



Disclosure

- ◆ I have no actual or potential conflict of interest in relation to this program/presentation.

2

Learning Objectives

- ◆ Define postoperative pulmonary complications (PPCs)
- ◆ Identify patient- and procedure-related risk factors for PPCs
- ◆ Outline the preoperative pulmonary risk assessment
- ◆ Assess postoperative pulmonary risk
- ◆ Examine evidence-based strategies to reduce PPCs

3

Postoperative Pulmonary Complications (PPCs)

- ◆ Important source of perioperative morbidity & mortality
- ◆ PPCs occur at a rate of 6.8% across all types of surgery
- ◆ More costly & longer length of stays than other major postoperative complications
- ◆ Estimating PPCs should be a standard preoperative assessment

4

Postoperative Pulmonary Complications (PPCs)

Definition

- ◆ Postoperative pulmonary abnormality that produces identifiable disease or dysfunction that is clinical significant and adversely affects the clinical course

5

Perioperative Pulmonary Physiologic Changes

- ◆ An extension of normal physiologic changes
 - Reduced lung volumes
 - ◆ Diaphragmatic dysfunction
 - ◆ Reduced vital capacity
 - ◆ Reduced functional residual capacity
 - Depressed respiratory drive
 - Inhibition of cough
 - Impaired mucociliary clearance

6

Major Categories of PPCs

- ▶ Atelectasis
- ▶ Bronchospasm
- ▶ Acute respiratory failure
 - Reintubation & prolonged mechanical ventilation
- ▶ Infection
 - Bronchitis & pneumonia
- ▶ Exacerbation of chronic lung disease (COPD or asthma)

7

Patient-Related Risk Factors for PPCs

Definite

- ▶ Advanced age
- ▶ Poor general health status
- ▶ CHF
- ▶ COPD
- ▶ Functional dependence

8

Patient-Related Risk Factors for PPCs

Likely or Possible

- ▶ Cigarette use
- ▶ Obstructive sleep apnea
- ▶ Pulmonary hypertension
- ▶ Upper respiratory infection
- ▶ Metabolic & nutritional factors

9

Procedure-Related Risk Factors for PPCs

Definite

- ▶ Surgical site
- ▶ Duration of surgery
- ▶ Emergent surgery
- ▶ Type of neuromuscular blockade

Likely or Possible

- ▶ Type of anesthesia

10

Preoperative Pulmonary Risk Assessment

History & Physical Examination

- ▶ Identify aforementioned risk factors
- ▶ Elicit unrecognized chronic lung disease or heart failure
- ▶ Evidence of obstructive lung disease
 - Decreased breath sounds
 - Adventitious sounds
 - Prolonged expiratory phase

11

Preoperative Pulmonary Risk Assessment

Preoperative Testing

- ▶ Pulmonary function testing (PFTs)
- ▶ Cardiopulmonary exercise testing (CPET)
- ▶ Chest radiography (CXR)

12

Risk Prediction Tools for PPCs

- ◆ ARISCAT Risk Index
- ◆ Gupta Calculator for Postoperative Respiratory Failure
- ◆ Gupta Calculator for Postoperative Pneumonia
- ◆ Arozullah Respiratory Failure Index
- ◆ ACS NSQIP Surgical Risk Calculator

13

Risk Reduction Strategies for PPCs

Preoperative

- ◆ Smoking cessation
- ◆ Optimize control of chronic lung disease
- ◆ Lung expansion strategies
- ◆ Patient education

14

Risk Reduction Strategies for PPCs

Intraoperative

- ◆ Type of anesthesia/neuromuscular blockade
- ◆ Duration of surgery
- ◆ Type of surgery

15

Risk Reduction Strategies for PPCs

Postoperative

- ◆ Lung expansion strategies
- ◆ Appropriate postoperative pain control
- ◆ Selective use of nasogastric decompression

16


