**FETAL HEALTH PREDICTION**

Link: [*https://www.kaggle.com/datasets/andrewmvd/fetal-health-classification/data*](https://www.kaggle.com/datasets/andrewmvd/fetal-health-classification/data)

**Background of the Study**

Child and maternal mortality remain critical global health challenges, with the UN's Sustainable Development Goals specifically targeting their reduction by 2030. The statistics are stark: approximately 295,000 women died from pregnancy-related complications in 2017, with 94% of these deaths occurring in low-resource settings. Most critically, the majority of these deaths were preventable with proper medical monitoring and intervention.

**Cardiotocograms (CTGs)** represents a vital tool in this context, offering a non-invasive and cost-effective method to monitor fetal health. By recording fetal heart rate (FHR), movements, and uterine contractions, CTG provides healthcare professionals with crucial data to assess fetal wellbeing and identify potential complications before they become life-threatening.

Reduction of child mortality is reflected in several of the United Nations Sustainable Development Goals and is a key indicator of human progress.

The UN expects that by 2030, countries end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce under 5 mortality to at least as low as 25 per 1,000 live births. Parallel to notion of child mortality is of course maternal mortality, which accounts for **295,000 deaths** during and following pregnancy and childbirth (as of 2017). The vast majority of these deaths **(94%)** occurred in low-resource settings, and most **could have been prevented.** In light of what was mentioned above, **Cardiotocograms (CTGs)** are a simple and cost accessible option to assess fetal health, allowing healthcare professionals to take action in order to prevent child and maternal mortality. The equipment itself works by sending ultrasound pulses and reading its response, thus shedding light on **fetal heart rate (FHR)**, fetal movements, uterine contractions and more.

**About the Dataset**

This dataset contains **2126 records** of features extracted from Cardiotocogram exams, which were then classified by three expert obstetricians into **3 classes:**

* **Normal**
* **Suspect**
* **Pathological**

**Problem Statement**

While CTG technology is widely available and relatively affordable, the interpretation of CTG readings requires significant expertise that may not be available in all healthcare settings, particularly in resource-limited areas where they're needed most. This creates a critical gap in healthcare delivery.

This project addresses this challenge by developing a machine learning model to classify CTG readings into three categories: Normal, Suspect, or Pathological. Using a dataset of 2,126 CTG recordings, each classified by three expert obstetricians, in this notebook we'll aim to create a reliable classification system that can support healthcare providers in identifying high-risk cases requiring immediate attention.