

## Supplementary Appendix

Supplement to: File TM and Ramirez JA. Community-acquired pneumonia. N Engl J Med 2022;389:632-41. DOI: 10.1056/NEJMcp2303286

This appendix has been provided by the authors to give readers additional information about the work.

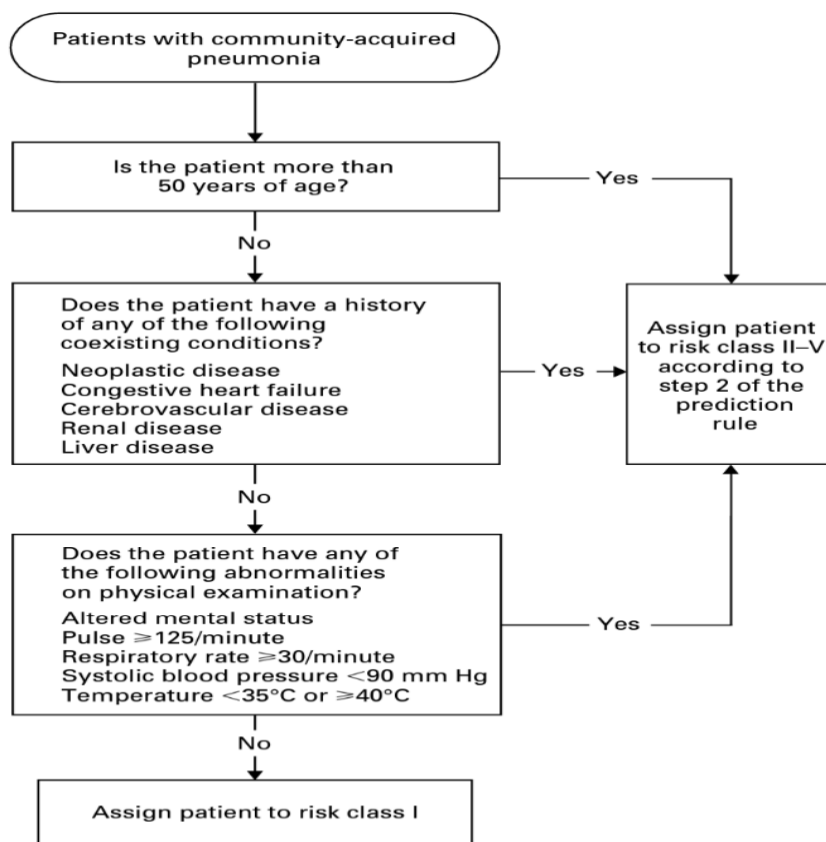
# Supplement-- Clinical Practice: Community-acquired Pneumonia

Table of Contents	Page
Pneumonia Severity Index	1
Risk Factors for Specific CAP Pathogens	3

Determining the severity of illness and site of care in patients with community-acquired pneumonia primarily relies on clinical judgment, which can be further complemented by employing severity scores. The most commonly employed ones are the Pneumonia Severity Index (PSI) and CURB-65. CURB-65 is described in the text. PSI is describe here:

## Pneumonia Severity Index (PSI)<sup>1</sup>:

Figure S1: Step 1



**Figure 1.** Identifying Patients in Risk Class I in the Derivation of the Prediction Rule. In step 1 of the prediction rule, the following were independently associated with mortality: an age of more than 50 years, five coexisting illnesses (neoplastic disease, congestive heart failure, cerebrovascular disease, renal disease, and liver disease), and five physical-examination findings (altered mental status; pulse,  $\geq 125$  per minute; respiratory rate,  $\geq 30$  per minute; systolic blood pressure,  $< 90$  mm Hg; and temperature,  $< 35^\circ\text{C}$  or  $\geq 40^\circ\text{C}$ ). In the derivation cohort, 1372 patients (9.7 percent) with none of these 11 risk factors were assigned to risk class I. All 12,827 remaining patients were assigned to risk class II, III, IV, or V according to the sum of the points assigned in step 2 of the prediction rule (see Tables 2 and 3).

## Table S1: Point Scoring System for Step 2

**TABLE 2.** POINT SCORING SYSTEM FOR STEP 2 OF THE PREDICTION RULE FOR ASSIGNMENT TO RISK CLASSES II, III, IV, AND V.

CHARACTERISTIC	POINTS ASSIGNED*
Demographic factor	
Age	
Men	Age (yr)
Women	Age (yr) – 10
Nursing home resident	+10
Coexisting illnesses†	
Neoplastic disease	+30
Liver disease	+20
Congestive heart failure	+10
Cerebrovascular disease	+10
Renal disease	+10
Physical-examination findings	
Altered mental status‡	+20
Respiratory rate $\geq 30$ /min	+20
Systolic blood pressure $< 90$ mm Hg	+20
Temperature $< 35^{\circ}\text{C}$ or $\geq 40^{\circ}\text{C}$	+15
Pulse $\geq 125$ /min	+10
Laboratory and radiographic findings	
Arterial pH $< 7.35$	+30
Blood urea nitrogen $\geq 30$ mg/dl (11 mmol/liter)	+20
Sodium $< 130$ mmol/liter	+20
Glucose $\geq 250$ mg/dl (14 mmol/liter)	+10
Hematocrit $< 30\%$	+10
Partial pressure of arterial oxygen $< 60$ mm Hg§	+10
Pleural effusion	+10

\*A total point score for a given patient is obtained by summing the patient's age in years (age minus 10 for women) and the points for each applicable characteristic. The points assigned to each predictor variable were based on coefficients obtained from the logistic-regression model used in step 2 of the prediction rule (see the Methods section).

†Neoplastic disease is defined as any cancer except basal- or squamous-cell cancer of the skin that was active at the time of presentation or diagnosed within one year of presentation. Liver disease is defined as a clinical or histologic diagnosis of cirrhosis or another form of chronic liver disease, such as chronic active hepatitis. Congestive heart failure is defined as systolic or diastolic ventricular dysfunction documented by history, physical examination, and chest radiograph, echocardiogram, multiple gated acquisition scan, or left ventriculogram. Cerebrovascular disease is defined as a clinical diagnosis of stroke or transient ischemic attack or stroke documented by magnetic resonance imaging or computed tomography. Renal disease is defined as a history of chronic renal disease or abnormal blood urea nitrogen and creatinine concentrations documented in the medical record.

‡Altered mental status is defined as disorientation with respect to person, place, or time that is not known to be chronic, stupor, or coma.

§In the Pneumonia PORT cohort study, an oxygen saturation of less than 90 percent on pulse oximetry or intubation before admission was also considered abnormal.

**Table S2: PSI Stratification of Risk Factors**

Risk	Risk Class	Based on
Low	I	Algorithm
Low	II	< 70 points
Low	III	71-90 points
Moderate	IV	91-130 points
High	V	>130 points

**Patients in risk classes I or II generally are candidates for outpatient treatment, risk class III patients are potential candidates for outpatient treatment or brief inpatient observation, and patients in classes IV and V should be hospitalized**

This model may be used to help guide the initial decision on site of care but should always be supplemented with physician judgement and determination of other factors, including degree of hypoxia, the ability to safely and reliably take oral medication and the availability of outpatient support resources.

## Risk Factors for Specific Pathogens

**Table S3: Risk factors that are associated with a specific pathogen that can cause CAP**

CAP Pathogen	Specific Risk factors
Influenza	Influenza activity in the community. Close contact with an infected person.
SARS-CoV-2	SARS-CoV-2 activity in the community. Close contact with an infected person.
Legionella species	Recent cruise ship. Exposure to contaminated water sources (e.g., hot tubs, cooling towers; recent plumbing)
Methicillin-resistant Staphylococcus aureus (MRSA)	Prior infection or colonization with MRSA
Pseudomonas aeruginosa	Prior infection or colonization with Pseudomonas aeruginosa
Multi-drug resistant (MDR) Gram-negative rods	Prior infection or colonization with MDR Gram-negative rods
Oral anaerobic bacteria	Poor dental hygiene
Chlamydophila psittaci	Exposure to birds
Coxiella burnetii	Exposure to farm animals or parturient cats
Francisella tularensis	Exposure to rabbits
MERS-CoV	Exposure to infected camels; travel to the Arabian Peninsula

## Revision 2

Coccidioides species	Travel to southwestern United States
Histoplasma capsulatum	Exposure to bat or bird droppings

## References

1. Reprinted from Fine MJ, Auble TE, Yealy DM, et al. A prediction rule to identify low-risk patients with community-acquired pneumonia. N Engl J Med 1997;336:243–50.