Background: Incident cardiac complications develop in around one-quarter of hospitalized patients with community-acquired pneumonia (CAP) and increase their short-term mortality. At present, there is no validated tool to predict the risk of cardiac complications in patients with CAP.

Methods: We analyzed data from two independent cohorts of CAP patients in which the 30-day incidence of acute cardiac complications (new or worsening heart failure, new or worsening arrhythmias, or myocardial infarction) was ascertained. The derivation cohort consisted of 1,343 inpatients from the Pneumonia Patient Outcomes Research Team study (October 1, 1991 - March 1, 1994). We used logistic regression analysis with stepwise backward elimination and shrinkage to correct for over-fitting to derive the prediction model and score. The model was then validated in 608 inpatients from the Dissemination of Guidelines for Length of Stay study (February 1, 1998 - March 1, 1999).

Results: There were 358 and 126 patients that developed incident cardiac complications in the derivation and validation cohorts, respectively. The final prediction model included the following baseline variables (score points): age in years (number of years equals number of points); history of heart failure (55); history of coronary artery disease (18); history of arrhythmias (18); systolic BP ≥140mmHg or diastolic BP ≥90mmHg (11); heart rate <80/min (4), or >120/min (25); BUN between 20mg/dL to 40mg/dL (13), or >40mg/dL (26); blood glucose >160mg/dL (18); hematocrit <30% (21); white blood cell count <12,000/μL (10); platelet count <150,000/μL (12), or >400,000/μL (17); blood pH <7.35 (43); and presence of bilateral infiltrates on chest-X-ray (21). The Hosmer-Lemeshow (HL) X² for the model was 12.5 (df=8; P=0.13), and the optimism-corrected C index was 0.79 (95% CI 0.77 to 0.82). When the model was applied to the validation cohort, the HL X² was 9 (df=8; P=0.34), and the C index was 0.78 (95% CI 0.74 to 0.82).

Conclusions: We derived and validated a clinical score that adequately predicts the risk of incident cardiac complications in patients with CAP. This tool can be useful in identifying high-risk patients for mechanistic or interventional studies.