

## PATIENT EDUCATION

Our lab is staffed by a registered respiratory therapist trained to educate patients and families in the tools of monitoring and managing lung disease. Educational services include instruction in:

- Medication administration, including inhaler with holding chamber, dry powder inhalers, aerosol nebulization
- Peak flow monitoring
- Airway clearance techniques, for those at risk for atelectasis or with retained airway secretions

The laboratory is located on the lower level of Hasbro Children's Hospital. Our hours of operation are Monday to Friday, 9 a.m. to 5 p.m. For more information, or to schedule a test, please contact us at 401-444-2829, or find us online at [www.hasbrochildrenshospital.org](http://www.hasbrochildrenshospital.org).



### Hasbro Children's Hospital

The Pediatric Division of Rhode Island Hospital

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Pediatric Pulmonary Function Laboratory  
Hasbro Children's Hospital  
593 Eddy Street, Providence, Rhode Island  
[HasbroChildrensHospital.org](http://HasbroChildrensHospital.org)



LSMC 0211

## PEDIATRIC PULMONARY FUNCTION LABORATORY



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## WELCOME

Welcome to the Pediatric Pulmonary Function Laboratory at Hasbro Children's Hospital. With the most experienced staff, advanced diagnostic tools and equipment, and broad array of educational services, our lab is an excellent resource for pediatric pulmonary patients and their families, as well as for community pediatric care providers.

We are committed to partnering with providers to deliver the best care to their patients, and to communicating effectively with referring physicians as we coordinate children's care.

All our equipment is specially calibrated to pediatric patients. Our staff is trained to conduct pulmonary testing on children, and to read and interpret pediatric findings, resulting in more accurate test results. Medical direction is provided by the pulmonary division of the department of pediatrics at The Warren Alpert Medical School of Brown University.

### *Our diagnostic services include:*

- **Spirometry:** This most commonly used test measures lung volume (vital capacity) and flow. The test can identify obstruction and is essential in the diagnosis and management of asthma. The presence of bronchospasm can be assessed by administration of a bronchodilator during the test session. Spirometry is appropriate for children ages six and older.



- **Lung volumes:** Measurement of all lung volumes or capacities is indicated to identify restrictive lung disease (if vital capacity is low; for certain diagnoses such as connective tissue disease). Capacities are measured by the body box (plethysmography) or nitrogen washout. Children ages eight and older can usually perform the test maneuvers.
- **Bronchial challenge with methacholine:** Airway responsiveness is assessed by administration of increasing doses of methacholine, an agent that provokes bronchospasm. Most patients with asthma have hyper-responsiveness when tested in the laboratory. The child must be able to perform spirometry to complete this test.
- **Diffusion capacity (DLCO):** This test measures the transfer capability of the lung for carbon monoxide. Risk factors for abnormal diffusion capacity include diagnoses such as connective tissue diseases, interstitial lung disease and exposure to radiation and chemotherapy for malignancy. Diffusion capacity is not a routine test and is usually reserved for the aforementioned conditions.

## WHICH TEST IS BEST?

We can assist pediatric providers in choosing the best test for their patients.

- **Asthma:** Spirometry should be done for all patients diagnosed or being evaluated for asthma. The National Asthma Education and Prevention Program guidelines recommend testing be done at the time of diagnosis; after initiation of therapy; at times of suboptimal control; or at least every one to two years.



- **Cough:** A patient with chronic or recurrent and prolonged episodes of cough can be a challenge. Spirometry might show obstruction (with or without response to bronchodilator), refining the differential diagnosis to include lower airway pathology. If spirometry is normal, bronchoprovocation with methacholine might be considered, especially for a patient who has cough but no wheezing.
- **Dyspnea (shortness of breath):** As with cough, dyspnea might be a symptom of lower airway obstruction. It might also be due to restriction, a less common problem in children. With restriction, spirometry would show a reduced vital capacity. Measurement of lung volumes would then be indicated.