

### Project Goal

The goal of the project is to use machine learning on data collected from real life patients in order to obtain insight into Enteral Feeding Intolerance (EFI).

Doing so helps doctors make more data-driven decisions in treatment.

### Methods

The method selected was to separate the data of the first three days of the patients' stay in the ICU.

The data was run on selected machine learning classification models to predict the patient mortality at the end of the hospitalization period.

In the second phase, the data was run on unsupervised machine learning models to predict subgroup clusters.

### Introduction

Enteral Feeding Intolerance (EFI) is a general term that indicates an intolerance of enteral nutrition – a way of delivering nutrition directly into the stomach or the small intestine for any clinical reason.

Intolerance may result in poor outcomes and may be associated with significant morbidity, leading to increased mortality and length of stay in an intensive care unit (ICU).

However, there is no clear, widely agreed-upon definition of EFI available.

By using machine learning, I am hoping to identify distinct patient subgroups and correlating features.



### Selected Approach

Classification models: Logistic Regression, Random Forest Classifier, and XGBoost GridSearchCV.

Clustering models: K means, Feature Extraction.

### Results

Machine learning algorithms were used to extract the features that the model determined as most contributing to the mortality classification of a patient with EFI.

These features can be used directly when considering the patient's future care plan as they are based on the data of past patients.

In addition, unsupervised clustering models were used to cluster subgroups of features to predict common risk factors.

