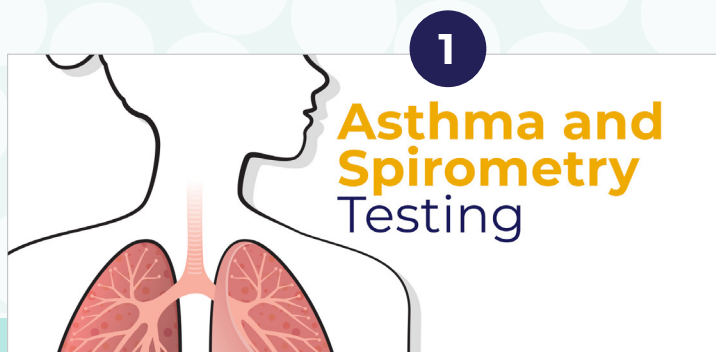
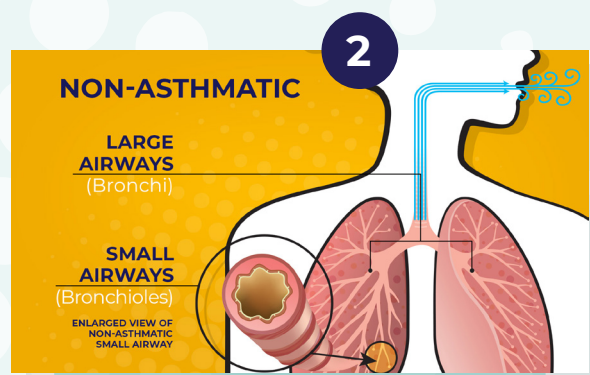


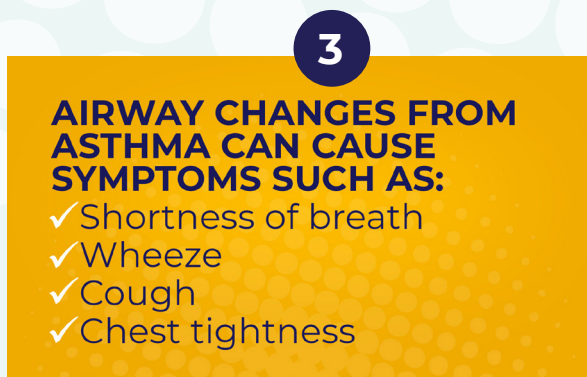
Asthma AND SPIROMETRY TESTING



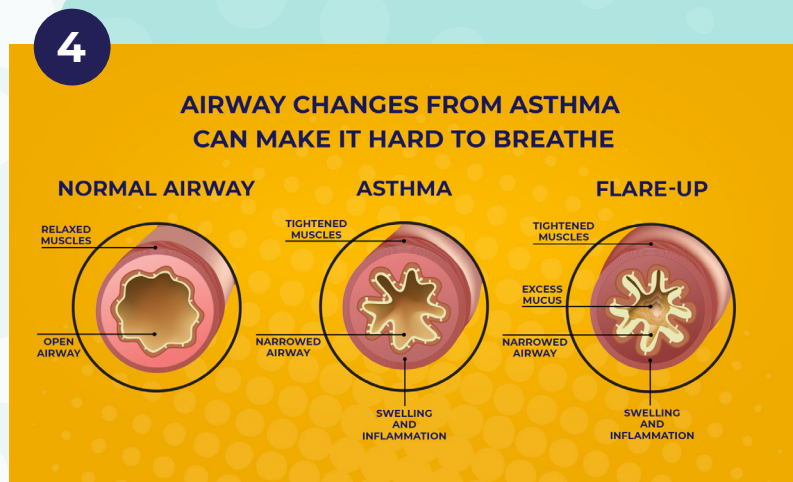
This handout provides
GENERAL INFORMATION on
spirometry testing.



In your lungs, you have large airways, called bronchi, and small airways, called bronchioles.



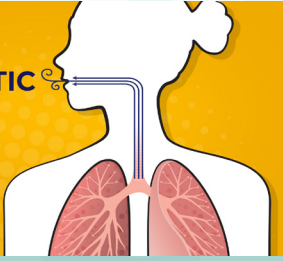
- When you have asthma, your immune system may overreact and cause your airways to become inflamed and narrowed.
- This narrowing can cause you to experience symptoms such as shortness of breath, wheeze, cough, and chest tightness.



Asthma is a lung disease of chronic inflammation in your airways. Long-term inflammation may cause changes in your airways that make the airway openings become narrower.

5

ASTHMATIC



- These airway changes can decrease your ability to blow air out of your lungs quickly or as quickly as normal when you exhale.
- This may cause you to experience common asthma-related breathing symptoms, such as shortness of breath, wheeze, cough, and chest tightness.

A lung function test can

measure if there are changes in your airways that may be affecting how quickly you can exhale. Many times, spirometry will also measure how fast you can breathe air in.

6



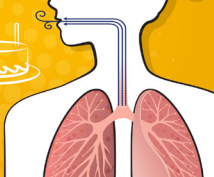
In addition to assessing your breathing symptoms,

and physical examination, spirometry is needed to see if you have asthma and if your asthma is affecting how well your lungs are functioning.

7

EXHALED AIR

How much?
How fast?



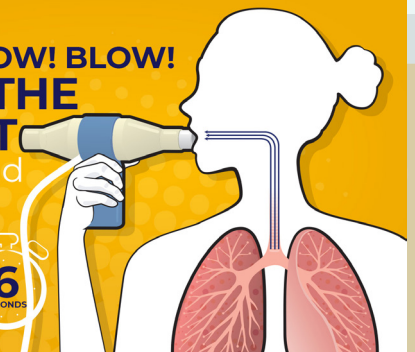
Spirometry needs a forced exhalation to measure *how much* air you can blow out and *how fast*.

8

BLOW! BLOW! BLOW!
BLAST THE
AIR OUT

as hard and
as fast as
you can

FOR AT LEAST

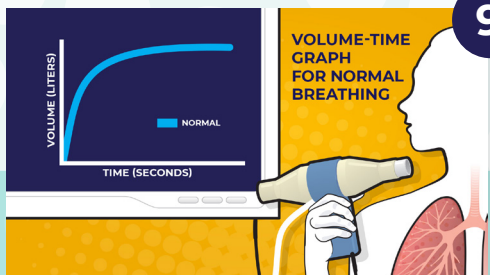
6
SECONDS

During the test, you will take a breath in, or inhale, as deeply as you can.

When your lungs are completely full, you will seal your lips around the mouthpiece and breathe out, or exhale, as hard and as fast as you can. This part of the test measures how much and how fast you can exhale. Asthma can affect how quickly you can breathe air out.

Next, you will inhale again using the biggest and fastest breath you can, until you can't breathe in any more air. This part of the test will measure how much air and how fast you can inhale. Asthma generally does not affect your ability to get air into your lungs.

9



After the test, your health care provider will get a graph that measures how much and how fast you blew air out during your exhalation.

The blue curved line shows what a normal result could look like.

10

YOUR RESULTS

are then compared to standards that take into account

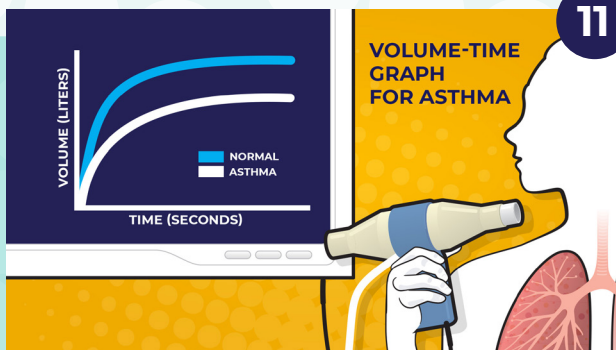
- ✓ age
- ✓ sex
- ✓ height
- ✓ weight
- ✓ race/ethnicity

AND ARE BASED ON HEALTHY PEOPLE

who never smoked and who have no symptoms of lung disease.



11

**The white curve represents**

a result for someone with asthma.

See how the volume of air blown out over time is lower when you have asthma (white line) than during an exhalation of someone without asthma (blue line).

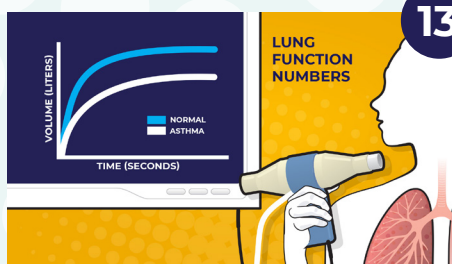
When you have asthma, you may be able to blow out a similar volume of air as someone without asthma, it just takes you longer to do it.

12

With asthma, you can't blow out air as fast as someone without asthma because asthma narrows your airways.

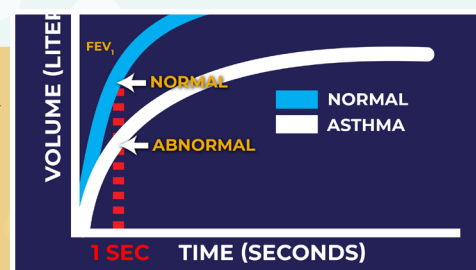
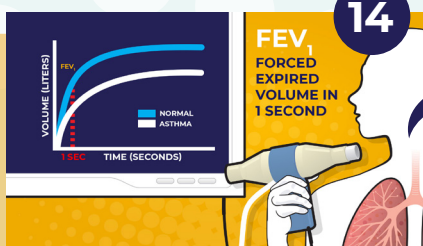
For most people with asthma,
THE RIGHT TREATMENT PLAN
can help you have normal or near normal lung function.

13



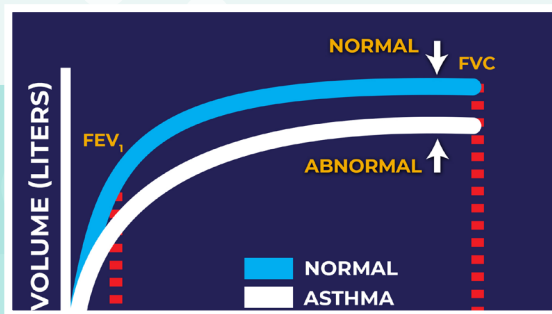
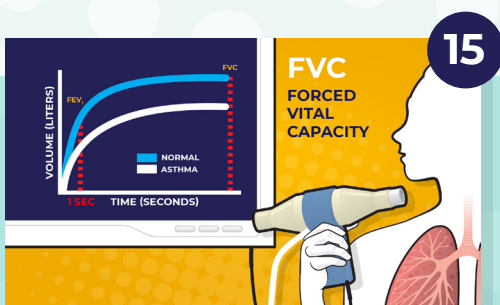
Your health care provider will also get your lung function numbers to help understand your lung condition.

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**FEV₁ is forced expired volume in one second**

and is the volume of air you can blow out during the first second of the test.

With asthma, this volume can be lower than normal because you can't blow the air out of your lungs quickly.



FVC is forced vital capacity

and is the volume of air you are able to blow out given as much time as you need.

With asthma, this volume can be normal or lower than normal.

Another important number

is the ratio of FEV_1 to FVC. It shows how much air you can blow out in the first second compared to how much air you can blow out given as much time as you need.

With asthma, this number can be lower than normal because you may blow out less air from your lungs in the first second.

Normally, a healthy person can blow out

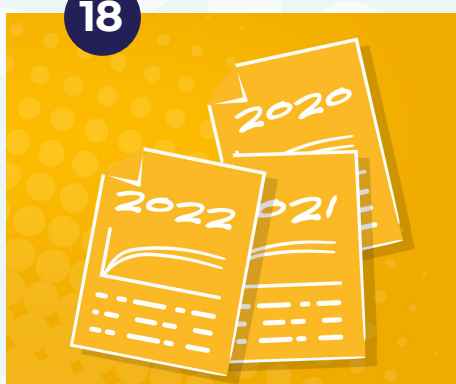
70%-80%

of all of the air they can blow out of their lungs in the first second of exhalation.



- Your health care provider uses all of these numbers to detect improvement or worsening, and to check how well your asthma treatment is working.
- Talk to your health care provider about your lung function numbers.
- You may need other types of tests to get more information to diagnose or control your asthma.

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Every year or so,

your health care provider may need to check your spirometry to see if your lung function is stable. Spirometry may also be checked when your asthma symptoms change or when your therapies have been changed.