

## Risk for and Reduction of Pulmonary Complications in Patients Undergoing Noncardiothoracic Surgery: An American College of Physicians Guideline

*Summaries for Patients* are a service provided by *Annals* to help patients better understand the complicated and often mystifying language of modern medicine.

The full reports are titled “Risk Assessment for and Strategies To Reduce Perioperative Pulmonary Complications for Patients Undergoing Noncardiothoracic Surgery: A Guideline from the American College of Physicians,” “Preoperative Pulmonary Risk Stratification for Noncardiothoracic Surgery: Systematic Review for the American College of Physicians,” and “Strategies To Reduce Postoperative Pulmonary Complications after Noncardiothoracic Surgery: Systematic Review for the American College of Physicians.” They are in the 18 April 2006 issue of *Annals of Internal Medicine* (volume 144, pages 575-580, pages 581-595, and pages 596-608, respectively). The first report was written by A. Qaseem, V. Snow, N. Fitterman, E.R. Hornbake, V.A. Lawrence, G.W. Smetana, K. Weiss, and D.K. Owens, for the Clinical Efficacy Assessment Subcommittee of the American College of Physicians; the second report was written by G.W. Smetana, V.A. Lawrence, and J.E. Cornell; and the third report was written by V.A. Lawrence, J.E. Cornell, and G.W. Smetana.

### Who developed these guidelines?

The American College of Physicians (ACP) developed these recommendations. Members of ACP are internal medicine doctors (internists), specialists in the care of adults.

### What is the problem and what is known about it so far?

Pulmonary complications (lung infections and breathing difficulties) can occur with surgery and play a big role in how patients do after surgery. Identifying patients before surgery who are likely to develop these complications would help doctors to advise patients about these risks. Good information about ways to reduce these complications would also be useful.

### How did the ACP develop these recommendations?

Authors reviewed published studies to identify factors that are associated with pulmonary complications related to noncardiothoracic surgery (surgery that does not involve opening the chest cavity). They also reviewed published studies to identify effective strategies for reducing pulmonary complications. A panel of expert physicians evaluated the quality and quantity of the evidence to develop recommendations.

### What did the authors find?

The authors found good evidence that the following patient factors increase the chances of pulmonary complications: older age, American Society of Anesthesiologists class II or higher, chronic obstructive pulmonary disease, dependence on others for help with daily activities, and congestive heart failure. The authors also found good evidence that pulmonary complications are most common with aortic aneurysm repair, thoracic surgery, abdominal surgery, neurosurgery, vascular surgery, head and neck surgery, surgery lasting for more than 3 hours, emergency surgery, and general anesthesia. The only laboratory test result that predicted pulmonary complications was low serum albumin level (blood test that indicates poor nutritional status). The authors found good evidence that strategies to expand the lungs after surgery, such as deep breathing exercises, reduce the risk for pulmonary complications. They found fair evidence that selective use of a nasogastric tube (a tube passed through the nose to the stomach) for nausea, vomiting, or abdominal distention only reduces pulmonary complications after abdominal surgery. They found insufficient evidence to draw firm conclusions about the effectiveness of other strategies to reduce pulmonary complications.

### What does the ACP suggest that patients and doctors do?

Patients and doctors should know that the following factors increase pulmonary complications: chronic obstructive pulmonary disease, age older than 60 years, American Society of Anesthesiologists risk score of II or higher, dependence on others for daily function, congestive heart failure, and serum albumin level less than 3.5 g/dL (<35 g/L). They should also be aware that pulmonary complications are common with abdominal, thoracic, neurologic, head and neck, vascular, and aortic aneurysm repair surgery, as well as any surgery lasting more than 3 hours, performed as an emergency, or involving general anesthesia. Patients with any of these factors should receive interventions that effectively reduce pulmonary complications, including deep breathing exercises after surgery and selective use of a nasogastric tube after abdominal surgery, if needed, to relieve nausea, vomiting, and abdominal distention. Doctors should not routinely use presurgery tests of lung function or chest radiography to predict the risk for pulmonary complications. In addition, doctors should not use right-heart catheterization (special devices to measure heart and lung pressures) or artificial nutrition to reduce the chances of pulmonary complications.

### What are the cautions related to these recommendations?

These recommendations could change as new information becomes available.

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