

AI-ASSISTED NON-INVASIVE BRAIN TUMOR GENOTYPE IDENTIFICATION

& CLINICAL DECISION SUPPORT

Predicting the invisible. Acting with speed.

Team: Elden Lords

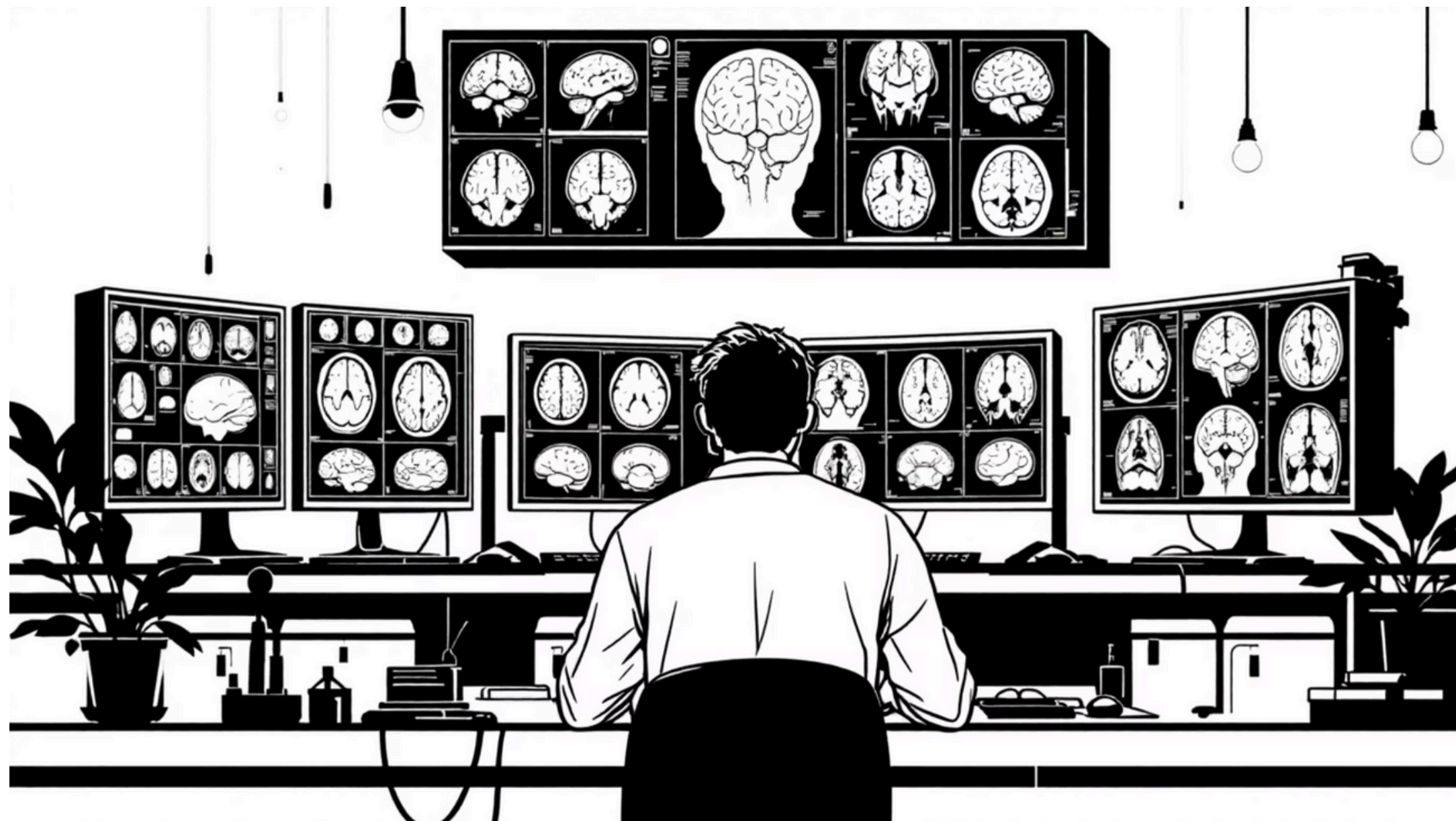
1. Dhanvi - 6382882934
2. Dinesh - 8919664007
3. Umar - 6304171897
4. Riteesh - 9849901104



Problem Statement

Brain tumors are a time-critical medical emergency where every hour of delay can lead to irreversible damage or aggressive disease progression. However, the current standard for diagnosis is dangerously slow and inefficient. When a patient undergoes an MRI scan, they often face a terrifying waiting period because determining the exact tumor type and genotype usually requires a surgical biopsy and lengthy lab analysis. This delay traps patients in a state of anxiety while their condition potentially worsens, creating a significant gap between the initial scan and the start of effective life-saving treatment.

Why Diagnosis Takes Too Long



MRI scans are generated within hours, but interpretation creates dangerous delays:

- Radiologists are overwhelmed, especially in underserved hospitals
- Determining tumor subtype requires multiple reviews and invasive biopsy
- Lab results take days to weeks

By the time clarity arrives, the disease may have already progressed beyond optimal treatment windows.

Three Critical Barriers to Fast Diagnosis

Imaging Creates Data Overload

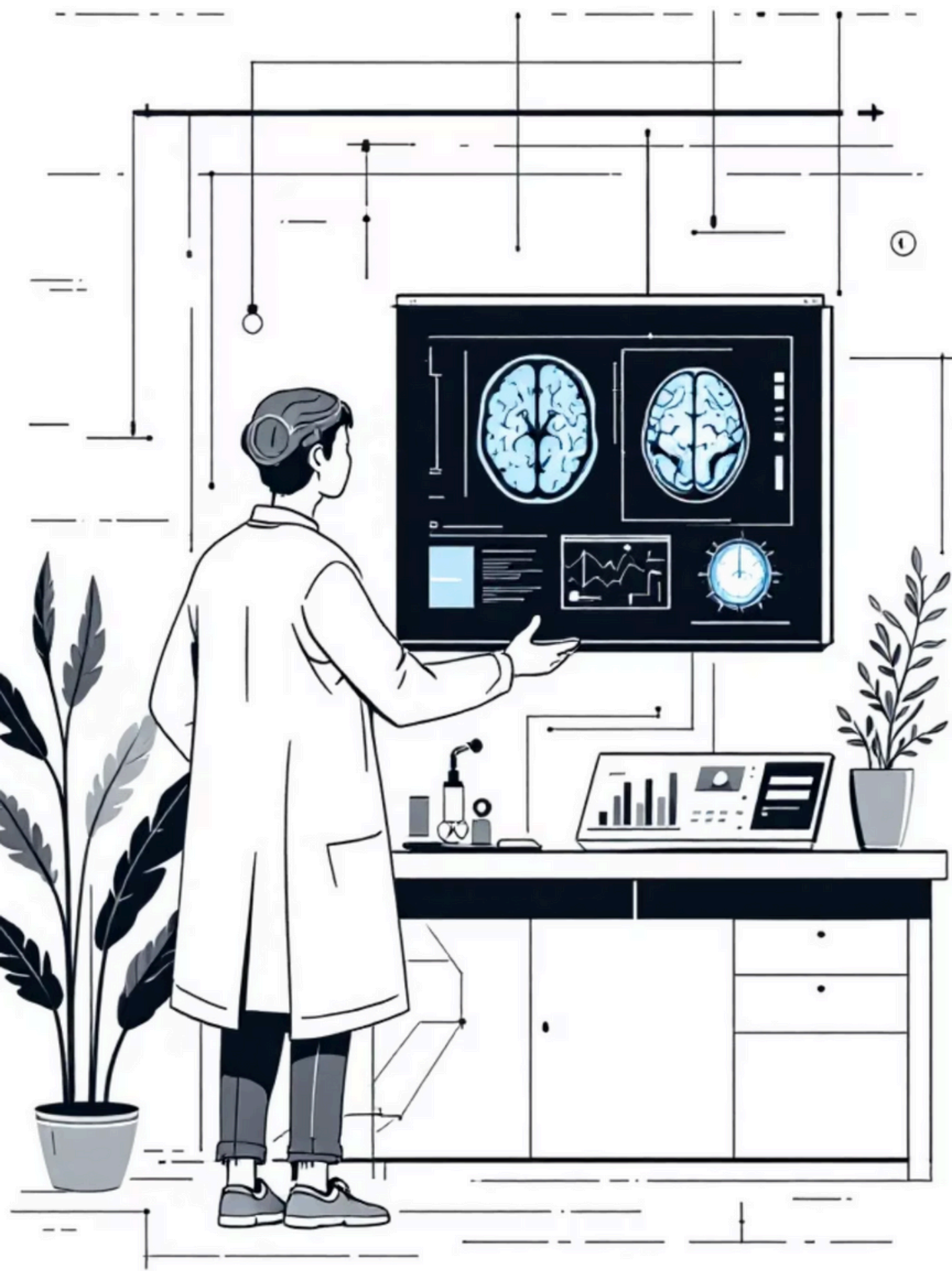
Modern MRI captures gigabytes of data, but humans must analyze slice by slice. Subtle tumor patterns are easily missed, and genotype inference depends heavily on radiologist experience.

Genotype Testing Is Invasive

Identifying tumor genotype typically requires surgical biopsy followed by lab testing—a process that's risky for patients, expensive, and takes days to weeks.

Specialist Access Is Unequal

In many regions, one radiologist serves thousands of patients. Neuro-oncology experts cluster in major cities while rural hospitals lack decision support tools.



Our Mission: Speed Without Sacrifice

We aim to build an AI-powered, non-invasive clinical decision support system that analyzes MRI scans to identify probable tumor genotype, visualize it clearly, and guide doctors toward faster, informed decisions—without harming patients or delaying care.

This system does not replace doctors. It augments them, especially when time matters most.

Beyond Detection: Imaging-to-Genotype Intelligence

What Makes Us Different

Most AI tools stop at tumor detection. We deliver genotype-level insight from non-invasive imaging—transforming scans into actionable clinical intelligence.

Our Core Promise

"We don't just detect tumors. We translate imaging into clinical insight."

01

Genotype-Level Inference

Predict tumor subtype and behavior from imaging alone

02

Explainable AI

Heatmaps and grid overlays show exactly why

03

Time-Saved Metrics

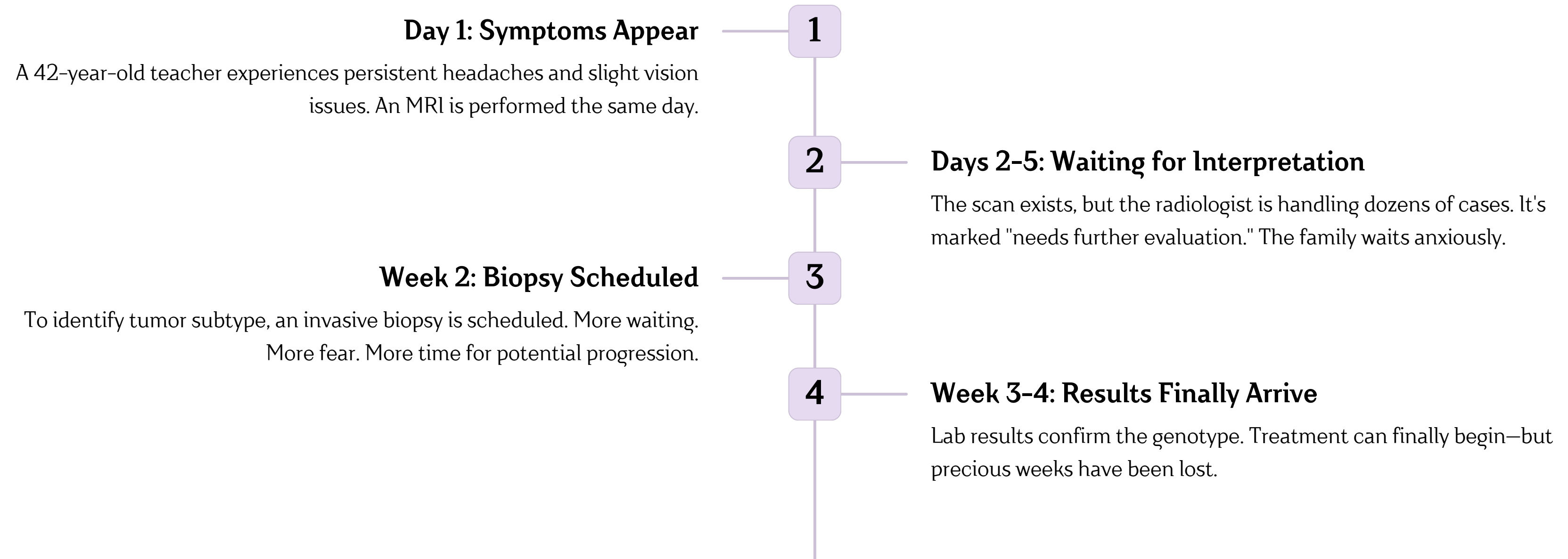
Quantify diagnostic acceleration clearly

04

Clinical Reports

Downloadable, standards-compliant documentation

A Story That Illustrates the Stakes



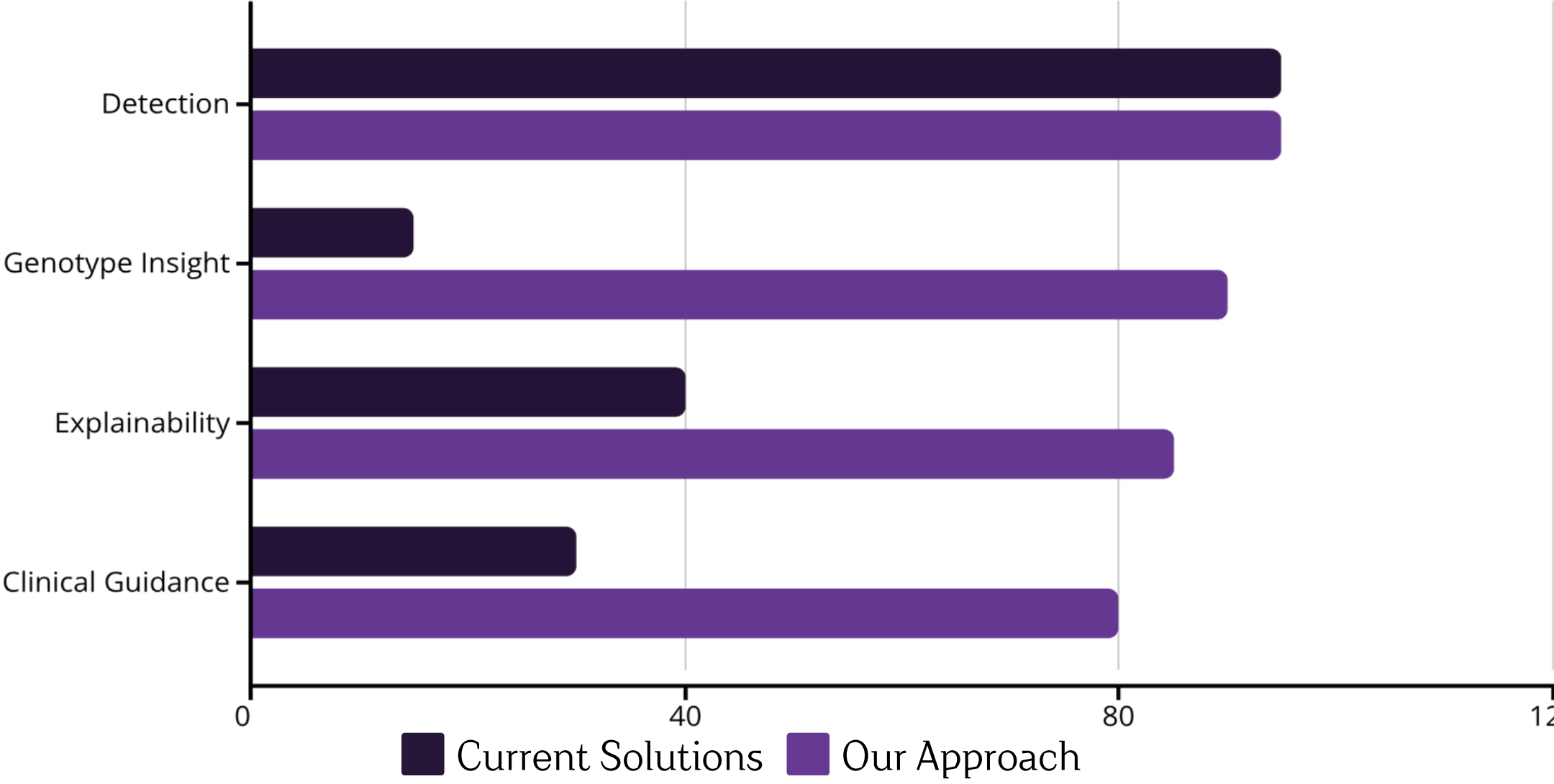
📄 **Now imagine a different scenario:** The same MRI is uploaded into our system. Within minutes, the tumor region is highlighted, genotype patterns are identified, risk level is assessed, and a structured report is generated. The doctor gains clarity, speed, and confidence—without losing control.

Business Model: Filling the Missing Layer

Existing Players

Current AI medical imaging solutions like Aidoc, Qure.ai, and Zebra Medical Vision focus primarily on detection and triage—identifying that a tumor exists and flagging urgent cases.

These are valuable tools, but they stop short of the critical next question: *What type of tumor is this, and what does that mean for treatment?*



We're not competing head-to-head. We're filling the missing layer between detection and treatment decision.