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Title: Vitamin D level predicts clinical outcome in community-acquired pneumonia

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Body: Rationale: Vitamin D plays a role in host defense against infection. Vitamin D deficiency is common. The prognostic value of vitamin D in pneumonia is unknown. Objective: To examine the impact of vitamin D status on outcome in community-acquired pneumonia (CAP). Methods: Subanalysis of a prospective study in 272 adults presenting to the emergency department with CAP. 25-hydroxyvitamin D, leukocytes, C-reactive protein, total cortisol, the Pneumonia Severity Index (PSI) score and the CURB-65 score were measured. Intensive care unit (ICU) admission during hospitalization and 30-day mortality were assessed. Results: 143/272 patients (53%) were vitamin D deficient (≤50 nmol/L), of which 65 patients were severe deficient (<30 nmol/L). (Severe) vitamin D deficiency was associated with an increased risk of ICU admission and 30-day mortality. Vitamin D was an independent predictor of 30-day mortality (area under the curve (AUC) 0.75, 95% confidence interval (CI) 0.63-0.87). When combined with the PSI score, the prognostic accuracy was superior to that of the PSI score alone (AUC 0.85, 95% CI 0.75-0.96 vs. AUC 0.78, 95% CI 0.64-0.91). The association between severe vitamin D deficiency and the combined endpoint

mortality/ICU admission persisted after thorough adjustment for confounding, adding to a possible causal relationship. Conclusion: The vitamin D level is an independent predictor of 30-day mortality, and adds prognostic value to the PSI score.