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| **Individual Assessment 1**  COSC2753 Machine Learning  RMIT University Vietnam, Semester 2023A | Vo Tuong Minh  S-3877562  April 12th 2023 |

# Definition

## Project overview

Intensive Care Units (ICUs) are constantly challenged with monitoring their patients for the risk of developing sepsis. According to the CDC: “Sepsis is the body’s extreme response to an infection. It is a life-threatening medical emergency. Without timely treatment, sepsis can rapidly lead to tissue damage, organ failure, and death.”

Thus, the ability to predict in advance if a patient will develop sepsis is crucial for ICUs to manage their resources (beds, staff, medical kits, etc.) and ensure their patients’ safety.

The goal of this project is to develop a Machine Learning model capable of predicting if a patient will develop sepsis during their ICU stay, based on their vital metrics, test results and age.

## Problem Statement

**Goal:** ***Machine learning model capable of accurately predicting*** if a patient will develop sepsis (***Sepsis Positive / class 1***) or will not develop sepsis (***Sepsis Negative / class 0***) during their ICU stay, ***based on their vital metrics, test results and age***.

**Strategy:**

1. Exploratory data analysis.
2. Preprocess training and testing data.
3. Train classifier(s) on training data using appropriate Machine Learning algorithms.
4. Evaluate and pick out the best algorithm classifier/algorithm.
5. Model optimization.
6. Predict testing data.

## Metrics