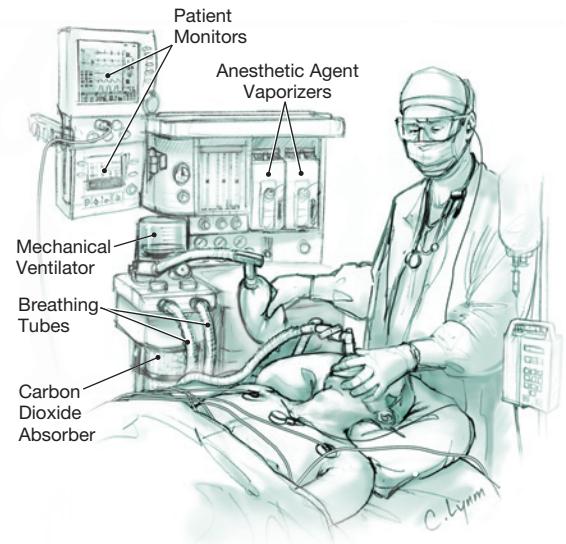


# Preparing for Surgery: Evaluation of Lung Function

Lung diseases, such as **chronic obstructive pulmonary disease (COPD)**, also called **emphysema**, affect an individual's ability to tolerate surgical procedures. Lung function, the ability of the lungs to provide oxygen to the body and remove carbon dioxide, is a critical factor in an individual's **perioperative** (the time period surrounding an operation) well-being. To reduce risk of pulmonary problems during and after an operation, your doctors may order tests and medications. Doctors involved in preparing you for a procedure may include your primary care physician, your surgeon, your anesthesiologist, and other specialists including **pulmonologists** (doctors with specialized education in treating lung diseases). The type of anesthesia you receive may depend on your lung function. Sometimes persons with severe lung disease need to remain on a **ventilator** (breathing machine) after surgery; others may require oxygen and respiratory treatments afterward. COPD also increases the risk of pneumonia after surgery. The May 16, 2007, issue of *JAMA* includes an article about evaluating COPD and other lung diseases in preparation for surgical procedures.



## PREVENTING POSTOPERATIVE PULMONARY COMPLICATIONS

- Stop smoking, especially if it can be done at least 2 months before a planned operation.
- Undergo a preoperative exercise regimen, including deep breathing and strong cough practice, if possible before **elective** (planned) surgery.
- Optimize medications for COPD and other lung diseases. This may include **bronchodilators** (to help relax airway muscles), inhaled or oral steroids, and antibiotics to treat bacterial respiratory infections.
- Delay surgery and treat pneumonia (if present) with antibiotics and chest physical therapy.
- Maximize nutrition prior to elective surgery.

## DIAGNOSIS AND TESTING

Medical history and physical examination usually reveal the severity of lung disease. Other testing may help to evaluate and optimize a person's lung function, especially in the setting of **thoracic** (chest) or other high-risk operations. Chest x-ray can show preexisting lung diseases, including COPD and pneumonia. Arterial blood gas sampling allows measurement of the oxygen and carbon dioxide levels in the blood, but is rarely necessary before surgery. Pulmonary function studies include simple bedside spirometry and more complicated testing. **Spirometry** measures the volumes that an individual can breathe in and out. This can predict need for further testing, treatment with bronchodilating medications, other respiratory therapies, and even risk of pulmonary failure in **intrathoracic** (inside of the chest) operations, such as **pneumonectomy** (removal of one of the lungs).

Sources: National Heart, Lung, and Blood Institute; American Society of Anesthesiologists; Society of Critical Care Medicine; American Lung Association

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## FOR MORE INFORMATION

- National Heart, Lung, and Blood Institute  
[www.nhlbi.nih.gov](http://www.nhlbi.nih.gov)
- American Society of Anesthesiologists  
[www.asahq.org](http://www.asahq.org)
- American Lung Association  
[www.lungusa.org](http://www.lungusa.org)

## INFORM YOURSELF

To find this and previous JAMA Patient Pages, go to the Patient Page Index on JAMA's Web site at [www.jama.com](http://www.jama.com). Many are available in English and Spanish. A Patient Page on chronic obstructive pulmonary disease was published in the November 5, 2003, issue; one on smoking cessation was published in the July 5, 2006, issue; and one on adult asthma was published in the July 21, 2004, issue.

