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Vacuuming up root causes of allergies

May 5, 2010
ELAINE CAREY

SPECIAL TO THE STAR

Debbie Christie is happily allowing researchers to minutely study every room in her house — dust mites and all — because it may give clues as to whether her year-old son Will is likely to develop allergies and asthma.

It may also shed light on why her 12-year-old son Daniel has asthma and a severe peanut allergy and why nine-year-old Matthew is autistic.

ANDREW WALLACE/TORONTO STAR

One-year-old William Hrybinkys is held by his mother Debbie while being examined by Dr Padmaja Subbarao at Sickkids. William, a healthy baby, is taking part in a five-year asthma and allergy study.

So Christie was more than eager to take part at the [Hospital for Sick Children](#) in the federally funded \$12 million Canadian [Healthy Infant Longitudinal Development Study \(CHILD\)](#), which is trying to uncover the root causes of a range of allergies including asthma in children and adults. It is following 5,000 Canadian children from the womb to five years of age.

"It was really important for me to participate — it benefits me and will help other families down the road," said Christie, 41, a registered nurse who has asthma and allergies and whose husband Alexander Hrybinkys has hay fever.

So far the study, now in its second year, has turned up no sign of allergies in Will, unlike his older brother Daniel, who by his age already had asthma and eczema.

SickKids is one of four hospitals across Canada taking part in the CHILD study and is actively recruiting pregnant women to take part, said Dr. Padmaja (P.J.) Subbarao, a respirologist and deputy director of the study, which is headed by Dr. Malcolm Sears, professor of medicine at [McMaster University](#) in Hamilton.

The participating expectant mothers must be healthy, living in Toronto and fluent in English because at this point, the lengthy questionnaires they must agree to fill out are only available in English.

The study, the largest of its kind to look at the role of environment on infant lung development, is needed because about one in five school-age children is diagnosed with asthma, a rate that has grown four times in the past 20 years in parts of North America, according to a 2007 study by the Commission of Economic Co-operation and Development.

It wants to look at children from conception on because previous studies started at age 9 when many of them already had damaged lungs, Subbarao said in an interview.

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SickKids, which hopes to follow 1,500 children, is specifically looking at the effect of viruses in causing asthma and allergies in the first few years of life. While other groups in the study in Vancouver, Edmonton and Winnipeg are examining other aspects, all of them are looking at the role of the environment, Subbarao said.

"The way we look at the environment is all the factors outside the person themselves," she said. "That includes genetics, the immune system, diet, stress, socioeconomic conditions and exposure to agents like smoke and things in the home."

Two researchers also conduct a home assessment of each participant, analyzing the type and age of housing, looking for signs of mould and vacuuming up dust for study.

Very early on, they are hoping to learn what babies' immune systems look like at birth and how they change over the first couple of years of life, Subbarao said. Just as important is studying how their lungs grow and develop.

"To have 5,000 kids is really key to finding out," she said. They hope to continue the study beyond the age of five because many children develop asthma when they are older and "having a group like this is really a national treasure." Each child is assessed six times in the first five years of life.

While genetics is considered a factor in asthma and allergies, "at the end of the day, if asthma was really a genetic disease, we would have found that out by now," she said. "We know it is multi-factoral."

But just what those factors are isn't known because the disease has not been well documented, she said. While viruses can cause an asthma attack, it's not known if they can trigger the disease. Similarly, smog can trigger an attack but "no one's proven that smog in a healthy person can make them asthmatic, she said.

Debbie Christie has already filled out three questionnaires that take about a half an hour each and baby Will has been tested twice at SickKids. Right after Will was born her house was tested intensively and "God knows what they found everywhere in each room," she laughed. "But I'm really impressed as a nurse at how detailed the study is. Because of our family history I will be really interested to see what happens."

- For information about taking part in the study contact:

Karen McLean, research co-ordinator: 416-813-7654 ext. 28077; karen.mclean@sickkids.ca or visit the CHILD study website at: www.canadianchildstudy.ca

Standard response for asthma attacks

Ten years ago, 18-year-old Joshua Fluelling of Toronto suffered a severe asthma attack and died after an ambulance crew was turned away from a nearby hospital and he was taken to the closest available hospital, 11 kilometres away.

As a result of that death and a subsequent inquest, changes continue to be made in the system. Most importantly, hospitals can no longer turn away ambulances with critically ill patients, regardless of how busy the emergency room is.

And for the past three years, the Ontario Lung Association has worked with emergency room doctors in 174 hospitals across the province to develop a standard response for asthma attacks called the Emergency Department Asthma Care Pathway.

The new pathway, now almost fully implemented, consists of a standard set of orders that include using the best asthma management procedures available, a comprehensive set of discharge instructions for patients as well as a take-home information sheet.

One of the findings of the inquest was that Fluelling did not manage his asthma well. He was a heavy smoker and also had a dog.

Dr. Diane Loughheed, an associate professor of medicine at Queen's University in Kingston, designed a study to evaluate the impact of the pathway in 10 hospitals and found it increased adherence to the best procedures and resulted in better asthma education in the emergency room and more patient referrals to asthma specialists.

"Emergency room visits should be a sign that something has gone wrong with that patient's care and needs to be addressed," Loughheed said in an interview. "In an ideal world, severe asthma attacks requiring an emergency room visit should be preventable."

While it's not known how many asthmatics go to emergency rooms, "we do know it's a controllable disease," she said. "When they do end up in emergency we should be asking why. More often than not there were factors that could have been controlled and fixed."

As a result of the success of the new pathway, the lung association is developing a pediatric protocol for children treated in Ontario's emergency rooms.

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