

Discovery Mode

AI-Powered Pharmacodynamic Analysis Pipeline

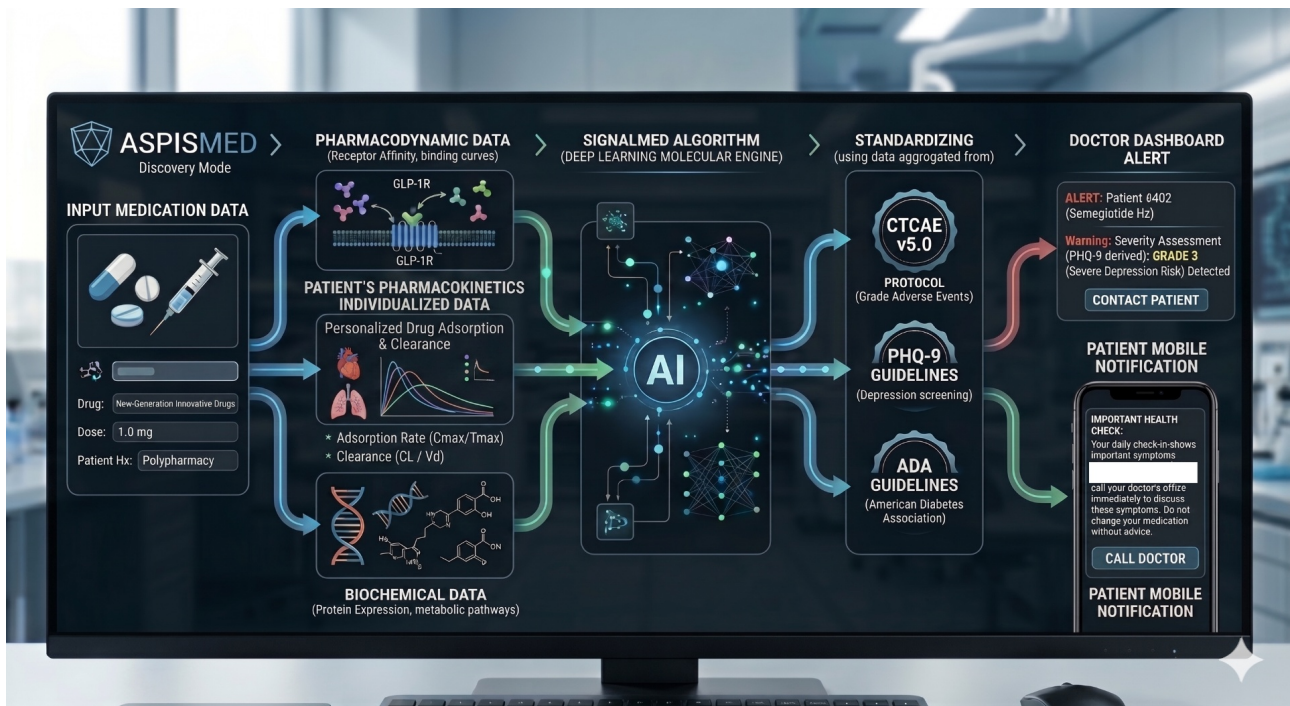


Figure 1 — ASPISMED Discovery Mode: end-to-end pipeline from medication input through the SignalMed deep-learning molecular engine to standardized clinical alerts and patient mobile notifications.

Functional & Technical Specifications

Discovery Mode — Three-Level Operational Architecture

The Discovery Mode architecture is structured into three distinct operational and clinical levels:

LEVEL 1: MOLECULAR — CLINICAL

This level performs multi-dimensional data analysis encompassing three core clinical vectors:

Dimension 1: Pharmacodynamics

Analyzes the drug's pharmacodynamics following its localized distribution across various biological tissues.

Dimension 2: Chemical Structure

Evaluates the core chemical structure of the pharmaceutical agent and correlates it directly with its tissue distribution profile.

Dimension 3: Patient Personalization

Tailors findings to the specific patient profiles by examining pharmacokinetic variables alongside current pharmaceutical regimens, drug-drug interactions, and active comorbidities (existing diseases).

LEVEL 2: COMPUTATIONAL

Utilizing the multi-dimensional dataset from Level 1, the proprietary ASPISMED algorithm processes the metrics to isolate and forecast the most probable inflection points where anomalies are expected to manifest:

- a. Severe Adverse Events / Interactions:** Predicts high-severity side effects or dangerous contraindications and drug interactions.
- b. Statistical Deviations & Novel Detections:** Identifies adverse events occurring at a higher frequency than currently documented in clinical literature, or flags emerging side effects that have not yet manifested to a statistically significant degree.

LEVEL 3: EXECUTIVE

The translation of data insights into clinical action flows sequentially through three operative steps:

Step One: Physician Parameterization

The clinician parameterizes the application interface by inputting the intended prescription regimen, active comorbidities, and concurrent medications. The engine scans the input data against the algorithm to present immediate prognostics regarding potential side effects or induced physiological changes. If critical safety signals are triggered, the system explicitly mandates/recommends the deployment of the monitoring application.

Step Two: Patient Onboarding & Personalization

The patient installs the application on their mobile device. Upon successful deployment, ASPISMED automatically generates a personalized alert matrix and notification schedule tailored to recognized medical adverse event detection protocols (such as the Common Terminology Criteria for Adverse Events — CTCAE).

Step Three: Closed-Loop Alerting & Triage

If real-time tracking feedback identifies an adverse event escalation characterized as severe or indicating an elevated probability of hospitalization, a critical automated notification prompts the patient to immediately contact their physician. Concurrently, a high-priority synchronized alert is dispatched directly to the attending physician's dashboard for targeted patient triage.