Risk prediction model

- Development of a Radiomic-clinical Nomogram for Prediction of Survival in Patients with Nasal Extranodal Natural Killer/T-cell Lymphoma
- Depression after aneurysmal subarachnoid hemorrhage: development of a screening tool and discharge user interface
- Hospital frailty risk score in predicting outcomes after simultaneous colon and liver resection for colorectal cancer liver metastasis in older adults: Evidence from the Nationwide Inpatient Sample 2015-2018
- Predicting podoplanin expression and prognostic significance in high-grade glioma based on TCGA TCIA radiomics
- Machine learning-driven national analysis for predicting adverse outcomes in intramedullary spinal cord tumor surgery
- Machine learning-driven SLC prognostic signature for glioma: predicting survival and immunotherapy response
- Interrogation of macrophage-related prognostic signatures reveals a potential immune-mediated therapy strategy by histone deacetylase inhibition in glioma
- APOE epsilon4 and Risk of Intracranial Hemorrhage in Patients With Atrial Fibrillation Taking Apixaban

A risk prediction model is a statistical tool used to estimate the likelihood of a particular outcome or event occurring based on various input variables or factors. These models are commonly used in fields such as finance, healthcare, insurance, and environmental science to assess and manage risks.

In finance, risk prediction models might be used to estimate the likelihood of default on a loan or the probability of a stock price movement exceeding a certain threshold. In healthcare, these models could be used to predict the likelihood of a patient developing a particular disease or experiencing a medical complication.

The process of building a risk prediction model typically involves collecting relevant data, identifying important predictive variables, and using statistical techniques such as logistic regression, decision trees, or machine learning algorithms to develop the model. The model is then validated using historical data or through testing on new data sets to assess its accuracy and reliability.

The goal of a risk prediction model is to provide decision-makers with valuable insights into the potential risks associated with specific actions or events, allowing them to make informed decisions and take appropriate actions to mitigate or manage those risks.

Risk stratification

Data from the 2015 China Health and Retirement Longitudinal Study (CHARLS), a high-quality micro-level data representative of households and individuals aged 45 years and older adults in China. The study analyzed 65 indicators, including sociodemographic indicators, health-related indicators, and biochemical indicators.

3454 older adults enrolled in the CHARLS database in 2015 were included in the final analysis. A total

of 997 (28.8%) had phenotypes of sarcopenia. Multivariate logistic regression analysis showed that sex, Body Mass Index (BMI), Mean Systolic Blood Pressure (MSBP), Mean Diastolic Blood Pressure (MDBP) and pain were predictive factors for sarcopenia in older adults. These factors were used to construct a nomogram model, which showed good consistency and accuracy. The AUC value of the prediction model in the training set was 0.77 (95% CI = 0.75-0.79); the AUC value in the validation set was 0.76 (95% CI = 0.73-0.79). Hosmer-Lemeshow test values were P = 0.5041 and P = 0.2668 (both P > 0.05). Calibration curves showed significant agreement between the nomogram model and actual observations. ROC and DCA showed that the nomograms had good predictive properties.

The constructed sarcopenia risk prediction model, incorporating factors such as sex, BMI, MSBP, MDBP, and pain, demonstrates promising predictive capabilities. This model offers valuable insights for clinical practitioners, aiding in early screening and targeted interventions for sarcopenia in Chinese older adults [1].

1)
Li Q, Cheng H, Cen W, Yang T, Tao S. Development and validation of a predictive model for the risk of sarcopenia in the older adults in China. Eur J Med Res. 2024 May 9;29(1):278. doi: 10.1186/s40001-024-01873-w. PMID: 38725036.