



ELSEVIER

Evidence-Based Medicine at the Point of Care

From the Medical Library to the Bedside

Library Association of the Republic of China,
Medical Library Committee

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Title: New Content Editor, First Consult

Date: 23 August 2012

Agenda

- Challenges in practicing evidence-based medicine (EBM)
- Point-of-care resources—why they are needed and how they help physicians practice EBM
- Sample use of EBM support at point of care

The Challenges of Practicing Evidence Based Medicine

- Time consuming
 - Amount of information
 - Rapid pace of new information
- Scientific dilemmas
 - Conflicting results of different studies
 - Inconsistent study design
 - Limited data for some conditions and diseases

Why do physicians need point of care resources?

- To get reliable information quickly
- To provide care based on best practices, supported by the best available evidence, with the goal of improved outcomes
- To follow health policies and regulations established by professional organizations, health insurance companies, government agencies

Point of Care Resources Should

Be:

- Current
 - Frequently updated
- Comprehensive
 - Find answers
- Easy to search and navigate
 - Fast answers
- Evidence based
 - Trustworthy

Point of Care Resources Should Be:

- Current
 - Updated every 3, 6, or 12 months
 - Important new information posted immediately
 - Latest updates

Point of Care Resources Should Be:

- Comprehensive
 - Broad range of clinical topics
 - Essential information for each topic
 - Prevention
 - Screening
 - Diagnosis
 - Treatment

Point of Care Resources Should Be:

- Easy to search and navigate for fast answers
 - Consistent format
 - Linked to related topics
 - Linked to layers of deeper resources

Point of Care Resources Should Be:

- Evidence based
 - Best available data to guide practice
 - Identified by thorough and systematic search
 - Summarized
 - Graded (quality and relevance)
 - Synthesized to provide recommendations

Evidence Based Point of Care Helping Physician and Patient

- Clinical case:
 - A 45 year old man has a fever, cough, and right-sided chest pain that is worse with deep inspiration
 - A chest x-ray show a small area of pneumonia on the right
- Clinical question:
 - Does pneumonia require treatment in hospital?



Saved Searches



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Study Type

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Specialty

Content Type

- All
- J** Journals (280)
- B** Books (36)
- Fc** First Consult (4)
- G** Guidelines (3)
- M** MEDLINE (1550)
- Ct** Clinical Trials (72)
- I** Images (237)

- Fc** **Community-acquired pneumonia in adults** [First Consult]
Margaret Trexler Hessen, MD,Austin Thompson, MD,Peter Murphy, MD,Randolph L. Pearson, MD
Revised: 30 Nov 2011
Last Updated:
Community-acquired pneumonia (CAP) is an acute infection of the lung parenchyma. A chest radiograph is essential in evaluating the possibility of CAP; it helps to confirm diagnosis in the presence of acute symptoms of infection and auscultatory fi...
- Fc** **Community-acquired pneumonia in children** [First Consult]
Veronica Gunn, MD, MPH,Steven M Opal, MD,James Kreindler, MD,Richard M Rutstein, MD
Revised: 08 Sep 2011
Last Updated:
Bradley JS, Byington CL, Shah SS, et al. The management of community-acquired pneumonia in infants and children older than 3 months of age: clinical practice guidelines by the Pediatric Infectious Diseases Society and Infectious Diseases Society o...
- Ct** **CAPRIVI: Community Acquired Pneumonia: Treatment With Avelox® in Hospitalized Patients** [Clinical Trial]
Conditions: Pneumonia
Interventions: Drug: Moxifloxacin (Avelox, BAY12-8039)
- B** **Community-Acquired Pneumonia** [Book]
Nelson Textbook of Pediatrics - Nineteenth Edition, Chapter 392, 1474-1479.e1, © 2011
Pneumonia is the leading killer of children worldwide, as shown by this illustration of global distribution of cause-

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▼ for

Differential Diagnoses Procedures

Consult > Medical Topics > Community-acquired pneumonia in adults

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Community-acquired pneumonia in adults

[Contributors](#)

Find more articles
Because not all answers are available

Key points

- Community-acquired pneumonia (CAP) is an acute infection of the lung parenchyma
- A chest radiograph is essential in evaluating the possibility of CAP; it helps to confirm diagnosis in the presence of acute symptoms and auscultatory findings
- Elderly patients may have an atypical presentation, lacking respiratory symptoms or fever but with more subtle symptoms such as functional status and a history of falls
- Empiric antibiotic therapy should be initiated as soon as possible once the diagnosis of pneumonia appears likely. In patients who are subsequently admitted to the hospital from the emergency room, antibiotics should be started before transfer
- Patients who require mechanical ventilation and/or are suffering from septic shock should be admitted to an intensive care unit (ICU)
- It should be determined whether the patient should be admitted to the hospital or can be treated at home based on the presence of conditions that could affect home care. In addition to clinical judgment, clinicians can use the [Pneumonia Severity Index \(PSI\) calculator](#) or CURB-65 criteria (confusion, blood urea nitrogen [BUN] >20 mg/dL, respiratory rate >30 breaths/min, low blood pressure [<90 mm Hg systolic], age ≥ 65 years)



Diagnosis

Summary approach [EBM]

- Although the symptoms and signs may point to a diagnosis of CAP, a definitive clinical decision cannot be made until an infiltrate has been confirmed on chest radiograph. However, a negative chest radiographic finding does not rule out CAP, especially early in the course of infection
- Once a chest radiograph has been obtained and the diagnosis confirmed, the initial site of treatment and the intensity of patient observation, and the use of health care resources. The decision should be based on the patient's preexisting conditions that may compromise home care, calculation of the [PSI](#) score, and clinical judgment
- The PSI uses a point system of several variables. Patients are initially divided into class I or higher depending on their mental status, and the presence of comorbid conditions (neoplastic disease, liver disease, CHF, cerebral vascular disease)
 - Patients aged 50 years or younger who have normal findings fall into class I
 - Patients over age 50 years who have abnormal findings are assessed further based on demographic factors (sex, race, residence), the presence of comorbid conditions (mentioned above), physical examination findings (fever, tachycardia, systolic hypertension, hypothermia, and hyperthermia), and laboratory or radiographic findings (hyponatremia, hyperglycemia, anemia, hypoxemia, pleural effusion)
 - Patients with less than 70 points fall into class II, whereas patients with 71 to 90 points fall into class III, patients with 91 to 130 points fall into class IV, and patients with more than 130 points fall into class V. Most patients in classes I and II can be treated as outpatients, whereas the remainder treated as inpatients
- A simpler, alternative means of objective assessment of pneumonia severity is the [CURB-65 scale](#) from which patients receive one point for each of the following indicators: confusion (compared to baseline); BUN greater than 20 mg/dl; equal to 30 breaths per minute; systolic blood pressure less than 90 mm Hg or diastolic blood pressure less than 60 mm Hg; or age 65 years or older. The British Thoracic Society suggests that hospital admission be considered for patients with scores of 3 or more be admitted to the hospital; a score of 4 or 5 should prompt consideration of admission to the ICU
- The decision to admit a patient to the intensive care unit (ICU) can be based on the presence of one or more of the following criteria: need for mechanical ventilation and septic shock, and three minor criteria, which include respiratory rate greater than 30 breaths per minute, hypotension requiring aggressive fluid resuscitation, multilobar disease, PO₂/fraction of inspired oxygen less than 100, or disorientation, uremia (BUN >20 mg/dl), leukopenia (leukocyte count <4,000 cells/ul), thrombocytopenia (platelet count <100,000 cells/ul)

Close

- **Key points**
- **Background**
 - Description
 - Epidemiology
 - Causes and risk factors
 - Associated disorders
- **Screening**
- **Primary prevention**
 - Summary approach
 - Population at risk
 - Preventive measures
 - Evidence
- **Diagnosis**
 - Summary approach
 - Evidence
 - Clinical presentation
 - Diagnostic testing
 - Chest radiograph
 - Pulse oximetry
 - Arterial blood gases

Pneumonia Severity Index Calculator - Internet Explorer provided by Reed Elsevier

http://pda.ahrq.gov/clinic/psipcalc.asp

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Pneumonia Severity Index Calculator

Pneumonia Severity Index Calculator

An interactive tool for the Pneumonia Severity Index from the Assessment of the Variation and Outcomes of Pneumonia: Pneumonia Patient Outcomes Research Team Final Report. AHRQ Publication No. 97-N009.

[Reference](#) [Abbreviations and Definitions](#) [Disclaimer](#) [About](#) [Design](#)

*Age : *Sex :

Nursing Home Resident

Comorbid Diseases :

Renal Disease Liver Disease CHF

Cerebrovascular Disease Neoplasia

Physical Exam :

Altered Mental Status SBP < 90

Temp < 35 or >= 40 RR >= 30 HR >= 125

Labs :

PH < 7.35 PO2 < 60 or Sat < 90

NA < 130 HCT < 30 Gluc > 250

BUN > 30 Pleural Effusion

* Items marked with an asterisk are required.

Current as of December 2003

Internet Citation:

Pneumonia Severity Index Calculator. December 2003. Agency for Healthcare Research and Quality. Rockville, MD. <http://pda.ahrq.gov/psipcalc.asp>

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[Department of Health and Human Services](#)

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Summary of Evidence

[Complete List of Evidence References](#)

Diagnostic criteria

- L Severity score in low-risk patients:** Severity scoring systems predict 30 day mortality in community acquired pneumonia with some accuracy, and the pneumonia severity index (PSI) has the best predictive ability for identifying low-risk patients that can be managed in the outpatient setting. FC Composite GRADE = Low
- A good quality systematic review with meta-analysis evaluated diagnostic performance along with comparison of PSI and variations of the CURB scoring system (CURB-65 and CRB-65). The review identified 23 prospective studies and trials of varying quality including data on 22,753 subjects. The authors reported diagnostic odds ratios for mortality of 10.77 for the PSI, 6.40 for the CURB-65, 5.97 for CRB-65, and 5.75 for CURB. They found PSI to have the highest sensitivity and lowest specificity for mortality; CRB-65 was the most specific but least sensitive. Further, they concluded that all four scales were accurate measures of negative predictive value in low-risk patients but were less accurate measures of positive predictive value. FC GRADE = Low
1. [Loke YK, Kwok CS, Niruban A, Myint PK. Value of severity scales in predicting mortality from community-acquired pneumonia: systematic review and meta-analysis. Thorax. 2010;65:884-90](#)
 - A good quality systematic review and meta-analysis evaluated 40 observational studies of varying quality on performance of PSI and variations of the CURB scoring system. There were no significant differences in overall performance of the severity indexes; however, the PSI performed

Trusted Results, Time Saved

- The quality of evidence is low, but the physician knows that the literature has been searched thoroughly and the data systematically evaluated and summarized
- He or she is not missing important information
- The physician saves time doing the research to care for other patients
- The patient is treated safely and comfortably at home

Back to the Patient

- The calculated PSI score indicates Class 1, low risk
- The evidence, summarized and graded, supports treatment as an outpatient

Comprehensive Information, Easy Navigation

- For more information, search Clinical Key
 - Incorporates FC as a point of care resource
 - Includes all Elsevier content plus Medline
 - Improved search
 - “Smart content”
 - Proprietary taxonomy



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- Ct** Clinical Trials (72)
- I** Images (237)

- Pneumonia Advanced age Comorbid illness (...)
- J** **Glucocorticoid treatment in community-acquired pneumonia** [Journal] 
 Confalonieri, Marco, Meduri, G Umberto
Lancet, The, 2011-06-11, Volume 377, Issue 9782, 1982-1984
 Community-acquired pneumonia is a major public health problem. While mortality decreased sharply after the introduction of antibiotics in the 1940s, since 1950 the overall acute (hospital) mortality has either remained stable or increased. 1 Equal...
 - M** **Prediction of mortality in community-acquired pneumonia in hospitalized patients.**
 [MEDLINE]
 Musonda, Patrick, Sankaran, Prasanna, Subramanian, Deepak N, Smith, Alexandra C, Prentice, Philippa, Tariq, Syed M, Kamath, Ajay V, Myint, Phyo K
Am. J. Med. Sci., 2011-12-01,
 Community-acquired pneumonia (CAP) is common and associated with a significant mortality. Currently recommended criteria to assess severity of CAP could be improved. We derived 2 new criteria CARS1 [confusion, age (<65, ≥65 to <85 or ≥ 85), r...
 - J** **Dexamethasone in community-acquired pneumonia** [Journal] 
 Meybeck, A, Turbelin, C, Delannoy, PY, Olive, D, Alfandari, S
Lancet, The, 2011-09-10, Volume 378, Issue 9795, 980-980
 Sabine Meijvis and colleagues 1 conclude that dexamethasone can reduce length of hospital stay in patients with community-acquired pneumonia. We would like to add some comments. Their study addressed a selected population. Of patients admitted to ...

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M Prediction of mortality in community-acquired pneumonia in hospitalized patients.

Musonda P, Sankaran P, Subramanian DN, Smith AC, Prentice P, Tariq SM, Kamath AV, Myint PK - Am. J. Med. Sci. - Dec 2011; 342(6):489-93

Abstract

Community-acquired pneumonia (CAP) is common and associated with a significant mortality. Currently recommended criteria to assess severity of CAP could be improved. We derived 2 new criteria CARSI [confusion, age (<65, ≥65 to <85 or ≥ 85), respiratory rate and shock index] and CARASI, where shock index is replaced by temperature-adjusted shock index based on previous observations. By using data of a prospective study performed in Norfolk and Suffolk, United Kingdom, we compare these new indices with the CURB-65 criteria. A total of 190 patients were included (men, 53%). The age range was 18 to 101 years (median, 76 years). There were a total of 54 deaths during a 6-week follow-up, all within 30 days of admission. Sixty-five (34%) had severe pneumonia by CURB-65. Using CARSI and CARASI, 39 (21%) and 36 (19%) had severe pneumonia, respectively. Sensitivity was slightly less, but specificity was higher with CARSI and CARASI indices than that of CURB-65. Positive and negative predictive values in predicting death during 6-week follow-up were comparable among 3 indices examined. The receiver operating characteristic curve values (95% confidence interval) for the criteria were 0.67 (0.60-0.75) for CURB-65, 0.64 (0.60-0.71) for CARSI and 0.64 (0.57-0.71) for CARASI. Comparing receiver operating characteristic curves for CURB-65 versus CARSI, or CURB-65 versus CARASI, there was no evidence of a difference between the tools, $P = 0.35$ and 0.33 , respectively. There was good agreement, which was strongly statistically significant ($\kappa = 0.56$, $P < 0.0001$ and $\kappa = 0.54$, $P < 0.0001$, respectively). Both CARSI and CARASI are useful in predicting deaths associated with CAP, including older patients, and may be particularly useful in the emergency and community settings.

Citation