

LACE Risk Model

Learn how Watson Health uses the LACE Risk Model to target care coordination for high risk patients



Model definition

The LACE (length of stay, admission source, comorbidities, and emergency room visits) model evaluates the risk of readmission for recently discharged patients from the hospital.

The LACE model includes scores from each term in the acronym. Organizations may score the model differently. Table 1 provides the Watson Health™ scoring. Each inpatient admission record in the IBM® Explorys Data Grid will have an associated LACE score.

Data used in model

Length of stay: calculated using admit and discharge dates on admission record in the IBM Explorys Data Grid.

- **Admission source:** whether a patient is admitted from the Emergency Department (ED) is determined by examining the admission record in the IBM Explorys Data Grid.
- **Comorbidities:** evaluating the various comorbidities is performed by scanning a patient's diagnosis records from both inpatient and outpatient visits in the IBM Explorys Data Grid.
- **Emergency room visits:** the fourth portion of the model is calculated by examining encounter records in the IBM Explorys Data Grid. Multiple ED visits in the same day are excluded to account for duplicated data from multiple source systems. For example, an encounter represented in both the electronic health record (EHR) and claims dataset would only count as one ED visit if the encounter dates match as expected.

Item	Score
L: Length of stay	
One day	+1
Two days	+2
Three days	+3
Four or more days	+4
A: Admission Source	
Admitted from ED	+1
C: Comorbidities (with ICD-9 codes)	
CHF (402)	+2
Myocardial infarction (412)	+1
Vascular (414, 415, 416, 440, 441)	+1
DM with complications (249, 250)	+1
Respiratory disease (490, 491, 492)	+2
Mild liver disease (570, 571)	+2
Severe liver disease (572)	+3
Tumor (140-239)	+2
Dementia (290-299)	+3
Connective tissue disease (710)	+3
AIDS (042)	+4
E: Emergency Room Visits In Past 6 Months	
One ED visit	+1
Two ED visits	+2
Three ED visits	+3
Four or more ED visits	+4
Total Score	L + A + C + E

Table 1: Details of scoring for LACE model

Model evaluation

Each inpatient visit is considered when calculating the LACE model. You can access the LACE model score in the IBM® Explorys EPM Application Suite, or view the records in IBM® Explorys SuperMart.

The LACE model score has been made available in IBM® Explorys EPM: Measure and IBM® Explorys EPM: Registry to target care coordination toward patients with the highest risk of complication or readmission.

References

1. LACE Risk Assessment Tool at Chinese Hospital, San Francisco¹
2. Ottawa Hospital Research Institute LACE Index²
3. Predicting the risk of unplanned readmission or death within 30 days of discharge after a heart failure hospitalization³

About IBM Watson Health

In April 2015, IBM launched IBM Watson Health and the Watson Health Cloud platform. The new unit will work with doctors, researchers and insurers to help them innovate by surfacing insights from the massive amount of personal health data being created and shared daily. The Watson Health Cloud can mask patient identities and allow for information to be shared and combined with a dynamic and constantly growing aggregated view of clinical, research and social health data.

For more information on IBM Watson Health, visit: ibm.com/watsonhealth.

1. Kreilkamp, R., RN, MSW; Application of the LACE Risk Assessment Tool at Chinese Hospital; Chinese Hospital; 2010; <http://www.avoidreadmissions.com/wwwroot/userfiles/documents/55/lace-risk-assessment-tool.pdf>

2. van Walraven, C.; Ottawa Hospital Research Institute, LACE index Scoring Tool for Risk Assessment of Death Readmission, 7/3/2012; <http://greatplainsqin.org/wp-content/uploads/2015/01/Lace-Index-Scoring-Tool.pdf>

3. Ag, A., McAlister, FA, Bakal, JA, Ezekowitz, J., Kaul, P., van Walraven, C.; Predicting the risk of unplanned readmission or death within 30 days or discharge after a heart failure hospitalization; PubMed.gov.; 2012 Sep; 164(3):365-72.doi: 10.1016/j.ahj.2012.06.010. Epub 2012 Aug 17; <http://www.ncbi.nlm.nih.gov/pubmed/22980303>

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