

HOSPITAL-ACQUIRED PNEUMONIA

Hospital-acquired pneumonia (HAP) is an infection of the lung parenchyma that occurs during the course of hospitalization. HAP is a significant source of morbidity, mortality, and increased resource expenditures. The attributable mortality for HAP is in the 30-50 percent range. The primary risk factor for the development of HAP is mechanical ventilation. The average length of stay for patients with HAP increases by an average of 13 days, with estimated additional costs of \$40,000. Hospitalists manage patients with HAP either as an attending physician or as a consultant to patients admitted to other services. Hospitalists can initiate quality improvement strategies at the individual patient level and at the system level to improve patient outcomes and optimize resource utilization.

KNOWLEDGE

Hospitalists should be able to:

- Define hospital-acquired pneumonia (HAP).
- List common organisms associated with HAP.
- Describe local and national resistance patterns for HAP.
- Identify important historical elements, medical record data and physical examination findings consistent with HAP.
- Distinguish the infectious causes of HAP.
- Describe the indicated tests required to evaluate HAP.
- Identify patients at risk for developing HAP.
- Describe the role of mechanical ventilation as a risk factor for the development of HAP.
- Explain the prophylactic measures commonly used to lower the risk of HAP.
- Describe the role of mechanical ventilation as a potential treatment option for HAP.
- Describe infection control practices to prevent the spread of resistant organisms within the hospital.
- Describe potential complications of HAP.
- Explain goals for hospital discharge, including specific measures of clinical stability for safe care transition.

SKILLS

Hospitalists should be able to:

- Elicit a thorough and relevant history, and perform a targeted physical examination for hospital-acquired pneumonia.
- Order and interpret indicated laboratory, microbiologic and radiological studies to confirm diagnosis of hospital acquired pneumonia and determine the etiologic agent.
- Initiate empiric antibiotic regimen based on patient history and underlying co-morbid conditions, likely organisms and local resistance patterns.
- Tailor antibiotic regimens based on microbiologic culture and sensitivity data as soon as available.
- Manage complications, which may include respiratory failure, pleural effusions and empyema.
- Coordinate care for patients requiring mechanical ventilation.
- Identify patients who require thoracentesis, perform or coordinate the procedure, and interpret the results.
- Assess patients with suspected hospital-acquired pneumonia in a timely manner, and manage or co-manage the patient with the primary requesting service.

ATTITUDES

Hospitalists should be able to:

- Communicate with patients and families to explain the etiology, management plan, and potential outcomes of hospital-acquired pneumonia.
- Communicate with patients and families to explain the tests and procedures and their indications, and to obtain informed consent.
- Recognize indications for specialty consultation, which may include infectious disease and/or pulmonary services.
- Employ a multidisciplinary approach, which may include nursing, respiratory therapy, nutrition and pharmacy services, to the care of patients with HAP through all care transitions.

- Recognize steps that can be employed to limit the emergence of antibiotic resistance.
- Document treatment plan and provide clear discharge instructions for post-discharge physicians.
- Recognize implications of HAP on discharge planning.
- Lead multidisciplinary teams to facilitate discharge planning, and communicate to outpatient providers the notable events of the hospitalization and anticipated post-discharge needs.
- Utilize evidence based recommendations and protocols and risk stratification tools for the treatment of HAP.

SYSTEM ORGANIZATION AND IMPROVEMENT

To improve efficiency and quality within their organizations, Hospitalists should:

- Collaborate with local infection control practitioners to reduce the spread of resistant organisms within the institution.
- Lead, coordinate or participate in multidisciplinary initiatives, which may include collaboration with critical care specialists and pulmonologists, to reduce the incidence of hospital-acquired pneumonia in ventilated patients.
- Lead, coordinate or participate in quality improvement initiatives to reduce ventilator days, rates of HAP, and variance in antibiotic use.
- Implement systems to ensure hospital-wide adherence to national standards for empiric antibiotic use, and document those measures as specified by recognized organizations.
- Lead efforts to educate staff on the importance of smoking cessation counseling and other prevention measures.