**My strategy on Patient Blood Test Data Analytics in Power BI**

As a Data Analyst, transforming raw healthcare data into actionable insights is one of my most rewarding challenges. This blog post walks through my process for analyzing patient blood test data using Power BI, following the robust **6-step data analytics framework**. This project, based on the Healthcare Analytics Dashboard dataset, demonstrates how powerful analytics can enhance patient care and operational efficiency.

**My Approach to Data Analytics: A Professional Journey**

**1. Ask: Defining the Core Problem and Objectives**

Every impactful analysis begins with a clear understanding of the "why." My primary goal for this project was to **create a comprehensive and interactive dashboard in Power BI that allows for quick assessment of patient health, identification of critical health indicators, and prioritization of at-risk patients**.

I focused on answering key questions:

- How can we get a quick **overview of the patient population** (e.g., total patients, average age, gender distribution, age group breakdown)?
- How can we effectively **visualize and compare critical blood test metrics** like Hemoglobin, White Blood Cell (WBC) count, Platelets, and Glucose levels?
- What are the **distribution and trends** of these metrics across different demographics?
- Crucially, how can we **identify and prioritize patients whose key health indicators are outside normal ranges**, particularly those with low Glucose and Hemoglobin levels?

This initial "Ask" phase **translates business requirements into analytical questions** and **define clear project scope**.

**2. Prepare Data and Collect: Sourcing and Structuring Information**

For this project, the dataset used was the **Patient Blood Test**. While the specifics of data collection (e.g., from an Electronic Health Record system) are beyond the scope of this project, my role involved ensuring the data was properly connected and available within Power BI.

**3. Process and Clean Data: Engineering Insights with DAX**

This is where my **DAX (Data Analysis Expressions) proficiency and data modeling skills** truly come into play. Raw data, no matter how comprehensive, needs intelligent structuring and enrichment. I focused on creating calculated columns and measures that transformed raw numerical values into meaningful categories and actionable insights.

All The **DAX I used are locate in the GitHub Readme File here. I created actionable metrics** that directly address the goal of patient prioritization.

**4. Data Analysis and Visualization: Crafting Insights**

With the data processed and enriched, the next step was to visualize it in an intuitive and insightful manner within Power BI Desktop. My goal was to provide a **comprehensive "Patients Blood Test Analysis Report"**.

I employed a variety of visuals and interactive elements:

- **Patient Overview Section:** Used **Card visuals** for quick statistics like "Total Patients" (50), "Average Age" (40.76), "Avg. Hemoglobin" (13.16), and "Avg. Glucose" (102.06). A **Bar chart** displayed "Patients Count By Age Group," clearly showing distributions (e.g., 18 patients in "20-30" age group). A **Donut chart** illustrated "Patients Count By Gender," revealing an even 50% split between Male and Female patients.
- **Hemoglobin Levels Analysis:** Displayed "Avg Hemoglobin, Min HB, Max HB and Target HB" with a **Card visual** for the average and other elements for range and target (14 g/dL). A table showed the "Haemoglobin Levels Patients Count," indicating 5 patients with "Low" Hemoglobin and 45 with "Normal".
- **WBC and Platelet Analysis:** Utilized a **Scatter Plot** titled "WBC Vs Platelets" to visually identify potential correlations or outliers between these two metrics.
- **Glucose Levels Insights:** Presented "Avg. Glucose, Min Glucose, Max Glucose and Target Glucose" using **Card visuals** and other elements. A table "Glucose Range Patients" highlighted that 21 patients were in the "High" glucose range, 18 "Normal," and 11 "Low".
- **Interactive Patient Tables:** Included detailed tables like "Glucose Levels Per patient" and "Haemoglobin Levels Per Patient" to show individual patient data, including their assigned categories.

- **Abnormal Value Highlighting:** Applied **Conditional Formatting** to tables (e.g., in "Glucose Levels Per patient") to visually emphasize glucose levels that fall into "Low" or "High" categories, making deviations immediately noticeable.
- **Patient Risk Analysis Table:** Critically, I included the "Patients Risk Analysis" table, which clearly lists patients categorized as "High Risk" due to both low Glucose and low Hemoglobin, such as Amanda Johnson and Amanda Wilson.
- **Filters and Slicers:** Incorporated highly interactive slicers for "Hemoglobin Range," "Select Gender," "Age Group," and "Glucose Range," along with a "Patient's Name" filter, empowering users to dynamically explore the data.

**5. Share: Communicating Insights Effectively**

The final output is the **"Patients Blood Test Analysis Report"** . While typically this would be published to the Power BI Service for broader access, for this scenario, I am sharing it as a blog post and to my GitHub.

Key insights shared include:

- A clear snapshot of the patient population's demographics and average blood test values.
- The distribution of patients across different health categories (e.g., Hemoglobin and Glucose ranges).
- **Direct identification of high-risk patients** through the "Patient Risk Analysis" table, making it easy to see who requires the most urgent attention.
- The interactive nature of the dashboard allows users to slice and dice data to find specific information quickly.

**6. Act: Driving Action and Continuous Improvement**

The goal of data analytics is to drive action. The "Patient Blood Test Analysis Report" provides direct, actionable insights:

- **Immediate Prioritization:** The "High Risk" category clearly flags patients whose low Glucose and Hemoglobin levels indicate a critical need for intervention. This allows healthcare providers to allocate resources efficiently and provide timely care.
- **Targeted Interventions:** Understanding the distribution of patients by age, gender, and specific test ranges enables targeted health programs or follow-ups.

- **Performance Monitoring:** The averages and ranges for key metrics allow for ongoing monitoring of patient population health trends.