Healthcare Care Coordination Agent

October 01, 2025

Executive Summary

An autonomous agent analyzes patient reports, drafts findings and recommendations for clinician approval, and upon sign-off sends the patient an appointment email with self-serve rescheduling.

Bullet version

- Autonomous agent ingests and analyzes patient reports
- Drafts findings and recommended actions for clinician review
- Clinician can modify and approve
- On approval, agent emails the patient with an appointment link
- Patient can reschedule independently

Closes care gaps by turning lab results into coordinated action. Baseline ~35% missed first follow-up; target ≤15% within 12 weeks; median Time-to-Outreach ≤2 hours.

Impact Breakdown (estimated)

Dimension	Impact %	Explanation
Improved Patient Screening & Follow-up Adherence	**30%**	automated reminders increase patient engagement and reduce no-shows.
Operational Efficiency (Clinician & Admin Time Saved)	**20%**	Autonomous agent auto-reads reports, drafts findings, and handles approvals → reduces manual processing.
Data Transparency & Auditability	**15%**	Mirror Node provide immutable audit trails for adherence events.
Cost Savings in Communication & Scheduling	**10%**	Automated SES mailers + patient self-rescheduling lower call-center and admin overhead.

Dimension	Impact %	Explanation
Security & Compliance Posture	**10%**	KMS encryption, Secrets Manager, IAM least-privilege → high assurance in data security and regulatory compliance.
Research & Analytics Value	**8%**	eHIE integration + structured appointment data improves health analytics.

Net Value Delivered

- **Patient-Centric Impact** → 30% (behavioral change, adherence)
- **System / Process Efficiency** → 30% (agent automation + comms savings)
- **Trust / Compliance / Analytics** → 33% (auditability, governance, research insights)

This system can **improve patient adherence by ~30%, cut admin workload by ~20%, and strengthen auditability by ~15%**, while delivering **secure, low-carbon on-chain accountability**

Tech Stack

Core Runtime

- **Python 3.11** (AWS Lambda runtime)
- **boto3** (AWS SDK for Python)

AI / Decisioning

- **Amazon Bedrock**
    - Bedrock **Runtime** (LLM calls; foundation model ID is parameterized)
    - **Bedrock Agent & Agent Alias** (tool-using autonomous agent)

API & Orchestration

- **Amazon API Gateway v2 (HTTP APIs)** – patient webhook/callbacks & admin endpoints
- **AWS Step Functions** – care-coordination / reward workflows

- **Amazon EventBridge (Rules)** – scheduled/triggered runs
- **Amazon SQS** (+ **DLQ**) – async notifications & retries

Data & Storage

- **Amazon DynamoDB** – Memory store & Runs/Approvals tables (server-side encrypted with KMS)
- **Amazon S3** – Patient data bucket / reports / artifacts (SSE-KMS)

Messaging & Comms

- **Amazon SES** – patient appointment emails
- **Discord Webhook** (via **AWS Secrets Manager** for the URL) – approval previews/alerts

Security / Secrets / Keys

- **AWS KMS (CMK + Alias)** – envelope encryption & signing where needed
- **AWS IAM** – fine-grained roles for Lambdas, Step Functions, DynamoDB, S3, Bedrock
- **AWS Secrets Manager** – Discord webhook, other app secrets

Observability

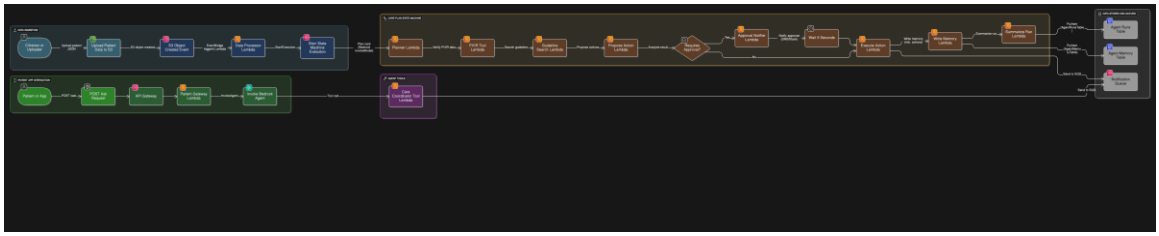
- **Amazon CloudWatch Logs & Metrics** – Lambda, API Gateway, Step Functions

DevOps / IaC

- **AWS CloudFormation** – full stack provisioning

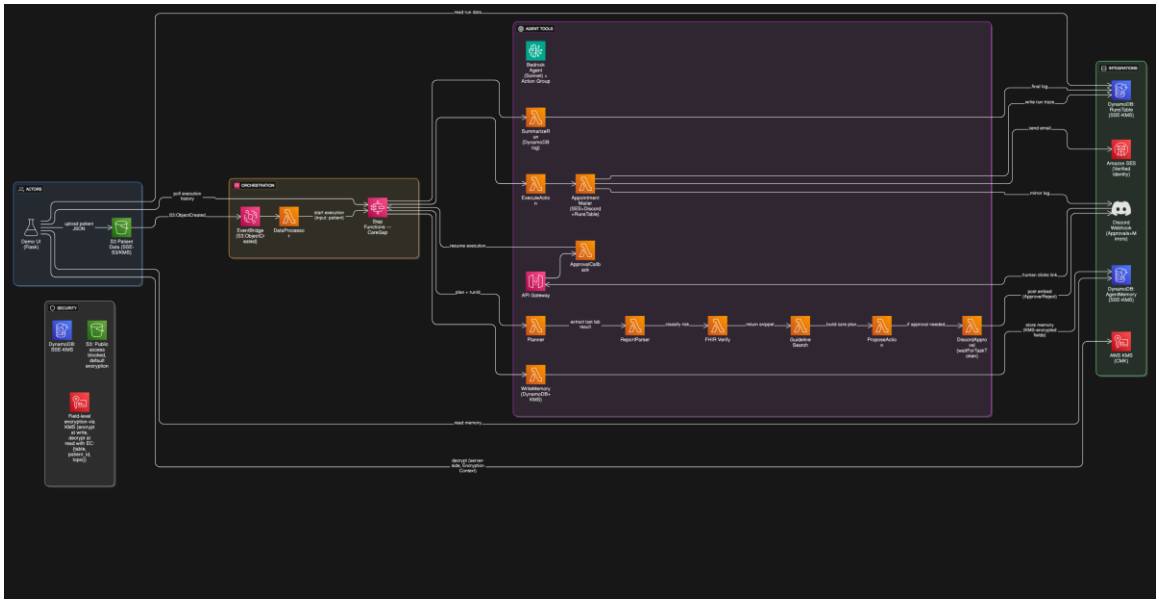
Process Flow

End-to-end orchestration with human-in-the-loop approval.



Architecture

Core AWS components and trust boundaries.



- OPP: TTA/approval/deliverability/success/cost control charts; special-cause detection.
- QPM: SLOs — TTA P50≤5m/P95≤10m, approval P50≤30m/P95≤4h, success≥92%.
- OID: Deterministic plan fallback; Discord approvals; adaptive email A/B testing.
- CAR: KMS/SES/Discord defects with preventative actions and SOP updates.

Security & Compliance

KMS on S3/DDB/SQS; Secrets Manager; IAM least-privilege; SES DMARC/SPF; PII minimized with SHA-256 and encrypted mirrors; audit logs in RunsTable.

Deployment & Runbook

Blue/Green via NameSuffix; generator for smoke tests; Discord approval; SES confirmation; Dynamo memory write; rollback by swapping suffix and redeploying previous template.

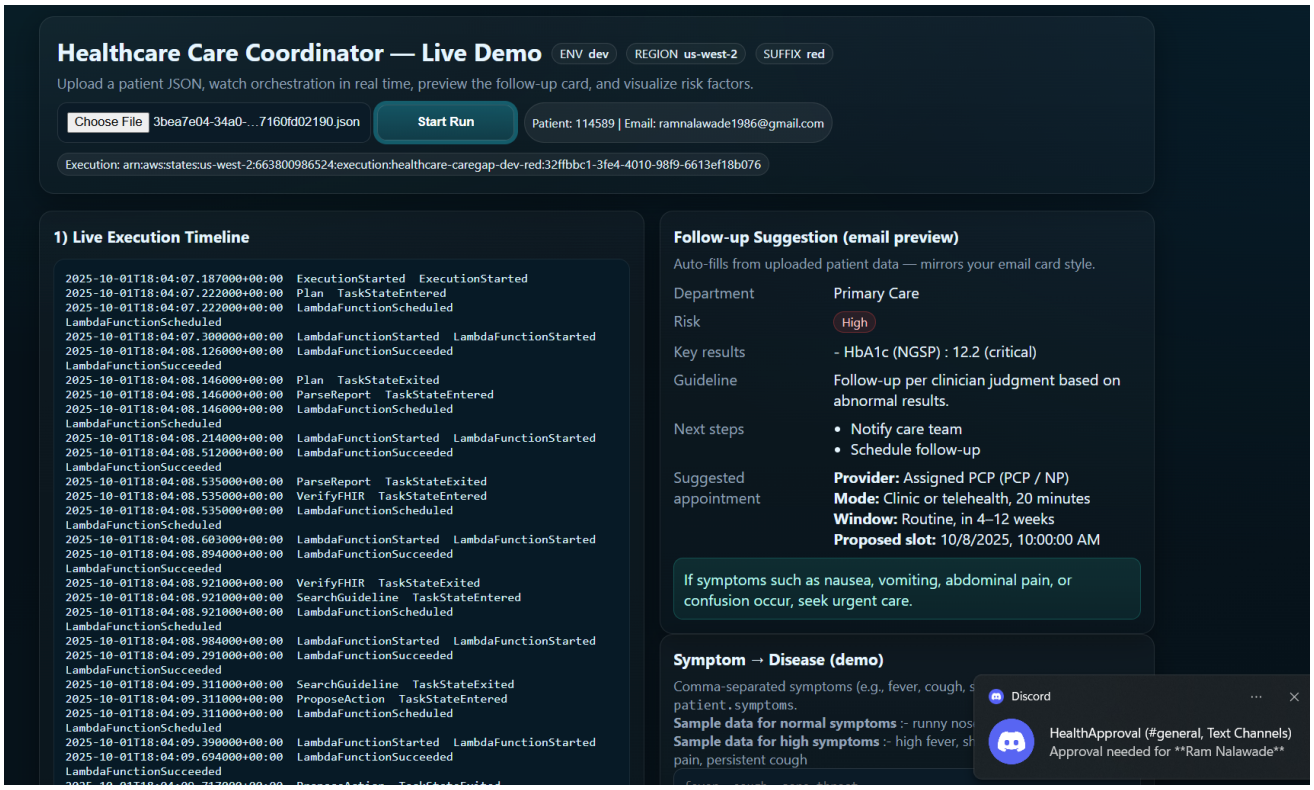
Impact & KPIs

Missed follow-up 35%→≤15%; TTA 36h→≤2h; deliverability ≥98%; open rate ≥55% (high risk).

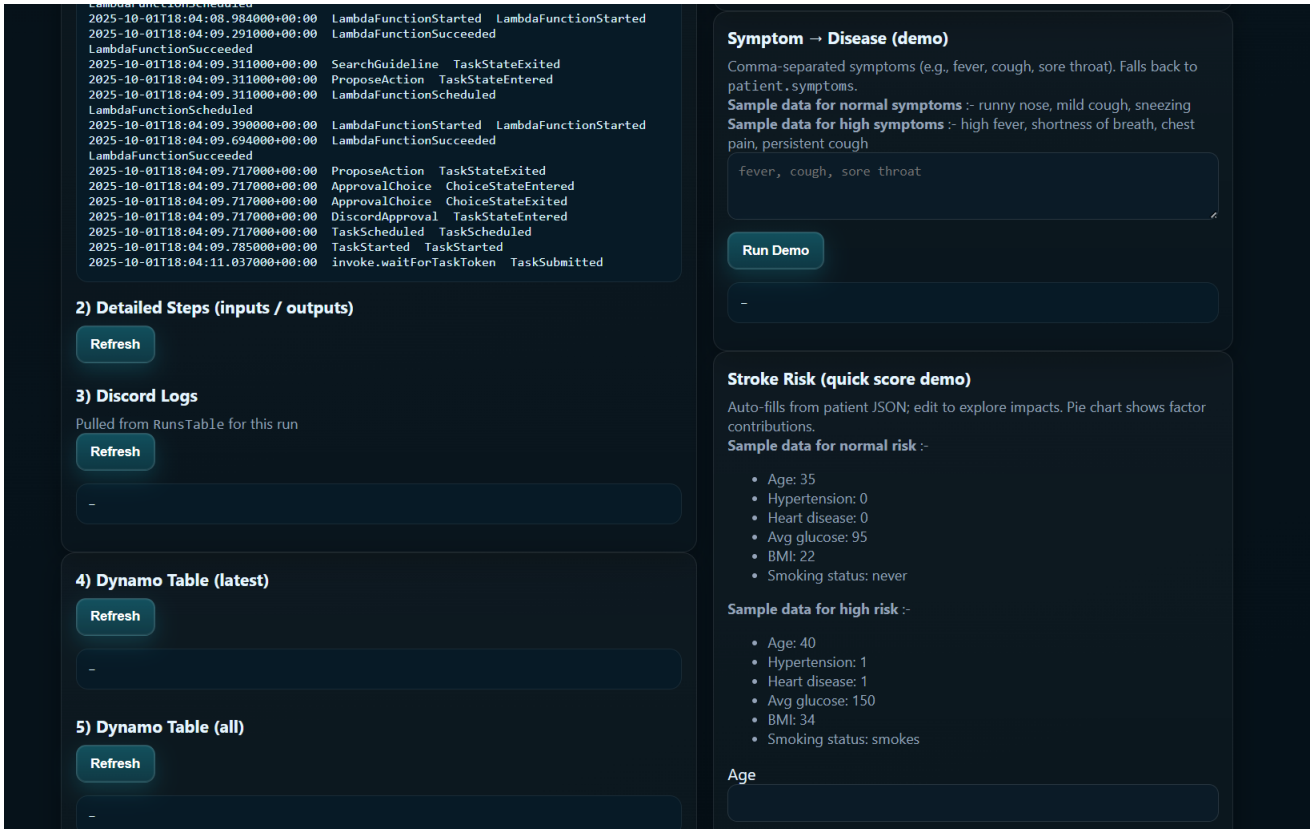
Future ML Integrations

Risk models on de-identified labs; imaging endpoints for X-ray/CT; FHIR/NLP mapping; active learning from approvals.

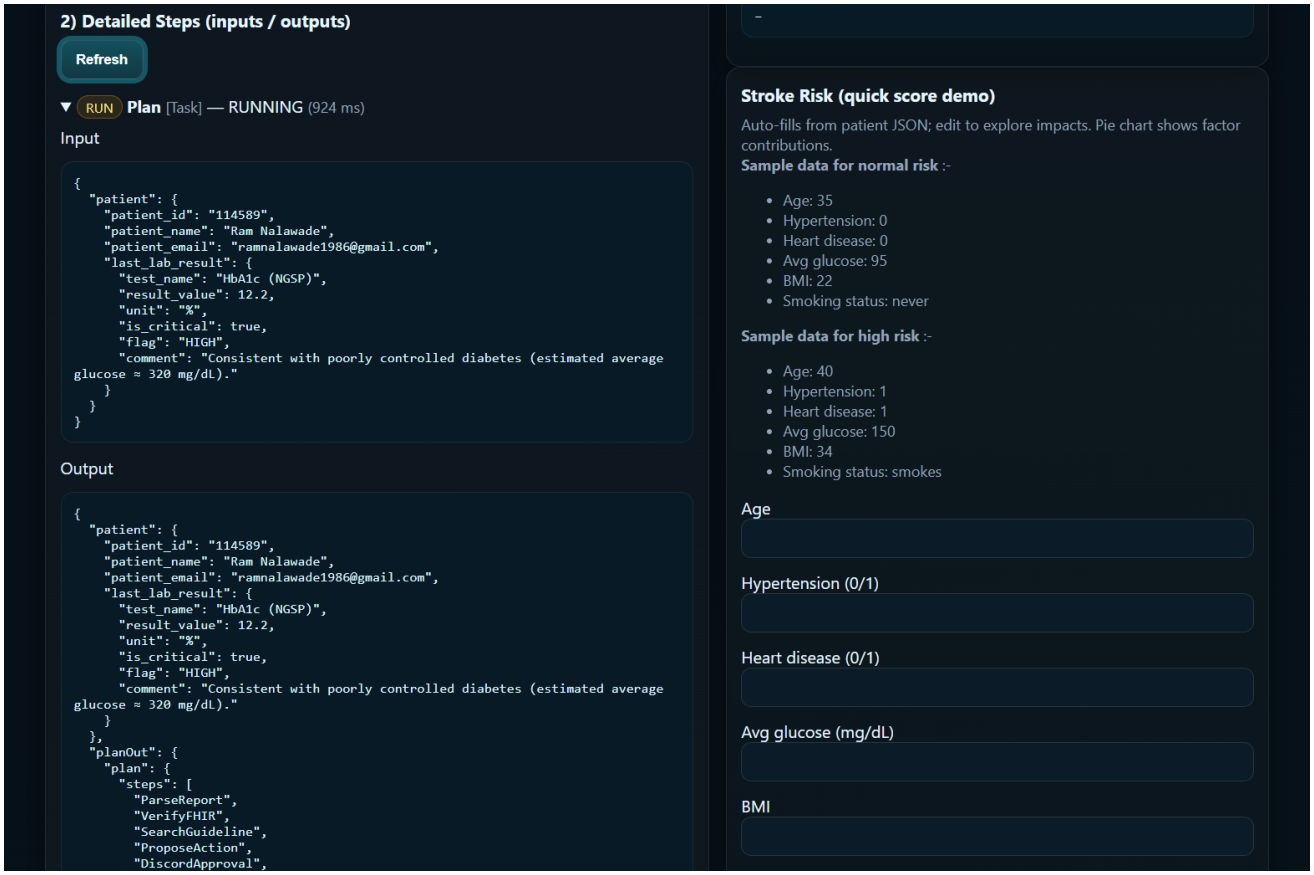
Screenshots Gallery



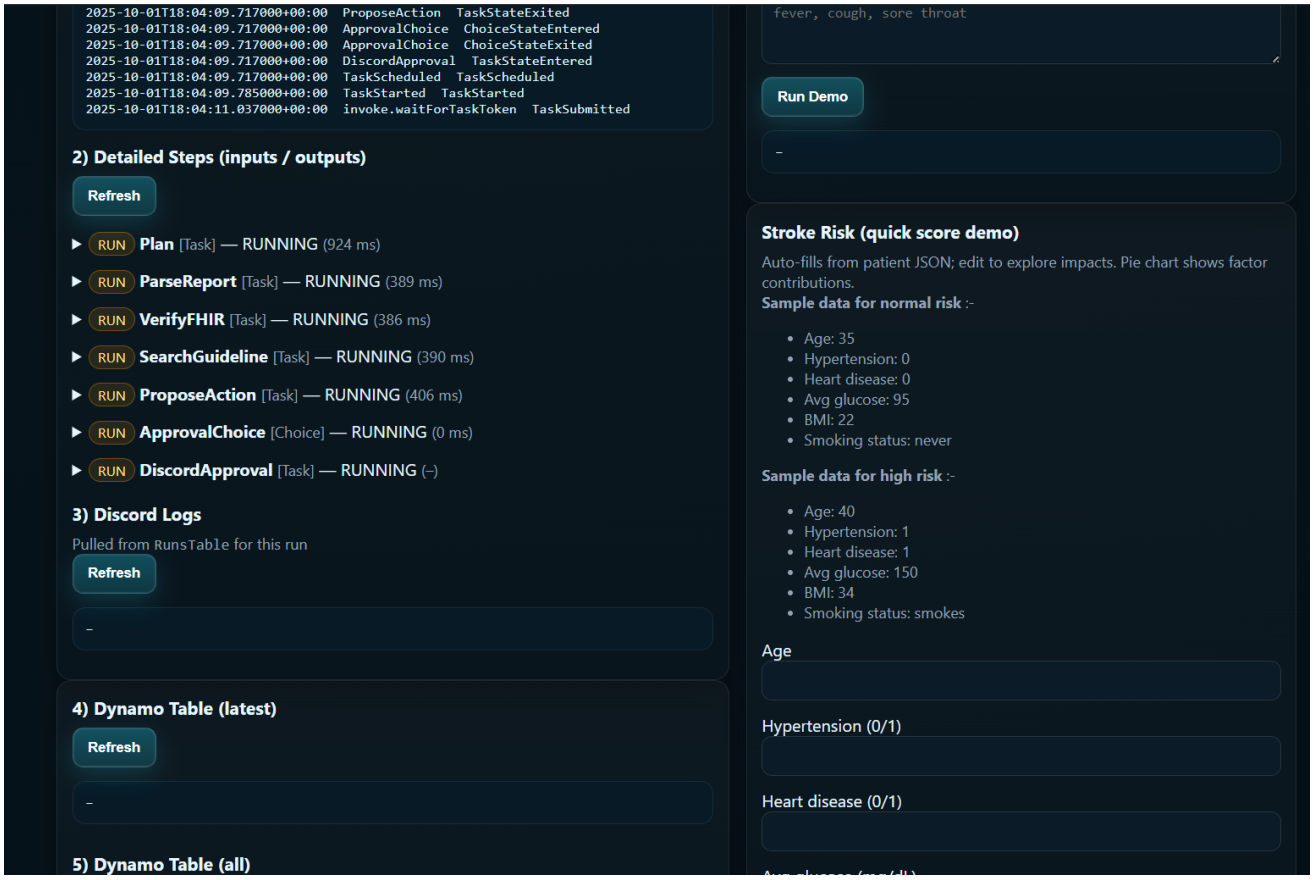
Live demo — orchestration + follow-up preview



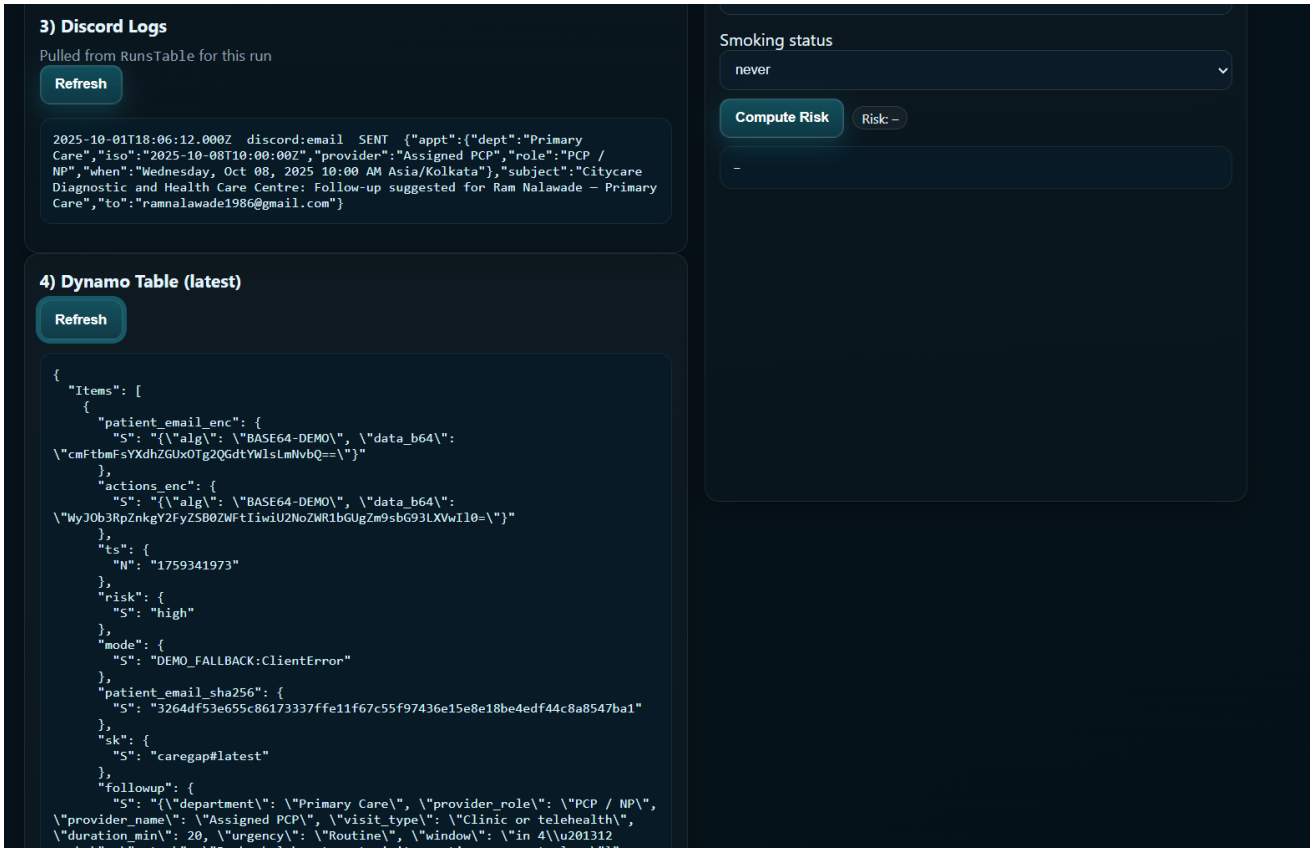
Timeline + symptom triage panel



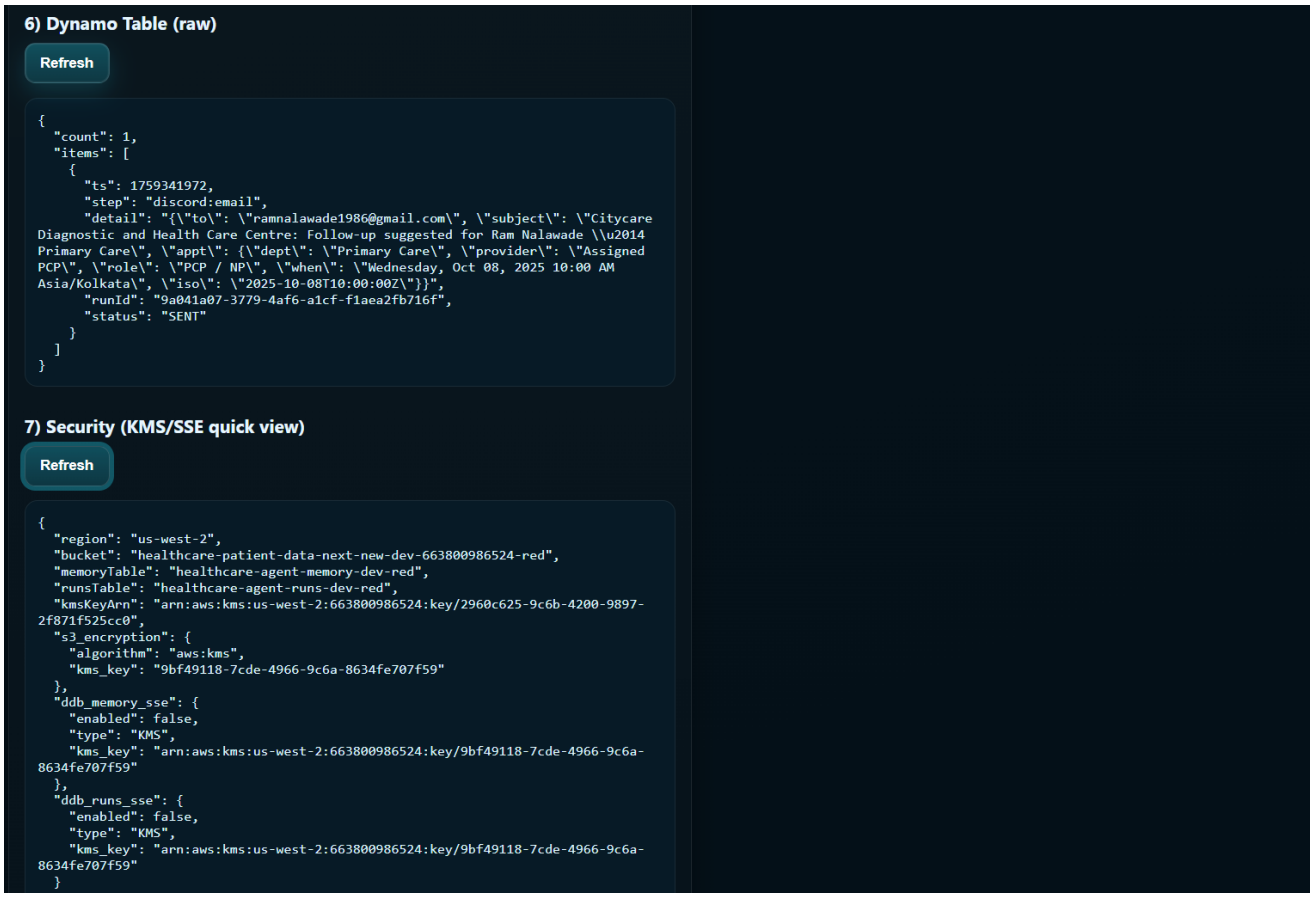
Detailed Steps — Plan (I/O)



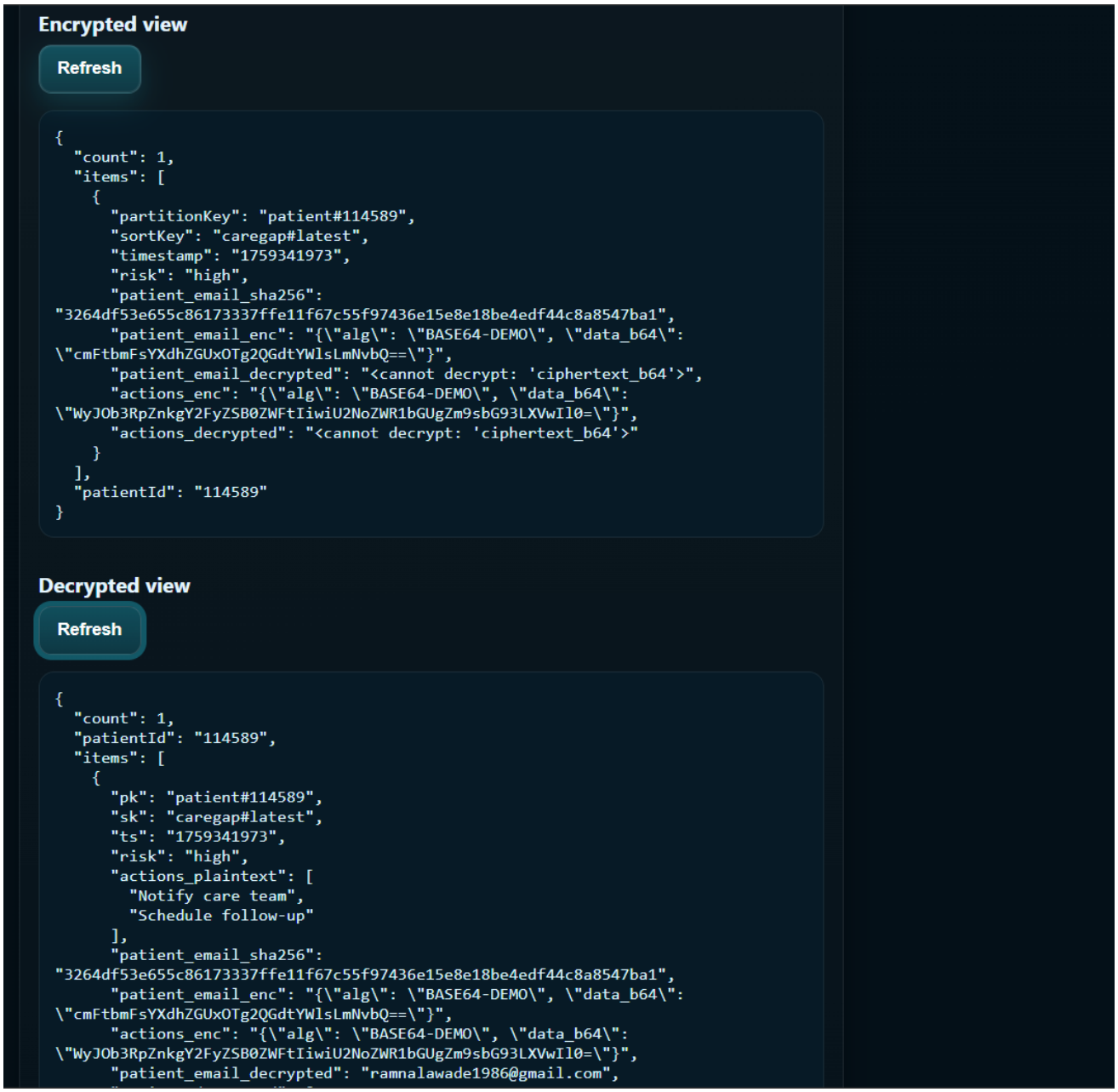
Expanded step list — running states Plan, parsereport, VerifyFHIR, SearchGuidelines



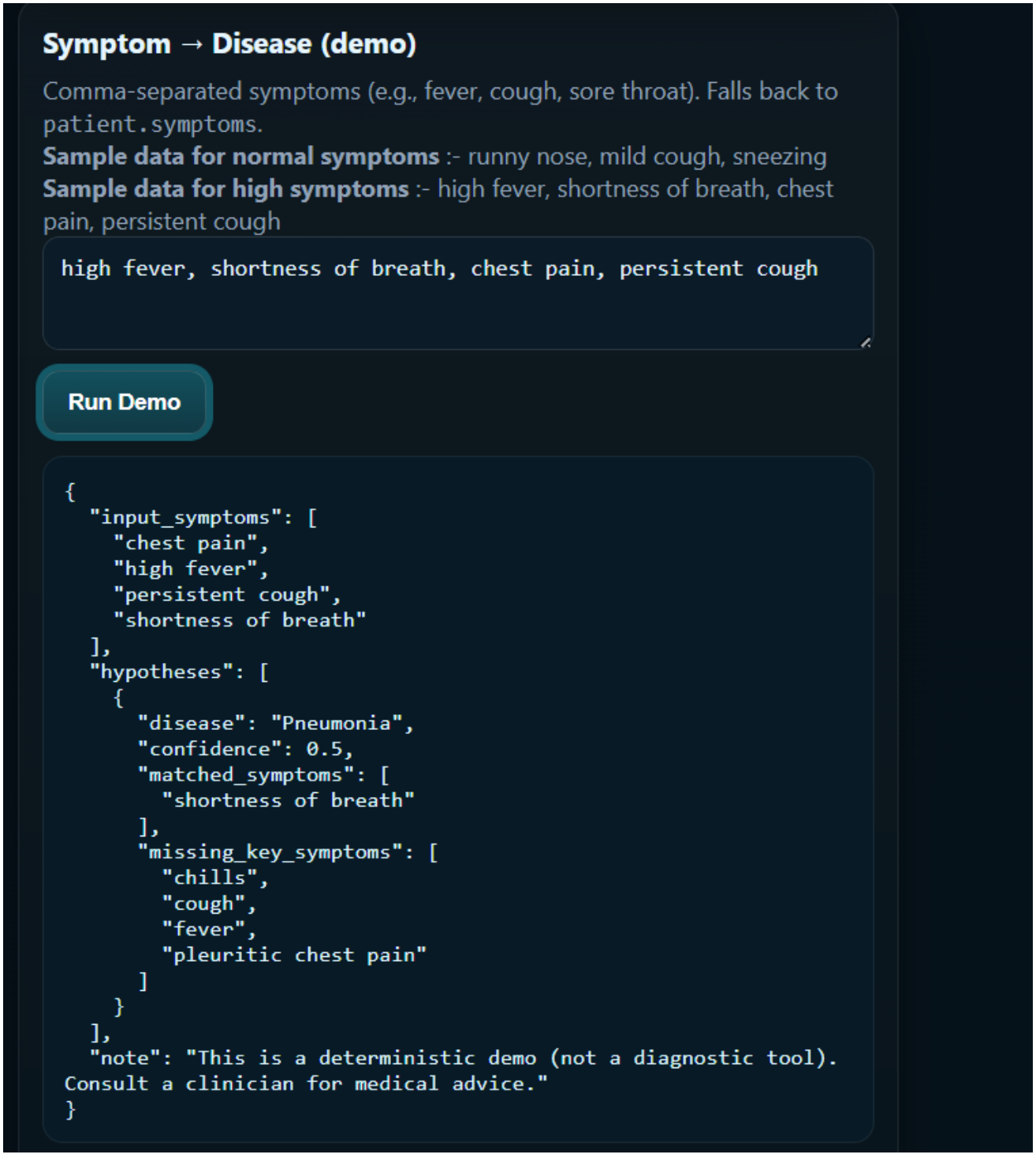
Discord log sample — email sent



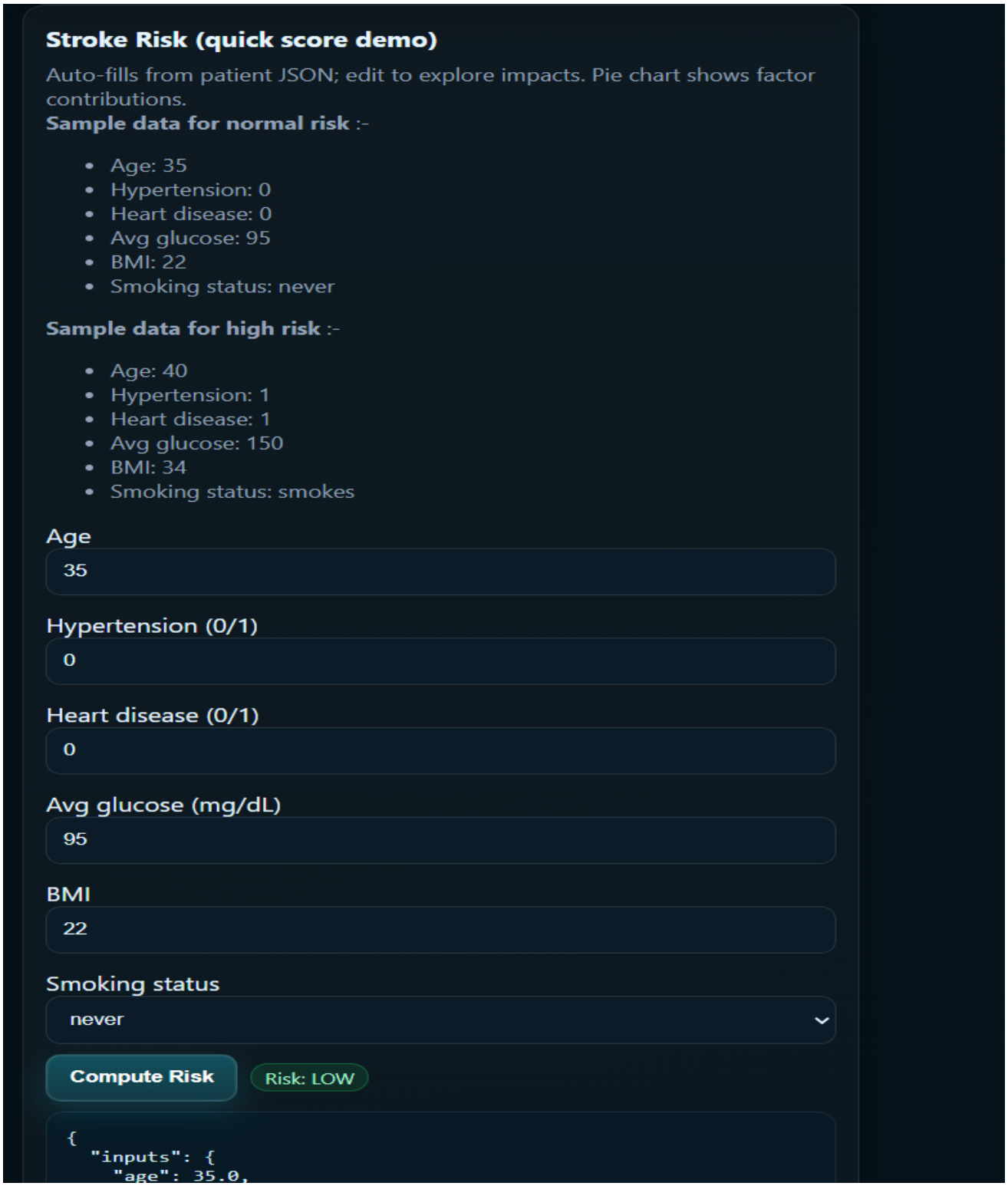
Dynamo — latest item



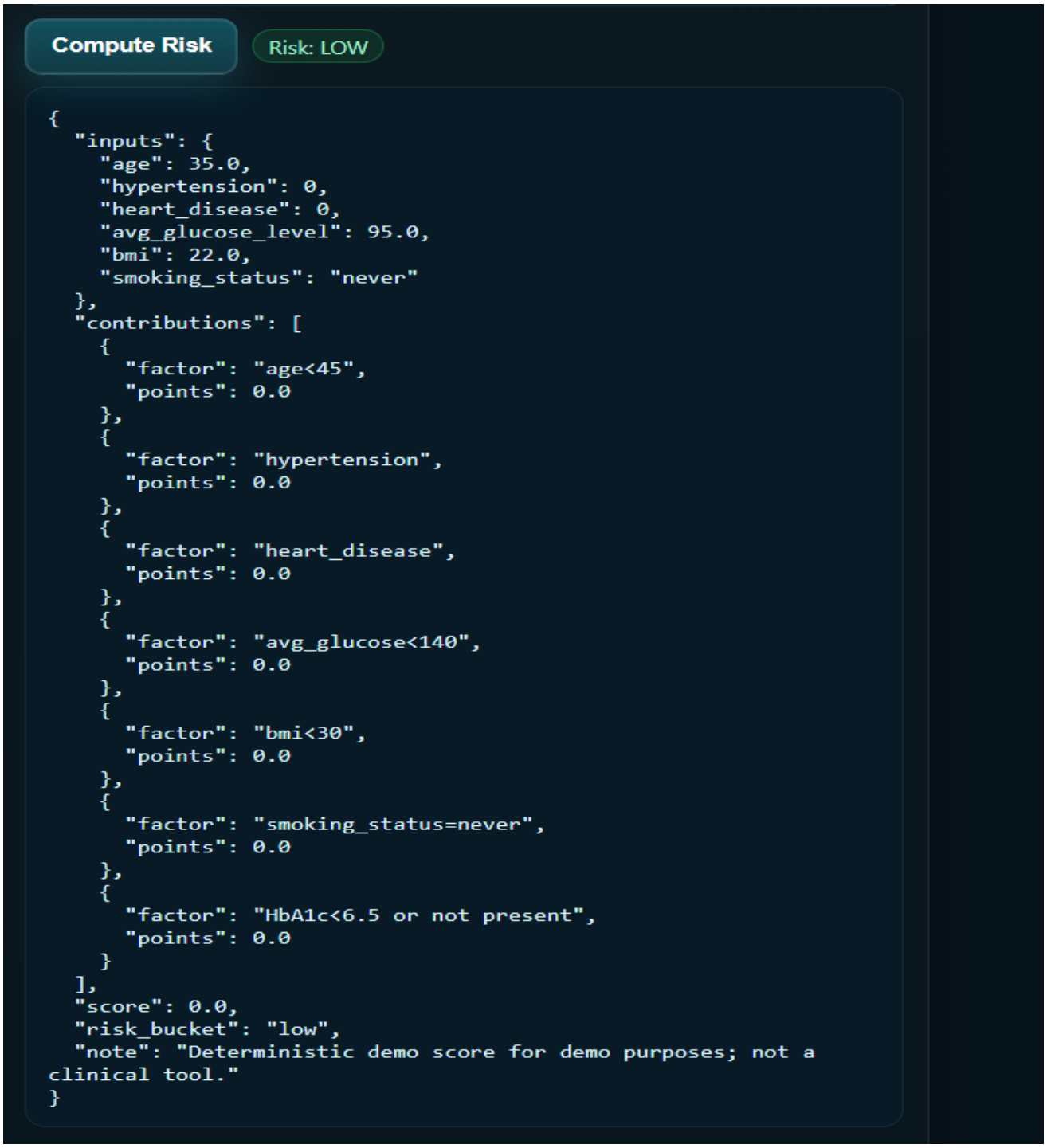
Dynamo encrypted / decrypted view



Symptoms Dieses Demo Script



Strock Risk Demo view



Risk demo — LOW bucket contributions