Pulmonary Function Tests: What You Need to Know

There are many types of pulmonary function tests to check how your child’s lungs work. In this handout, you will learn about different types of pulmonary function tests. You will also learn how to prepare and what to expect at your child’s testing appointment.

WHAT ARE PULMONARY FUNCTION TESTS?
Pulmonary function tests (PFTs) are tests that measure how much air the lungs can hold or how much air flows in and out of the lungs. PFTs can help doctors diagnose lung conditions, check how well the lungs respond to medications or check how much the lungs are affected by a certain illness.

WHAT ARE THE DIFFERENT TYPES OF PFTS?
There are many types of PFTs. The PFTs your child has depends on their symptoms and medical history. See the back of this handout for more information on the different types of PFTs.

HOW LONG DOES A PFT TAKE?
Every PFT test is different. Some PFTs take a few minutes. Others can take anywhere from 12-20 minutes. The care team can tell you which PFTs your child will have and how long each one will take.

HOW CAN I PREPARE MY CHILD FOR A PFT?
Here is how you can prepare your child for a PFT:

- If your child takes inhaled bronchodilators, do not take them 4 hours before the tests. Your child can take their other medications as usual. This includes albuterol solution, ProAir® multidose inhalers, levalbuterol (also called Xopenex®) solution or multi-dose inhaler and Combivent® solution or multi-dose inhalers.

- Ask the care team how to explain the PFTs in a way that is appropriate for your child’s developmental stage and in a way they can understand.

WHEN WILL I GET THE RESULTS BACK FROM THE PFT?
There are many types of PFTs. The PFTs your child has depends on their symptoms and medical history. See the back of this handout for more information on the different types of PFTs.
Different types of PFTs

There are many types of PFTs. The PFTs your child has depends on their symptoms and medical history.

Here are common types of PFTs your child might have:

- **Forced vital capacity flow-volume loop**
  This test measures the amount of air and how quickly it can move through the lungs in one strong, deep breath. Your child will take a deep breath and exhale as hard as they can into the spirometer (a tube used to measure the amount of air breathed out of the lungs). They will do this a few times with help from the care team.

- **Lung volume tests**
  Some common lung volume tests include plethysmography, helium dilution test and nitrogen washout test. These tests check how well your child’s lungs are working. They also check for different lung or airway diseases or defects. For these tests, your child will sit inside of a body/box chamber. The chamber looks like a telephone booth with clear walls, a seat inside and a mouthpiece on one side. The care team will sit at a computer next to the chamber. For this test, your child will take several small breaths into the mouthpiece with the help of the care team.

- **Single breath diffusion capacity test**
  This test checks how much air passes through the lungs, into the blood and out to the rest of the body. For this test, your child will take two breaths into a spirometer that is connected to a computer. They will then hold their breath for 10 second. They will do this a few times with the help of the care team.

- **Fractional Expired Nitric Oxide (FENO) test**
  A FENO test is used with a forced vital capacity flow-volume loop test to check the lungs of children with asthma. It measures how much nitric oxide (a gas produced during an exhale) flows out of the lungs.

- **Capnography test**
  A capnography test (also called an EtCO₂ test) checks how much carbon dioxide (a gas produced during an exhale) flows out of the lungs. For this test, your child will breathe normally into a tube connected to a computer.

- **Oxygen saturation test**
  An oxygen saturation test measures how much oxygen is flowing through the blood. For this test, the care team will place a small, plastic monitor on their finger for 2-3 minutes. This does not hurt.

- **Maximum airway pressure test**
  This test is for children who have neuromuscular diseases (diseases that affect the nerves in the muscles and how they work). This test checks how much pressure is put on the lungs during an inhale.

- **Cardiopulmonary exercise test**
  This test (also called a stress test) checks how well your child’s heart and lungs work at rest and during intense exercise. The test usually lasts 45 minutes to an hour. The exercise part lasts for about 10 minutes. For this test, your child will use a treadmill or stationary bike to raise their heart rate.