

AI model can predict mortality in community-acquired pneumonia

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For patients with community-acquired pneumonia (CAP), a deep

learning (DL) model using initial chest radiographs can predict 30-day mortality, according to a study published online June 14 in the *American Journal of Roentgenology*.

Changi Kim, from Seoul National University Hospital in South Korea, and colleagues developed a DL [model](#) to predict [30-day mortality](#) in [patients](#) with CAP using chest radiographs from the time of diagnosis from 7,105 patients from one institution. The model was evaluated in patients diagnosed with CAP during emergency department visits from the same institution (temporal test model [947 patients]) and from two additional different institutions (external test cohorts A and B [467 and 381 patients, respectively]).

The researchers found that in the temporal test set, the area under the receiver operating characteristic curve (AUC) for predicting 30-day mortality was higher for the DL model than the established risk prediction CURB-65 score (0.77 versus 0.67, respectively); in external test cohorts A and B, the higher AUC for the DL model was not significant compared with CURB-65 (0.80 versus 0.73 and 0.80 versus 0.72, respectively).

In the three cohorts, the DL model exhibited significantly higher specificity (range, 61 to 69 versus 44 to 58 percent, respectively) at the same sensitivity achieved by the CURB-65 score. Compared with the CURB-65 score, combination of the DL model and CURB-65 score yielded an increase in AUC in the temporal test cohort and external test cohort B (0.77 and 0.80, respectively).

"The DL model may guide clinical decision-making in the management of patients with CAP by identifying high-risk patients who warrant hospitalization and intensive treatment," the authors write.

Two authors disclosed financial ties to Lunit.

More information: Changi Kim et al, A Deep-Learning Model Using Chest Radiographs for Prediction of 30-Day Mortality in Patients With Community-Acquired Pneumonia: Development and External Validation, *American Journal of Roentgenology* (2023). [DOI: 10.2214/AJR.23.29414](https://doi.org/10.2214/AJR.23.29414)

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