

MyHeart ACS FAQ

MyHeart ACS features an **AI calculator** that predicts the risk of ACS mortality for In-patient and emergency patients based on Malaysian population data.

1. What is MyHeart ACS?

MyHeart ACS is a cutting-edge technology created especially for Malaysians. The risk of mortality in Malaysian patients with Acute Coronary Syndrome (ACS) is evaluated by integrating machine learning predictive algorithms. MyHeart ACS delivers precise projections of mortality risk for Malaysian ACS patients by utilising data particular to the Malaysian population, including demographics, clinical data, and laboratory results.

The system's personalization guarantees that medical professionals in Malaysia have access to a solution that has been especially created to address the demands of the local population, which ultimately results in more effective decision-making and better patient.

2. What are the features of MyHeart ACS?

MyHeart ACS provides several features:

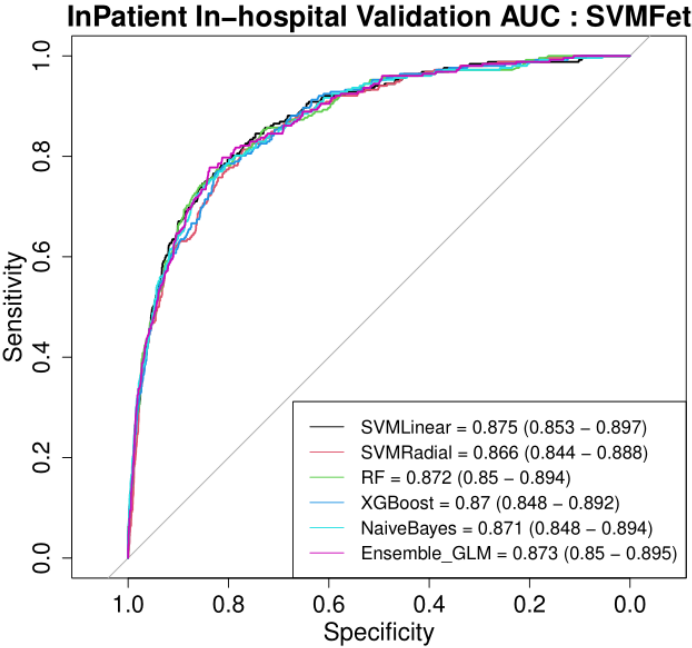
- **In-Patient Mortality Risk:** The risk score is used to determine the risk of mortality for ACS patients who have been hospitalised and are presently receiving care by taking a wider range of data into account. It considers a range of patient information, such as demographics, clinical data, test results, and any additional factors that may arise throughout the hospital stay.
- **Emergency Mortality Risk:** This risk score focuses specifically on predicting the risk of mortality for ACS patients in the emergency department or upon admission. It utilizes a subset of features that are available at the time of admission, such as basic demographics and limited clinical information. This streamlined risk assessment allows for a quick evaluation of the patient's mortality risk, enabling healthcare practitioners to make rapid decisions and initiate appropriate interventions in emergency situations.
- **Cardiac Catheterization Risk:** MyHeart ACS computes the risk of cardiac catheterization. In order to determine the possibility of negative outcomes or issues from the surgery, it takes into account a number of characteristics

that are unique to the patient's medical history, condition, and test findings. This risk prediction aids medical professionals in assessing the prospective advantages and threats of heart surgery.

3. How reliable is MyHeart ACS?

MyHeart ACS uses advanced machine learning algorithms trained on large and comprehensive datasets, ensuring high accuracy in its predictions. The tool's predictions have been validated against several benchmarks, showing reliable performance. The AUC results for the classification model, attest to the model's reliability. However, as with any predictive model, the results should be used as part of a broader assessment rather than standalone definitive predictions.

Risk Score	AUC of Best ML Model (CI%)
In-Patient	0.88 (0.853 - 0.897)
Emergency	0.85 (0.83 - 0.878)

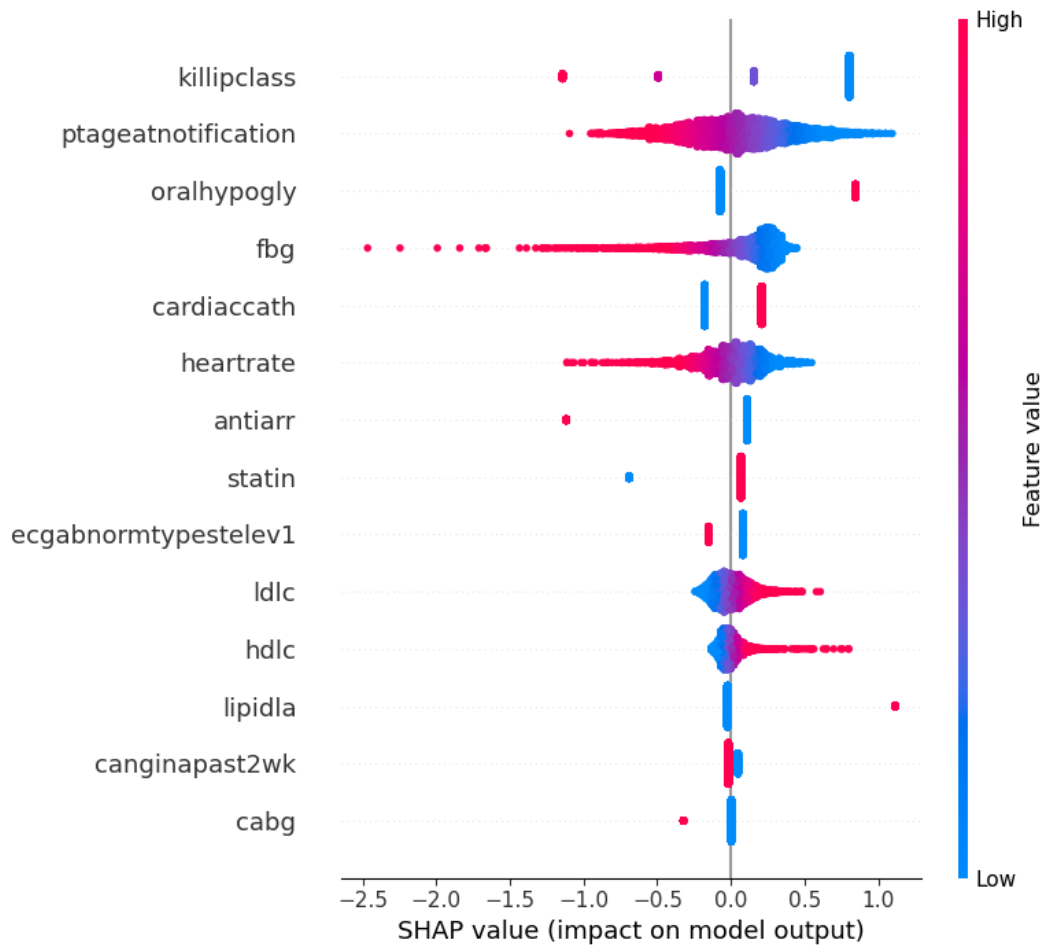


4. How do the ACS Mortality Prediction Calculators for In-Patient and Emergency Patients work?

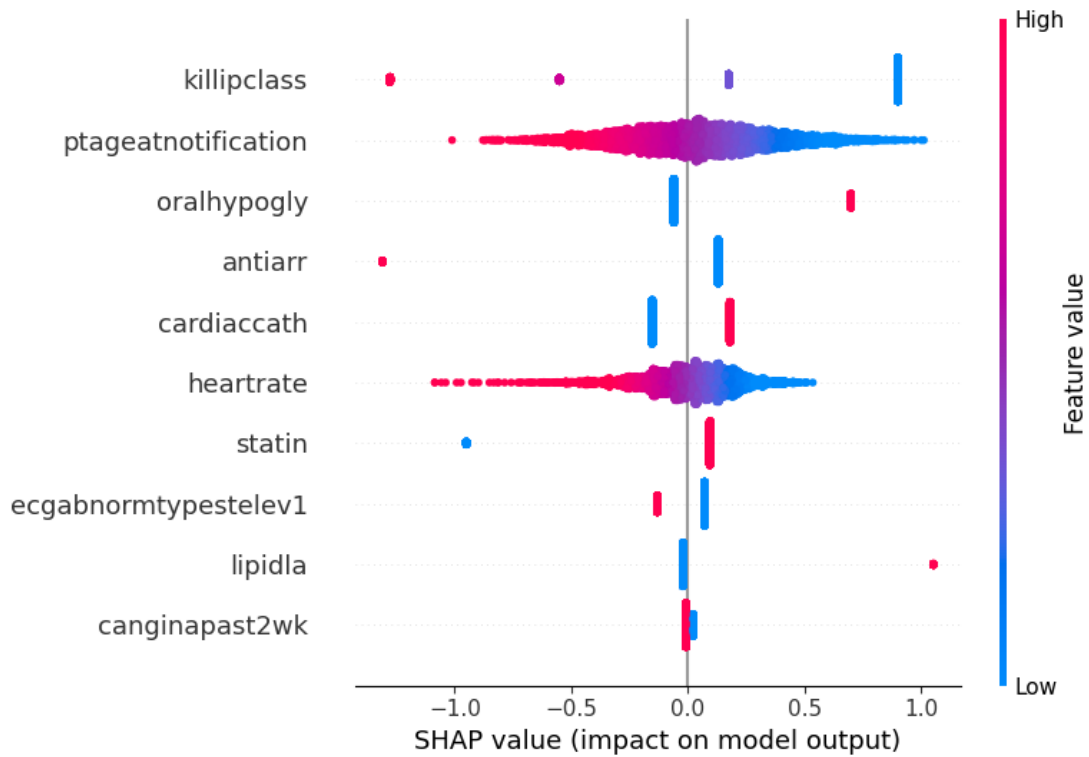
Both the ACS Mortality Prediction Calculator for In-Patient and for Emergency Patients use relevant features from the NCVD data and were selected based on their predictive value for ACS mortality.

A tool called SHAP (SHapley Additive exPlanations) is used to understand these models. SHAP plots show the impact of each feature on the model's prediction, allowing users to understand which factors are most influential in predicting the risk of ACS Mortality.

For In-Patient Patients, the SHAP plot may look like this:



While for Emergency Patients, the SHAP plot may differ:



By examining these plots, users can gain insight into the model's decision-making process, seeing which factors are deemed most critical in each context.

5. Publication Works

Kasim, S., Malek, S., Song, C., Wan Ahmad, W. A., Fong, A., Ibrahim, K. S., ... & Ibrahim, N. (2022). In-hospital mortality risk stratification of Asian ACS patients with artificial intelligence algorithm. *Plos one*, 17(12), e0278944.

Kasim, S., Malek, S., Ibrahim, K. S., Hiew, J. H., & Aziz, M. F. (2021). ACS mortality prediction in Asian in-hospital patients with deep learning using machine learning feature selection. *European Heart Journal*, 42(Supplement_1), ehab724-3069.