LACE Index for Readmission

https://www.mdcalc.com/lace-index-readmission

The LACE + index (Length of stay, Acuity of admission, Charlson Comorbidity Index (CCI) score, and Emergency department visits in the past 6 months) is a tool utilized to predict 30-90 day readmission and other secondary outcomes. Caplan et al., sought to examine the effectiveness of this predictive tool in patients undergoing brain tumor surgery.

Admissions and readmissions for patients undergoing craniotomy for supratentorial neoplasm at a single, multi-hospital, academic medical center, were analyzed. Key data was prospectively collected with the Neurosurgery Quality Improvement Initiative (NQII)-EpiLog tool. This included all supratentorial craniotomy cases for which the patient was alive at 90 days after surgery (n = 238). 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 30-90 day readmission, 30-90 day emergency department (ED) visit, and 30-90 day reoperation. 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 = 238) from 227 patients, of which 50.00% were female (n = 119). The average LACE + index score was 53.48 ± 16.69 (Range 9-83). The LACE + index did not accurately predict 30-90 day readmissions (P = 0.127), 30-90 day ED visits (P = 0.308), nor reoperations (P = 0.644). ROC confirmed that the LACE + index was little better than random chance at predicting these events in this population (C-statistic = 0.51-0.58). However, a single unit increase in LACE + leads to a 0.97 times reduction in the odds of being discharged home with fair predictive accuracy (P < 0.001, CI = 0.96-0.98, C-statistic = 0.69).

The results of this study show that the LACE + index is ill-equipped to predict 30-90 day readmissions in the brain tumor population and further analysis of significant covariates or other prediction tools should be undertaken [1)].

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, CI = 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, CI = 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 [2].

1)
Caplan IF, Zadnik Sullivan P, Glauser G, Choudhri O, Kung D, O'Rourke DM, Osiemo B, Goodrich S, McClintock SD, Malhotra NR. The LACE+ index fails to predict 30-90 day readmission for supratentorial craniotomy patients: A retrospective series of 238 surgical procedures. Clin Neurol Neurosurg. 2019 May 1;182:79-83. doi: 10.1016/j.clineuro.2019.04.026. [Epub ahead of print] PubMed PMID: 31102908.
2)
Caplan IF, Sullivan PZ, Kung D, O'Rourke DM, Choudhri O, Glauser G, Osiemo B, Goodrich S, McClintock SD, Malhotra NR. LACE+ Index as Predictor of 30-Day Readmission in Brain Tumor Population. World Neurosurg. 2019 Mar 27. pii: S1878-8750(19)30849-6. doi: 10.1016/j.wneu.2019.03.169. [Epub ahead of print] PubMed PMID: 30926557.