

Let's Talk About...

Methacholine challenge test: Understanding asthma

What is the methacholine challenge test?

A methacholine challenge test can help your child's healthcare provider diagnose asthma or see how serious the asthma is.

A methacholine challenge test is a lung function test that helps determine your child's airway irritability. Your child will inhale a mist that contains different concentrations of methacholine. Methacholine is an agent that may cause airway narrowing, especially in people with asthma. The mist is produced by a device called a nebulizer. Your child will inhale the mist through a mouthpiece.

Before the test begins and after inhaling the methacholine, your child will blow forcefully into a spirometer, a tool that measures lung capacity.

How do I prepare my child for the methacholine challenge test?

Your child must stop taking the following medicines before their methacholine challenge test.



Medicines	When to stop taking
Short-acting inhaled bronchodilators in conventional doses (such as Ventolin, Proventil, ProAir)	6 hours before test
Long-acting inhaled bronchodilators (such as Serevent, Advair, Symbicort, Dulera)	36 hours before test
Ultra-long-acting bronchodilators (such as Arcapta, Breo Ellipta)	48 hours before test
Short-acting anticholinergics (such as Atrovent)	12 hours before test
Long-acting anticholinergics (such as Spiriva)	At least 72 hours before test

Your child can continue to take the following medicines before the test unless their healthcare provider says otherwise:

- Singulair/montelukast
- Corticosteroids (inhaled and oral)
- Antihistamines

If you have questions about your child's medicines and whether they need to stop taking them before the test, call your child's healthcare provider.

Your child must be able to perform the pulmonary function test by blowing forcefully into the spirometer before starting the methacholine challenge. If they can't adequately perform the pulmonary function test, the challenge will be cancelled.

You will need to sign a consent form before the challenge.

What happens during the methacholine challenge test?

- Your child will blow forcefully into a spirometer.
- They will then inhale the mist of methacholine.
- After inhaling the mist, your child will blow forcefully into the spirometer. If your child's lung function remains above a certain level, they will continue inhaling the next higher dose of methacholine.
- These steps will continue until all doses of methacholine have been administered, or until your child's lung function decreases past a certain level.
- Your child will then be given a bronchodilator medicine. They will wait 10 minutes and then blow into the spirometer. The healthcare provider will see if your child's lung function is within a certain pre-challenge level.

- If your child's lung function is not within a certain pre-challenge level, they will be given a second bronchodilator medication. Your child will wait 10 minutes and then blow into the spirometer. Their lung function must return to a certain pre-challenge level before leaving the pulmonary function lab. If your child's lung function does not return to this level, the doctor will be notified. The test will take about 90 minutes.

Your child's doctor will discuss the results with you after the test is completed and interpreted by a pediatric pulmonologist.

What are the potential side effects of the methacholine challenge test?

The methacholine challenge is usually well tolerated without significant side effects. However, inhaling methacholine may cause:

- Shortness of breath
- Wheezing
- Cough
- Headache
- Chest tightness

Many children do not have any symptoms at all. When they do occur, they are mild and last only a few minutes. Your child can inhale a bronchodilator medicine before leaving the lab, if needed.

Your child is not likely to have a severe asthmatic reaction. However, if your child does have a severe reaction, they will immediately receive the appropriate treatment.

What if I have questions about the methacholine challenge test?

If you have questions about preparing your child for the methacholine challenge or what to expect during the test, contact your child's healthcare provider.

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