Confluentia Hackathon'25

# Health made Clear

# The Problem

Medical reports are designed for doctors, not patients. Most people end up confused or anxious when they see their results. Without a clear explanation, they don't know if their health is normal, at risk, or urgent.

## Complex Terminology

Terms like HDL, TSH, or Creatinine appear without context. For an average patient, these words carry little meaning, leaving them dependent on others for even basic interpretation.

## Scattered Information

A single report often contains dozens of parameters across multiple pages. There's no simple way to visualize or connect them, so patients miss important patterns in their health.

## Lack of Context

Even when a value is flagged as 'high' or 'low,' reports rarely explain the possible causes, risks, or next steps. Patients are left asking: 'Is this serious or not?

# Insights: What we discovered!

## Personal Context

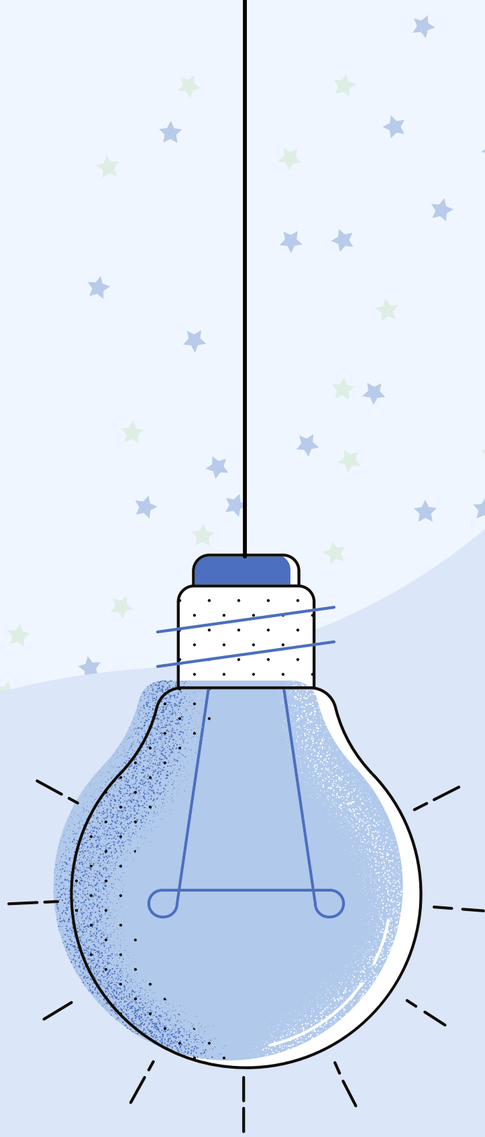
Reports only make sense when interpreted in light of individual symptoms, lifestyle, and history. Generic flags are not enough - context builds understanding and confidence.

## Time Efficiency for Patients & Doctors

Instant report interpretation saves patients hours of confusion and reduces the time doctors spend explaining routine results, improving overall efficiency

## Supports Preventive Health Strategies

By highlighting potential risks early, patients are encouraged to adopt lifestyle modifications or follow-up checks, promoting proactive health management



# The Solution: Intuitive Medical Report Analysis

We've developed a web-based tool that simplifies medical data, providing patients with actionable insights and peace of mind. Visit us at https://medical-report-analysis-beryl.vercel.app/

## Instant Report Analysis

Upload any medical report in PDF, image, or text format. The system quickly reads and extracts all relevant parameters, providing immediate feedback without manual effort.

## Contextual Explanations

Each parameter is analyzed in context of the patient's age, gender, medical history, and lifestyle. Plain-language explanations help patients understand their results and potential health implications.

## Preventive Guidance

The platform identifies abnormal patterns and provides actionable suggestions. Early alerts encourage preventive care, reducing panic and enabling timely health decisions

## Exportable Summaries

Patients can download a simplified, shareable report to discuss with doctors or keep for personal health tracking. This ensures continuity of care and easier consultations

# How It Works – Demo

Our platform converts a standard medical report into a clear, actionable summary in seconds. Patients can instantly see which parameters are normal, which need attention, and the recommended next steps.

## Raw Medical Report

| Investigation | Observed Value | Unit | Biological Ref Interval |
|---|---|---|---|
| | BIOCHEMISTRY | | |
| VER FUNCTION TEST (LFT) | | | |
| BILIRUBIN TOTAL | 9.42 H | mg/dl | 0.30 - 1.20 |
| CONJUGATED (D. BILIRUBIN) | 7.79 H | mg/dL | 0.00 - 0.30 |
| UNCONJUGATED (I.D.BILIRUBIN) | 1.63 H | mg/dl | 0.00 - 0.70 |
| SGOT | 162 H | IU/L | 0.00 - 46.00 |
| SGPT | 86 H | IU/L | 0.00 - 49.00 |
| ALKALINE PHOSPHATASE | 396 H | U/L | 42.00 - 128.00 |
| TOTAL PROTEIN | 6.2 | gm/dl | 6.20 - 8.00 |
| ALBUMIN | 3.7 L | gm/dl | 3.80 - 5.40 |
| GLOBULIN | 2.5 | gm/dl | 1.50 - 3.60 |
| A/G RATIO | 1.48 | | 1.0 - 2.0 |
| GAMMAT-GT | 263 H | IU/L | 11.00 - 50.00 |

Specimen : SERUM

** END OF REPORT **

## After AI analysis

**AI Analysis Results**

A 20-year-old male patient presented with fever and headache. Liver function tests (LFTs) revealed significantly elevated levels of several biomarkers: total bilirubin (9.42 mg/dl, high; normal range 0.30-1.20 mg/dl), conjugated bilirubin (7.79 mg/dL, high; normal range 0.00-0.30 mg/dL), unconjugated bilirubin (1.63 mg/dl, high; normal range 0.00-0.70 mg/dl), SGOT (162 IU/L, high; normal range 0.00-46.00 IU/L), SGPT (86 IU/L, high; normal range 0.00-49.00 IU/L), alkaline phosphatase (396 U/L, high; normal range 42.00-128.00 U/L), and gamma-GT (263 IU/L, high; normal range 11.00-50.00 IU/L). Total protein was 6.2 gm/dl (within normal range 6.20-8.00 gm/dl), while albumin was low at 3.7 gm/dl (normal range 3.80-5.40 gm/dl) and globulin was 2.5 gm/dl (within normal range 1.50-3.60 gm/dl). The A/G ratio was 1.48 (within normal range 1.0-2.0). These findings suggest significant liver dysfunction. Further investigation is warranted to determine the underlying etiology. The patient's weight is recorded as 58kg. The tests were conducted by Dr. Atul (MCI 3456), Dilshad Garden, Delhi.

**AI Analysis Results**

Biomarker Risk Analysis

| Biomarker | Value | Unit | Normal Range | Risk Level | Recommendations (for Not Safe / High Risk) | Potential Consequences (if ignored) |
|---|---|---|---|---|---|---|
| Bilirubin Total | 9.42 H | mg/dl | 0.30 - 1.20 | Not Safe (High Risk) | Significantly elevated bilirubin levels suggest liver dysfunction. Consult your doctor immediately for further investigation and a treatment plan. Consider a diet low in fat and processed foods. | Jaundice, liver damage, and potentially life-threatening complications like liver failure if left untreated. |
| Conjugated | 7.79 | | 0.00 - | Not Safe | Significantly elevated conjugated bilirubin indicates impaired liver function. | Liver damage, jaundice, and potentially |

**From confusion to clarity – actionable insights in seconds.**

# Next Steps / Roadmap

Short-term: Integrate more report formats and expand language support for wider accessibility.

Medium-term: Add predictive analytics to detect trends and risk patterns over time.

Long-term: Partner with hospitals and diagnostic labs to embed our solution directly in patient portals.

Vision: Make medical reports understandable for everyone, empowering patients to take charge of their health.