## LACE+ Index

The LACE index (Length of stay, Acuity of admission, Comorbidities, Emergency department use) quantifies the risk of mortality or unplanned readmission within 30 d after hospital discharge. The index was validated originally in a large, general population and, subsequently, in several specialties.

The results of a study suggested that the LACE+ index is suitable as a prediction model for important patient outcomes in a urologic surgery population including unanticipated readmission and ER evaluation <sup>1)</sup>.

Linzey et al. performed a retrospective, cohort study of consecutive neurosurgical procedures between January 1 and September 29, 2017 at our institution. The LACE index and other clinical data were abstracted. Data analysis included univariate and multivariate logistic regressions.

Of the 1,054 procedures on 974 patients, 52.7% were performed on females. Mean age was 54.2  $\pm$  15.4 yr. At time of discharge, the LACE index was low (1-4) in 58.3% of patients, moderate (5-9) in 32.4%, and high (10-19) in 9.3%. Rates of readmission and mortality within 30 d were 7.0, 11.4, and 14.3% in the low-, moderate-, and high-risk groups, respectively. Moderate-risk (odds ratio [OR] 1.62, 95% CI 1.02-2.56, P = .04) and high-risk LACE indexes (OR 2.20, 95% CI 1.15-4.19, P = .02) were associated with greater odds of readmission or mortality, adjusting for all variables. Additionally, longer operations (OR 1.11, 95% CI 1.02-1.21, P = .02) had greater odds of readmission. Specificity of the high-risk score to predict 30-d readmission or mortality was 91.2%.

A moderate- or high-risk LACE index can be applied to neurosurgical populations to predict 30-d readmission and mortality. Longer operations are potential predictors of readmission or mortality <sup>2</sup>).

The LACE+ index (Length of stay, Acuity of admission, Charlson comorbidity index, and Emergency department [ED] visits in the past 6 months) is a tool used to predict 30-day readmissions. Caplan et al. sought to examine this predictive tool in patients undergoing brain tumor surgery.

Admissions and readmissions for patients undergoing craniotomy for supratentorial neoplasm at a single multihospital academic medical center were analyzed. All brain tumor cases for which the patient was alive at 30 days after surgery were included (n = 352). Simple logistic regression analyses were used to assess the ability of the LACE+ index and subsequent single variables to accurately predict the outcome measures of 30-day readmission, reoperation, and ED visit. Analysis of the model's or variable's discrimination was determined by the receiver operating characteristic curve as represented by the C-statistic.

The sample included admissions for craniotomy for supratentorial neoplasm (n = 352). Assessment of the LACE+ index demonstrates a 1.02× increased odds of 30-day readmission for every 1-unit increase in LACE+ score (P = 0.031, Cl = 1.00-1.03). Despite this, analysis of the receiver operating characteristic curve indicates that LACE+ index has poor specificity in predicting 30-day readmission (C-statistic = 0.58). A 1-unit increase in LACE+ score also predicts a 0.98× reduction in odds of home discharge (P < 0.001, Cl = 0.97-0.99, C-statistic = 0.70). But LACE+ index does not predict 30-day reoperation (P = 0.945) or 30-day ED visits (P = 0.218).

The results of this study demonstrate that the LACE+ index is not yet suitable as a prediction model for 30-day readmission in a brain tumor population  $^{3)}$ <sup>4)</sup>.

## References

1)

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