**Machine Learning Project :**

# **Problem statement and context**

* **Problem Statement :**

The objective of this project is to analyse and predict the most suitable medication for a patient based on specifical attributes. Specifically, we aim to classify wich drug *(DrugA, DrugB, DrugC, DrugX, or DrugY)* should be prescribed given data on:

* Age
* Sex
* Blood Pressure (BP)
* Cholesterol levels
* Sodium-to-Potassium ratio in the blood (Na\_to\_k)

This is a classification problemwhere the target variable is the type of drug (Drug), a categorical feature. The goal is to leverage machine learning to improve the efficiency and accuracy of prescribing drugs based on patient data.

* **Context of the study**

The healthcare industry increasingly leverages machine learning to enhance decision-making in patient care. By analyzing features such as age, gender, blood pressure, cholesterol, and the sodium-to-potassium ratio, machine learning models provide tailored drug prescriptions, improving treatment accuracy and reducing variability【1】【2】. The sodium-to-potassium ratio, a key biomarker for cardiovascular health, is particularly important in drug prescription as it influences hypertension management【3】.

This project has real-world applications, including developing decision-support systems for healthcare providers and integrating machine learning into electronic health records (EHR) for real-time drug recommendations. Furthermore, analyzing patterns in drug prescriptions and patient demographics can inform public health initiatives and policy-making.

**References:**

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