Children's Hospital of Pittsburgh of UPMC

HELPFUL Information for parents and children

Pulmonary Medicine, Allergy and Immunology

Exhaled Nitric Oxide (eNO) Testing

AT CHILDREN'S HOSPITAL OF PITTSBURGH OF UPMC, we believe parents and guardians can contribute to the success of this test and invite you to participate. Please read the following information to learn about the test and how you can help.

Fast Facts About eNO Testing

- Exhaled Nitric Oxide (eNO) testing is a quick and easy way to measure inflammation (swelling) in the bronchial tubes of the lungs.
- The test may be done to diagnose asthma, to evaluate a chronic cough or to see how well inhaled corticosteroid treatment is working in a child who has already been diagnosed with asthma.
- The test is done by having your child take a large breath and then breathe out very slowly into a tube connected to a computer.
- Your child will be asked to repeat the breaths several times to get an accurate measurement.
- The eNO test takes a total of about 15 minutes.
- Your child may resume a normal diet and activities afterwards.

What Is eNO Testing?

Nitric oxide is a gas that is produced naturally in the lungs when we breathe. Children who do not have asthma have low levels of nitric oxide in their breath when they exhale (breathe out). When airways become inflamed (swollen), the lungs produce higher levels of nitric oxide. The exhaled nitric oxide (eNO) test can detect these higher levels and help the doctor confirm a diagnosis of asthma in a patient. The results of the test also can help the doctor find out how well inhaled anti-inflammatory medications called corticosteroids *(KOOR-tick-co-STARE-oids)* are working in patients who have been diagnosed with a chronic cough or asthma.

In asthma, airways become narrowed because the bronchial tubes in the lungs begin to swell in reaction to certain things. This narrowing can be triggered by such things as pollens, mold, animal dander, dust mites, vapors and chemicals, or by a respiratory infection (cold or flu). Untreated or uncontrolled asthma can cause the bronchial tubes to swell, which makes breathing very difficult and can cause a life-threatening situation and even death.

To keep children with asthma breathing well, it is important to find the right combination of medications in the right doses to control their asthma. The eNO test results, when compared over several doctor's appointments over time, can be an effective way to make sure that a child is getting the right medications in the right amounts to keep him or her breathing well.

Home Preparation

No preparation is required before eNO testing.

Before the eNO Test

The eNO testing is done through the Division of Pulmonary Medicine, Allergy and Immunology of Children's Hospital in Oakland. This test may be done on its own, as part of another appointment, or while your child is a patient in the hospital.

After you have registered your child at the desk, you will be asked to sit in the waiting area.

- We invite one parent or guardian to stay with your child during the treatment. Other adults and siblings must stay in the waiting room during the test.
- Your child will be called to the examining room and asked some screening questions by one of the doctor's assistants. The assistant will take your child's vital signs, weight and medical history.
- You may ask any questions or discuss concerns about your child's treatment at this time.

eNO TESTING cont'd

- Your child may wear normal clothes to the test.
- Your wait time will vary depending on how many children are being seen that day and the type of test that has been ordered for your child. Since every child is different, the length of time needed to do each test also will vary. Please be patient with the medical staff.

The eNO Test

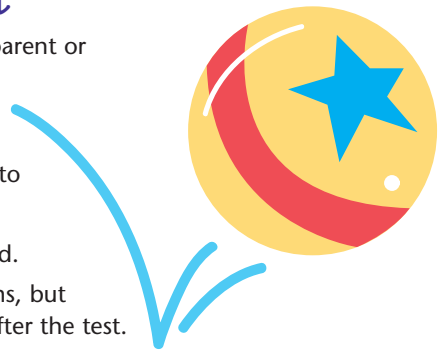
You will be joined in the examining room by a pulmonary function technician. The eNO test will be performed by the technician. The results will be reviewed by a doctor.

- The eNO machine is a type of computer. It has a keyboard, a computer screen and processor with a tube and mouthpiece connected to it.
- Your child will be asked to sit in a chair in front of the eNO machine. He or she will not be asked to remove any clothing.
- The technician will place a padded nose clip on your child's nose to make sure he or she breathes only through his or her mouth.
- It is important that your child listens closely to the technician's instructions and watches the computer screen during the test.
- On the computer screen, younger children will see a picture of a hot air balloon. (Older children may see a picture of a meter.)
- The technician will first ask your child to exhale (breathe out) all the way.
- Your child will be asked to take a big breath in (inhale).
- Your child then will be given a sterile mouthpiece to put into the mouth as he or she breathes out slowly into the tube. The picture of the balloon or meter on the computer screen will show him or her how slowly to breathe out.
- The technician will ask your child to repeat the breathing a few more times until at least 2 good measurements are taken.
- The computer will save the results so that they can be seen by the doctor or printed out on paper.
- The doctor will review the results of the eNO test and discuss them with you.

A Parent's/Guardian's Role During the eNO Test

The most important role of a parent or guardian during the test is to help your child stay calm and relaxed. The best way to help your child stay calm is for you to stay calm.

- You may stay near your child.
- Feel free to ask any questions, but please ask them before or after the test.



After the eNO Test

Your child may resume normal activities immediately, unless otherwise directed by the doctor. There are no side effects from eNO testing.

Special Needs

If your child has any special needs or health issues you feel the doctor or pulmonary function technician performing the test needs to know about, please call the Division of Pulmonary Medicine, Allergy and Immunology at Children's Hospital of Pittsburgh **before the test** and ask to speak with a pulmonary function technician. It is important to notify us in advance about any special needs.

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To see the list of all available patient procedures descriptions, please visit www.chp.edu/procedures.

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