

# Machine Learning Models for Predictive Analytics of Readmission Risks in Hospitals

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Unplanned readmission is one of the main cost drivers in hospitals. In addition, readmission rates are key indicators for quality management in health care. Approaches of predictive analytics are introduced that help to identify patients with a high risk for readmission. Various prediction models have been developed, focusing on decision trees, support vector machines, and neural networks, combined with under- and oversampling as well as bagging and boosting techniques. The application of these models as well as an evaluation study based on “big data” are presented, revealing an excellent predictive power.

In addition, a decision support system is outlined that transforms the results of different complex predictive models into suggestions for patient management, thus taking the step from predictive to prescriptive analytics.

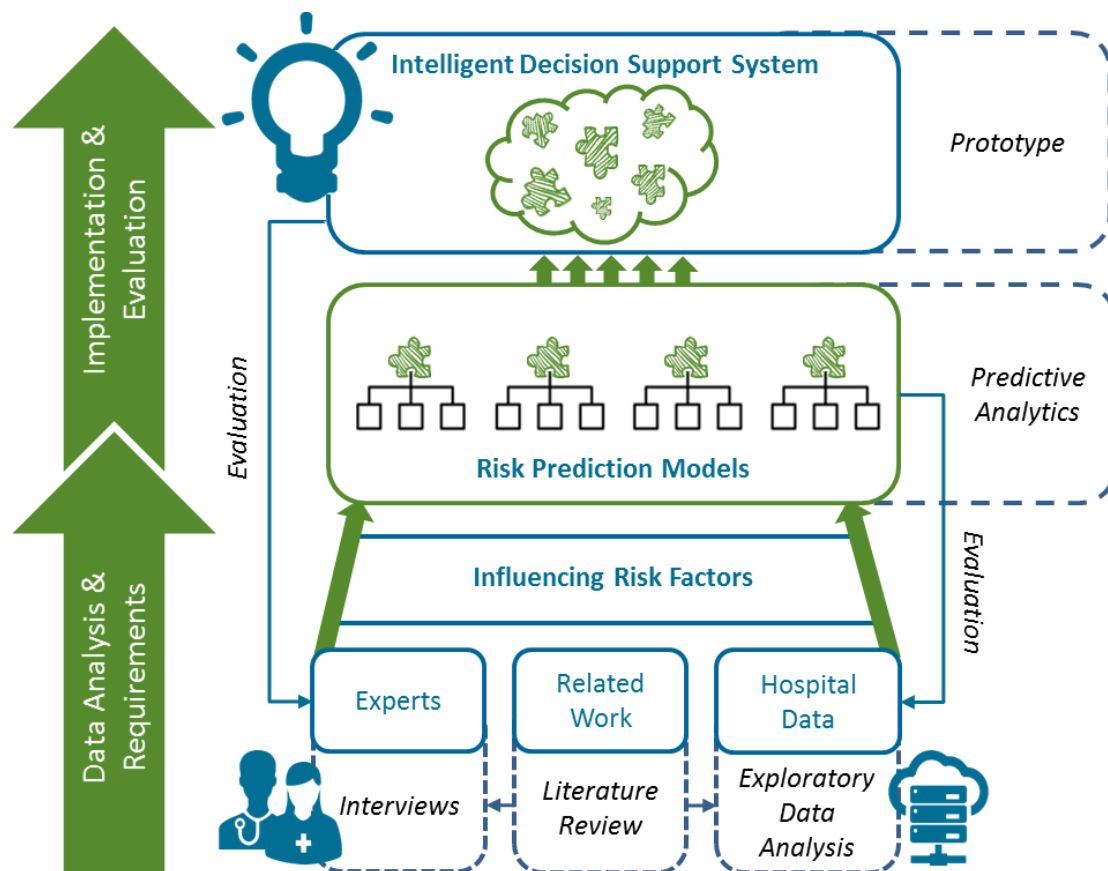


Figure 1: Risk prediction and decision support system based on machine learning models