

The Seattle Times

Wednesday, January 5, 2005 - Page updated at 12:00 AM

Permission to reprint or copy this article or photo, other than personal use, must be obtained from The Seattle Times. Call 206-464-3113 or e-mail resale@seattletimes.com with your request.

Asthma is on the rise but remains a mystery

By Carol M. Ostrom
Seattle Times staff reporter

Ask questions about asthma, and the answers — even from experts — begin to sound like those you'd get from a recalcitrant teenager being quizzed about his love life.

What causes asthma?

I dunno.

Why do some people get it, but not others?

Dunno.

Once I get over an asthma attack, do I have to keep taking all those medications?

Maybe.

If I'm worried about my baby getting asthma, should I get rid of my pet?

Whatever.

Asthma, as common as it is — and it's way common, and getting more so — is still a mystery in many ways.

Scientists are still sorting out exactly what asthma is, scientifically speaking. For the most part, doctors simply approach asthma the way many of us approach "good" art: They know it when they see it — or more to the point, when they hear it.

The wheeze. The cough. Complaints of shortness of breath or a child's flagging energy during playtime or sports. The sounds of too much "goop" in the lungs after a virus.

"There's no specific test for asthma," although there are plenty of clues, says Dr. Neil Schachter, a lung specialist at Mount Sinai Medical Center in New York City and author of "Life and Breath," a patient-friendly book about asthma, emphysema, chronic bronchitis and other lung diseases.

Most doctors can accurately diagnose asthma when patients have a constellation of symptoms pointing to hypersensitive airways. Triggers, such as animal dander, dust, pollens or chemicals, cause muscle contractions, excess mucus or inflammation — or all of the above. Some doctors take a practical approach: If a patient responds to asthma medication, they've probably got asthma.

Still, many patients wheeze and cough through many a day without suspecting asthma, and parents and even health providers can mistakenly assume a child just has frequent viruses. An estimated third of those who have asthma have never been diagnosed, says Dr. James Krieger, chief of epidemiology for Public Health — Seattle & King County.

"Sometimes it's hard to identify asthma as a problem," says Dr. Cornelius Van Niel, a pediatrician at SeaMar Community Health Center. "A family will come in and say the kid coughs every time they exercise, or coughs at night, or can't keep up with other kids on the playground. They don't see an obvious medical problem, and the kid doesn't know any different."

That was the case for Elizabeth Cabrera, a bright-eyed, bouncy 4-year-old. Before her asthma was diagnosed, says her mother, Sara Aparicio, Elizabeth was winding up in an emergency room as often as every eight days during the winter. Playing, even laughing, could bring on an attack.

About two years ago, doctors at SeaMar realized Elizabeth wasn't simply having recurrent viruses and started her on preventive medication. Now, her mother says, she's able to run and play and go to preschool early in the day, a time they once avoided because cold air could trigger an attack.

Asthma on the rise

Experts agree that asthma is increasing. Several national reports call it an epidemic: a 74 percent increase in self-reported asthma over the past two decades, says the federal Centers for Disease Control and Prevention. In King County, asthma hospitalizations of children peaked in about 1996, then dropped. But the rate is still far ahead of what it was in 1987, and especially high in low-income neighborhoods.

Sometimes — about 100 times a year in Washington — someone dies from the disease.

Researchers and doctors now stress that asthma shouldn't be treated only when there's an "attack." Asthma is a chronic disease that, left untreated, can cause structural changes in a person's lungs.

"We have much better treatments now, a much better understanding of this disease" than 25 or 30 years ago, Schachter says. "We didn't understand then, for example, that this was an inflammatory disease, that it was frequently triggered by allergy and by irritants. We didn't know that if you don't manage it correctly, that it can go on and produce a chronic and sometimes irreversible lung disease."

Although the long-term effects of some medications aren't known, most doctors now agree that asthma patients should be on long-term inhaled corticosteroids to reduce inflammation, and perhaps a long-acting bronchodilator, to relax smooth airway muscles.

Now that there's more awareness, there's also more curiosity about another asthma mystery: What causes it in the first place?

Is it our old houses — filled with dust, mold, dust mites and the ubiquitous cat dander?

Or is it our new houses — sealed up tight and rife with glue products, aromatic cleansers and carpet chemicals?

For someone who already has asthma, all of the above can trigger an attack.

But do those things *give* someone asthma?

"We don't know why some people get it and others don't," Schachter says. "We know risk factors and predisposing factors, but we really don't have a full, fundamental understanding of why people develop asthma. We don't know how much is nurture, how much is nature."

Scientists know genes play a part. But the gene pool is slow to change and doesn't explain the big jump in asthma over the past two decades.

So, as with many other diseases, the spotlight is not so much on the genes, but on their interaction with the environment — everything from air pollution to dust bunnies. Genetics may load the gun, so the saying goes, but

environment pulls the trigger.

Many researchers point the finger at air pollution. A 2001 study, for example, noted that when automobile use was drastically curtailed in Atlanta during the 1996 Summer Olympic Games, ozone concentrations plummeted and asthma-related episodes requiring hospital care dropped by 44 percent.

Traffic pollution, especially diesel fumes, seems to trigger asthma in early life, says Dr. Gail Shapiro, a pediatrics professor at the University of Washington and an asthma researcher.

Traffic, industry, wood fires and construction produce nitrogen dioxide, ozone, sulfur dioxide and particulates, the pollutants Schachter describes as "the fatal four" for pulmonary health.

The "hygiene hypothesis"

Scientists also have turned their attention to our inside environment — our homes.

Some have formulated a counter-intuitive notion: that the current asthma epidemic may in part be fueled by our clean, germ-free lives.

This "hygiene hypothesis" posits that the modern-day lack of serious microbial enemies, such as diphtheria and measles, leaves our immune systems with little to do but focus on the insignificant: dust mites, cat dander, pollen.

The hypothesis, says Dr. Eyal Raz, a researcher at the University of California, San Diego, is that "all of this sterility eliminates from our daily lives the useful impact of microbes."

Raz and other scientists are studying a synthetic vaccinelike substance that stimulates an immune response. In mice and monkeys, the vaccine appeared to actually reverse lung damage from asthma.

The vaccine was developed from a DNA sequence identified by Raz a decade ago, and is now being tested in humans.

Other studies that appear to support the hygiene hypothesis suggest that early exposures to livestock or pets may help a child's immune system learn not to over-react.

But research findings in this area are complicated, cautions Krieger, co-director of Allies Against Asthma, a four-year project to improve the health of low-income children in Central and South Seattle and Southwest King County. Other studies suggest that exposure to dust mites at a very early age may push the immune system to develop asthma.

Studies show asthma is more prevalent among low-income families, who more often live in industrial areas or closer to highways, or who may live in rental housing with little control over allergens such as carpets.

"It's really complicated and it's not all sorted out yet," Krieger says. "It's an area of very active research. Stay tuned — that's what the message is here."

Education plays a role

Despite all the unknowns, though, there's much that scientists and clinical practitioners do know about asthma. First, they know now that education of patients and caregivers is key.

Doctors can treat acute attacks but "it's the chronic asthma symptoms that people live with" that are responsible for much of asthma's debilitating effects, says Dr. Paula Lozano, a pediatrician at Harborview Medical Center and a scientific investigator at Group Health Cooperative. Reducing symptoms helps prevent or moderate attacks, she adds.

In a pilot study nearly a decade ago at Odessa Brown Children's Clinic, Dr. James Stout of the University of

Washington found evidence that in-home visits and education for low-income families significantly reduced emergency room visits and hospitalization for asthma.

Stout helped test those findings in another, larger study. In September, the New England Journal of Medicine published the results from seven cities, including Seattle and Tacoma, showing that education and home visits to reduce exposure to allergens and tobacco smoke significantly improved children's health.

Columbia Health Center in South Seattle found simply sending postcards reminding patients to get flu shots, along with asthma education during well-patient visits, appeared to reduce hospitalization and ER visits dramatically.

Lozano was lead author of a study at Group Health and other health centers showing that sessions with specially trained asthma-care nurses about how to manage and prevent symptoms reduced children's rescue-medication use by 30 percent, with an average of 13 fewer days of symptoms per year.

"The goal should be a normal lifestyle," Shapiro says. With the right medications, she says, that's almost always possible.

Waking up at Harborview

Cindy Wright, 46, has taken that advice, despite some scary episodes with the asthma she developed at age 3. Fifteen years ago, on a dry, cold January evening, she worked out and went back to her apartment. For the first time that year, she turned her heat on.

She studied for a while, and got ready to go to sleep. She was having a little trouble breathing, so she used the medications she was on at the time, as she always did before bed. Still having trouble breathing, she used a little more. About midnight, she called her doctor, who told her he'd meet her at the hospital.

But when she stepped outside into the cold air, she knew she was in trouble. "I said to myself, you know, 'I'm not going to make it,' " she recalls. She walked back into her apartment and called 911. "The last thing I remember was seeing the first firefighter," an emergency medical responder, she says. "Then I don't remember anything else."

She woke up in Harborview Medical Center, where she wound up in the intensive care unit.

Today, she's taking Advair, one of the newer inhaled drugs that combines a bronchodilator and a corticosteroid. She's careful about dusty air vents and cold air, but rarely has to use her "rescue" medication, an Albuterol inhaler.

Wright, a medical assistant, has walked two marathons and exercises regularly.

Perhaps in response to the sterile environment her parents were forced to create for her as a child, she now lives with three dogs and two cats in an older home in Snohomish.

"Now, it's amazing. I'm able to do things I was never able to do before," she says. "It's a miracle."

Carol M. Ostrom: 206-464-2249 or costrom@seattletimes.com

Copyright © 2005 The Seattle Times Company