those who may need to use it. General emergency procedures may need to be kept in the classroom as well.

"Planning is the key to overcoming panic," says Dahlia Hall, M.D., a member of the Section of General Pediatrics at The Children's Hospital at Monmouth Medical Center. "A written plan can give you and your child the confidence that medical problems will be addressed promptly and correctly."

## Cover the Basics

*The Children's Hospital at Monmouth Medical Center recommends that every child's Medical Action Plan includes, when relevant:*

- ❖ Information on the student's medical condition.
- ❖ Symptoms and consequences of the condition.
- ❖ Indicators of the need for medical intervention.
- ❖ Contact people and phone numbers (such as medical practitioner and parents).
- ❖ Clear instructions to cover all foreseeable circumstances including management in class, and out in the yard, and management on excursions or school camps.



*Dr. Hall and young patient*

- ❖ Emergency procedures.
- ❖ Specific information about medication including administration and storage, timing, dosage and possible side effects.
- ❖ Relevant forms and written advice from medical practitioners and parents regarding the medical treatment of the student.
- ❖ Any specific instructions on meal management.
- ❖ Toileting procedures and management.
- ❖ The people responsible for particular actions.

## Individualize the Plan to the Condition

Each medical condition will have its own specialized descriptions. For example, the Environmental Protection Agency recommends that families with asthmatic children have a school plan that includes:

- ❖ The child's asthma triggers.
- ❖ Instructions for asthma medicines.
- ❖ What to do if the child has an asthma attack.
- ❖ When to call your doctor.
- ❖ Emergency telephone numbers.

## Keep an updated action plan within reach

Keep your child's Medical Action Plan handy. Make sure your child and everyone who cares for him or her — including grandparents and baby sitters — know where to find it. Keep another copy in your wallet or purse, in case a medical problem occurs away from home.

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Be sure to update the plan as medical needs change. In the case of a change of medication that must be administered at school, written authorization should be provided by the medical practitioner. Each Medical Action Plan should be reviewed annually, unless circumstances change, or whenever the student's medical condition changes significantly.

All Medical Action Plans should take into account issues of confidentiality and privacy to ensure that personal information about individual students is treated with respect. Judgment should be made about who has a 'need to know' the information in the plan. In some situations this will only be staff directly involved with the student, while in others all staff will need to be aware of the plan so that they can take action if necessary.

## Stay in touch with your child's doctor

Even with the best action plan, you may still have questions about handling a medical problem. Call your child's physician should you have any concerns.

## The Children's Hospital at Monmouth Medical Center

More than 130 pediatricians are affiliated with Monmouth Medical Center's pediatric attending staff and more than half are subspecialty trained. The Children's Hospital at Monmouth Medical Center has extensive subspecialty outpatient services for children with chronic illnesses such as thyroid dysfunction, diabetes, neurological disorders, asthma and other respiratory problems.

*For a referral to a pediatrician or specialist from The Children's Hospital at Monmouth Medical Center, please call 1.888.SBHS.123.*

## Pediatric Endocrinologist at The Children's Hospital at Monmouth Medical Center Double Duties as a Lifeguard

While physicians everywhere help to safeguard the lives of their patients, one pediatric endocrinologist from The Children's Hospital at Monmouth Medical Center has taken the role of lifeguard literally. Thirty-four-year-old Mike Barrows, D.O., has been a Jersey Shore life guard since the age of fifteen, making well over one hundred rescues during his summer duty, which he continues on a part time basis at Sea Girt, NJ, even as a practicing physician.

In addition to water rescues, Dr. Barrows has assisted beachgoers who have been injured, experienced febrile seizures, gone into diabetic shock, and other medical emergencies. His years as a lifeguard helped to shape Dr. Barrow's interest in medicine.

"You are helping people in need of assistance on the beach and I see a connection between that and my medical pursuits," he relates. "They both involve serving the community and providing protection."

This past year Dr. Barrows won the American Ironman event at the United States Lifeguarding Association's (USLA) National Lifeguard Championships, which were held in Huntington Beach, CA. This event involves a quarter mile swim, a third of a mile board paddling, half a mile of rowing, with quarter mile runs between each activity. In previous years he collected three national titles in swim and surf rescue events.

### A Positive Message for Young Patients

At The Center for Disorders of Insulin and Metabolism, Dr. Barrows and Center director Malcolm Schwartz, D.O., and pediatric endocrinologist Kirk Kerensky, M.D., work to provide a blame-free, supportive environment to help

obese children and their families adopt healthier lifestyles. It is a multidisciplinary team consisting of the physicians, a nurse practitioner, certified nutritionist, diabetes educators, social worker, and child psychologist.

Dr. Barrows recently diagnosed and treated an obese eleven-year-old boy with type 2 diabetes. The boy weighed 280 lbs at the time of diagnosis and had uncontrolled diabetes. Within one year, through medical management, proper diet, and an individualized exercise plan, the boy lost 80 lbs and no longer had the condition.

Sometimes, before Dr. Barrows meets a patient, the nurse practitioner will share some details of his lifeguarding accomplishments with the youngster. Return patients ask Dr. Barrows about his time on the beach and next competition. Several have expressed interest in joining junior lifeguard programs.

"Dr. Barrows is an inspiration to all of our pediatric patients," related Margaret C. Fisher, M.D., FAAP, Medical Director of The Children's Hospital at Monmouth Medical Center. "A healthy body facilitates a healthy mind, and anything that motivates children to exercise is a positive at a time of skyrocketing pediatric obesity rates nationally."

*For more information about The Center for Disorders of Insulin and Metabolism, please call Monmouth Medical Center at 732.923.6085.*

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Approximately 30,000 years ago when we were hunter-gatherers and did not know when the next meal was expected, some people were able to develop “thrifty genes.” These genes allowed the body to become insulin-resistant by interfering with cell mechanisms that allow blood glucose to be transported into the cells so that the cells could utilize this compound for energy. Therefore the pancreas had to make more insulin to accomplish this action. This action, which produced excessive insulin, allowed the fat cells to accumulate stores of fats for energy at a time of hunger and famine. This provided a much higher survival rate. Then approximately 5000 years ago we became an agrarian society and these thrifty genes helped us gain weight because food became plentiful and we ate multiple times during the day. As time passed we also did less physical activity. The combination of multiple daily meals, larger portions, less physical work and the thrifty genes has increased our rate of obesity and its complications.

## Obesity Complications

Insulin excess due to insulin resistance is responsible for skin changes that increase the roughness of the skin and change its color to dark brown or black (acanthosis nigricans). Skin tags are also a direct result of excess insulin. Fatty liver is now seen in children. Atherosclerosis and hypertension begin in childhood and are a direct result of the obesity and hyperinsulinemia. In females polycystic ovarian syndrome is related to the insulin resistance and may present with obesity, infertility and hyperandrogenism. It is present in 5% to 10% of American women. Diabetes mellitus type 2 is a major complication of obesity and insulin resistance. Cholelithiasis is more common in obese adults. Although gallstones are unusual in childhood, nearly one half of all cases of cholecystitis in adolescents are associated with obesity. Anecdotal evidence suggests that depression and eating disorders are common in children and adolescents referred to obesity clinics. Prejudice and discrimination against individuals with obesity are ubiquitous within US culture; even young children have been found to regard their peers who have obesity in negative ways. Social isolation, peer problems, and lower self-esteem frequently are observed.

## Treating Obesity

The increasing prevalence of obesity in childhood and adolescence, accompanied by insulin resistance, appears to explain the increasing incidence of type 2 diabetes in adolescents. Treatment of obesity, hyperinsulinism and insulin resistance is not easy. It necessitates a multidisciplinary approach which includes the physician, nurse educator, dietician, exercise physiologist or personal trainer, and psychologist. Therapy at The Children’s Hospital at Monmouth Medical Center consists of changing the diet and emphasizing exercise.

Our dietician stresses a lower carbohydrate diet (40% of total daily calories) spread evenly over the entire day. Protein and fat may have to be increased slightly but we have not found an adverse affect on serum lipids. Complex carbohydrates and fruits and vegetables are emphasized in our clinic. Patients are taught carbohydrate counting (grams of carbohydrate) so that they make intelligent choices and substitutions. Foods with monounsaturated fats are stressed.

We believe that a program of fun, intense exercise is necessary for weight loss. Insulin sensitivity can be improved by exercise. Insulin resistance in the muscle, liver and fat cells is lowered by exercise. Our exercise trainers develop a series of exercises that include aerobic and weight resistance components. The patients can do the program at home or at a gym near their home. Children with special needs are referred to a physical rehabilitation center and a similar program is also prepared for them taking into account their limitations.

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*Dr. Barrows and his patient*

## Obesity Prevention

Prevention of obesity is always preferable to treatment. However it may be just as difficult to prevent obesity because our society promotes the economic and social benefits of advertising sales of food which are obesity enhancers.

### The following are suggestions to prevent obesity:

- ❖ Prevent smoking
- ❖ Maintain moderate exercise as tolerated
- ❖ Pursue meticulous glucose control in gestational diabetes
- ❖ During the postpartum and infancy period, encourage breast-feeding and postpone the introduction of solid foods
- ❖ Families should eat meals as a family in a fixed place and time. Do not skip meals, especially breakfast. No television should be watched during meals and television should be limited to two hours per day.

### In schools:

- ❖ Eliminate fundraisers with candy and cookie sales.
- ❖ Review contents of vending machines for healthier choices.
- ❖ Install water fountains.
- ❖ Educate teachers, especially physical education and science faculty, about basic nutrition and benefits of physical activity.
- ❖ Educate children on appropriate diet and lifestyle.
- ❖ Mandate minimum standards for physical education, including 30–45 minutes of strenuous exercise two to three times weekly.
- ❖ Encourage walking to and from school when it is safe.

### In communities:

- ❖ Increase family-friendly exercise/play facilities for all age children.
- ❖ Discourage the use of elevators and moving walkways.

If there was an infectious disease that affected as many patients as obesity does, our population would rise up and demonstrate to provide funds and opportunities to decrease its incidence. We need to work together to prevent this ongoing epidemic of obesity and decrease serious complications.

At The Center for Disorders of Insulin and Metabolism, Dr. Schwartz and fellow pediatric endocrinologists Mike Barrows, D.O., and Kirk Kerensky, M.D., manage the pediatric obesity program at The Women's & Children's Specialty Center, Lakewood, and The Children's Hospital at Monmouth Medical Center in Long Branch. The program provides a blame-free, supportive environment to help obese children and their families adopt healthier lifestyles.

For more information, please call 732.923.6085.

## Young volunteers raise funds to cheer hospitalized children

What motivated 17 teenagers to convene for a recent grownup-style organization meeting—some of them fresh from soccer practice, with uniforms on and grass-stained knees? For Victoria Slater of Monmouth Beach, 15, it was the memory of a 10-year-old boy who had been getting chemotherapy for leukemia when she first volunteered at The Children's Hospital at Monmouth Medical Center two years ago.

"I spent a lot of time talking with him and felt a real connection—he was cool," Victoria explains. "Last November, when I found out he'd died, I was really upset. So I want to do as much as I can to help other kids now, and not wait until I'm older."

### Kids Helping Kids

It's no fun to be seriously ill at a time of life when you're supposed to be carefree and rambunctious. That's why these healthy teens were meeting. They belong to Kidz Kare, a 19-member volunteer organization whose purpose is to support Children's Hospital patients and make them as comfortable and content as possible.

Who knows better what kids would want than other kids? says Susan Dulczak, clinical director of the hospital's Valerie Fund Children's Center for Cancer and Blood Disorders, who founded the group. The meeting included organizing the first group of officers and planning a fundraising party with a silent and live auction.

"For this event there were multiple committees to design invitations, obtain silent auction gifts, create flower arrangements... and they did it all. Their parents helped so much as supporters and donators for this event"

It was a parent, in fact, who gave the group its initial impetus. "About a year and a half ago, I got a call from a parent in the community," recalls Ms. Dulczak. "She had two teens, and with Christmas a few weeks away, she said, 'My kids have everything. This year, I'd like them to give back. What can they do to help The Children's Hospital?'"

Dulczak took the question to the foundation's board, which helped her recruit local teen volunteers to give presents to inpatient children. "That first event was very successful," she says. "The kids liked it so much they wanted to stay involved."

Thus Kidz Kare was born. Today the group has a junior board of directors, elected officers, a mission statement—even its own logo and t-shirt. Members are learning the nuts and bolts of group organizing too. "I take minutes at the meetings," says secretary Shauna Bidgood, 15, of Tinton Falls, "and I've learned it's important to write everything down carefully."

Treasurer Ian Nugent, 13, of Neptune has discovered that treasurers sometimes have to say no. "People might have great ideas," he says, "but we can't always do them because we have to stay in our budget." Victoria believes Kidz Kare's members are learning as much about each other as they are about fundraising. "We might not always agree on the next step, but we have to remember why we're here," she says. "It's for the children. That keeps us focused."

"The Kidz Kare Junior Committee is one of our most outstanding developments at The Children's Hospital at Monmouth," says Lucia Baratta, Vice President of Development, Monmouth Medical Center Foundation. This group of leaders is by far the most dynamic group of young people I have ever met. They give so much of themselves and have so much enthusiasm and energy. I also marvel at the support and admiration of their parents towards their commitment to helping our very special patients. I am so proud to be a part of Kidz Kare. I never realized how much I would learn from them... they have truly touched my heart."

*For more information about Kidz Kare, please call Monmouth Medical Center Foundations at 732.923.6886. For more information about The Valerie Fund Children's Center at the Children's Hospital at Monmouth Medical Center, please call 732.923.7455.*



*Kidz Kare Board Members*

## Questions & Answers

Richard J. DeGroot, M.D. F.A.A.P., Director, Pediatric Inpatient Services

Dear Dr. DeGroot:

Q. I have a three-week-old baby who fusses at night and seems to like sleeping on my shoulder or his belly. My friends tell me the baby should sleep on his back but some of their babies seem to have flat heads in the back. How important is it that my baby sleep on his back, and how do I prevent the back of his head from getting flat?

A. Most infants have fussy periods toward the end of the day for several hours and feel comforted when held. This may last several months before the fussiness stops.

Infants who sleep on their stomachs are at increased risk of Sudden Infant Death Syndrome (SIDS). The incidence of SIDS has declined by over 50% from 1992 through 2002 when the American Academy of Pediatrics first recommended that babies be placed on their backs when sleeping. In 2005, the AAP revised the guidelines to try to reduce the risks even further. These updated recommendations included: no sleeping on their sides for infants, using a firm sleep surface, keeping soft objects out of the crib, avoidance of maternal smoking during the pregnancy as well as avoiding second hand smoke exposure after birth, using a pacifier at naps or bedtime, and separate but proximate sleeping environment. Babies who are breastfed in their mother's bed should be placed in a sleeping environment (bed, cradle, bassinette) in the same room as their mothers, but they should not sleep in the same bed so they can avoid the risk of suffocation. All of these factors have been shown to decrease the risk of SIDS.

Infants usually spend about sixteen to twenty hours a day sleeping in the neonatal period, so flattening of the back of the head can occur in some infants. To reduce the risk of this the AAP recommends the "Back to Sleep, Tummy to Play" routine. All infants should sleep on their backs, but when awake and observed by a caregiver, babies should be placed on their stomachs at least two to three times per day. This can be done when the infant awakens or at diaper changes. For infants who do not like being on their tummy, an alternative would be to hold the baby over your chest and shoulder while cradling the back of the baby's head with your hand. As infants grow, develop and become more interested in the world, tummy time will become more enjoyable. This is a natural way to strengthen the neck and shoulder muscles, and to explore their world.

Dear Dr. DeGroot:

Q. Last winter my 4-year-old daughter had a cough that lasted almost four weeks. I now wonder if she might have had pneumonia, since I came down with viral pneumonia shortly afterward. How can you tell if a child has pneumonia? Does a chest x-ray need to be done?

A. A prolonged, intermittent cough without fever or a decrease in appetite and activity in a four year old is most likely not pneumonia. More likely causes would be post nasal drip from an upper respiratory infection or cough variant asthma. A mild case of pertussis or whooping cough is another possibility, especially if the child did not receive the DTaP vaccine. The incidence of pertussis has increased in the adolescent/adult population so much so that the American Council on Immunization Practices now recommends a pertussis booster for adolescents and adults – Tdap – instead of the Td booster. While a mild viral pneumonia would still have been a possibility, x-rays would not be used routinely.

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More common clues for pneumonia in a child's history would be a preceding upper respiratory infection followed by a prolonged fever with or without a cough, especially during the winter season, chills, poor appetite and fatigue with only minimal exertion. Along with the above, chest pain on breathing, cyanosis or a bluish tint on the lips and nail beds, and increasing work of breathing are all signs of worsening pneumonia. On physical examination there may be crackling sounds heard or a decrease in breath sounds in the lungs. In younger children with a mild pneumonia, nothing abnormal may be heard on examining the lungs.

Because the majority of children with pneumonia get better with time and treatment and because they have a lifetime ahead of them in which they will be exposed to x-rays, chest x-rays are not routinely ordered in children. If uncomplicated pneumonia is found on examination, a chest x-ray usually would not alter a child's treatment. Most pediatricians would treat the child and follow up closely every one or two days. If pneumonia is found, chest x-rays are obtained in children with respiratory distress, prolonged fever or persistent fever while on antibiotics, decreased breath sounds in the lungs, cyanosis, chest pain, or recurrent pneumonia.

