CASE STUDY · 2026
Divescale

VETERINARY OPERATIONS · AI-NATIVE PLATFORM

Pet Health Care System

An AI-native operating system for veterinary hospitals. Designed, built, and scaled by Divescale, tailored for clinics that cannot afford to go offline.

CLIENT
US Veterinary Care Company

ENGAGEMENT
Full Platform Build

DELIVERED
2026

Divescale

CHAPTER 01 · THE PROBLEM

Before We Built This, Here's What Clinics Were Living With

The average veterinary hospital ran on 6 to 12 disconnected software tools. Every role had its own login. Data lived in silos. Staff spent the first hour of every day just switching tabs and reconciling records.

01 · SCHEDULING CHAOS

Staff opened shared Excel sheets on a monitor visible to 20+ people, manually cross-checking room availability, doctor schedules, optimal buffer times, and service duration, all while the phone rang. Booking a single appointment took minutes and was still error-prone.

02 · PAPER WHITEBOARDS

In-patient tracking lived on a whiteboard. Tasks were scrawled in marker, erased, rewritten: no audit trail, no notifications, no sync. When someone erased the wrong line, no one knew. Patients paid the price.

03 · INVISIBLE REVENUE LEAKS

Between **8-12% of procedures performed** never made it onto the invoice. Separate imaging tools, disconnected billing, manual entry, the leaks were silent, but they compounded daily.

04 · NO SINGLE VIEW

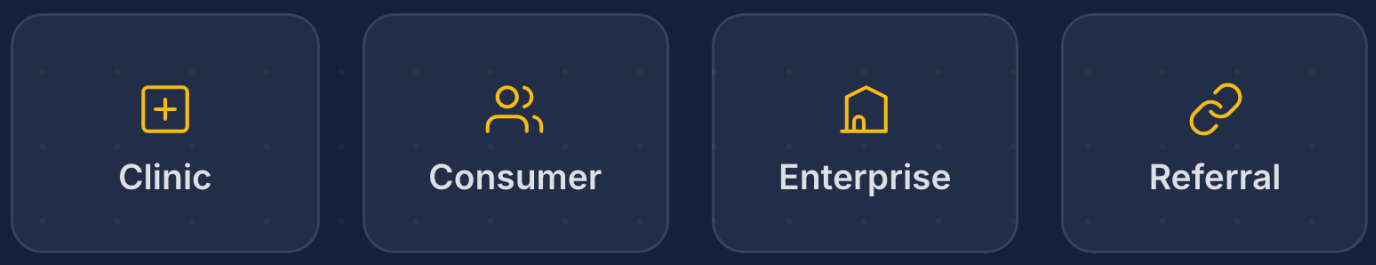
Practice managers made decisions blind. Revenue trends required exporting CSVs and feeding them into Excel. Forecasting patient volume took days of manual work or a data scientist. Neither was affordable.

$50-100K	8-15 min	40%	6-12
Lost to no-shows per practice, yearly	Wasted per appointment on tool-switching	Of a vet's day lost to paperwork	Disconnected apps per typical practice

CHAPTER 02

One Platform. Four Portals. Zero Downtime.

Divescale replaced the chaos of legacy vet software with a single intelligent platform that never sleeps.



NEXT.JS · NESTJS · TYPESCRIPT · POSTGRESQL · AWS EKS · AURORA GLOBAL

CLINIC PORTAL · FEATURE 01

Intelligent Appointment Optimization

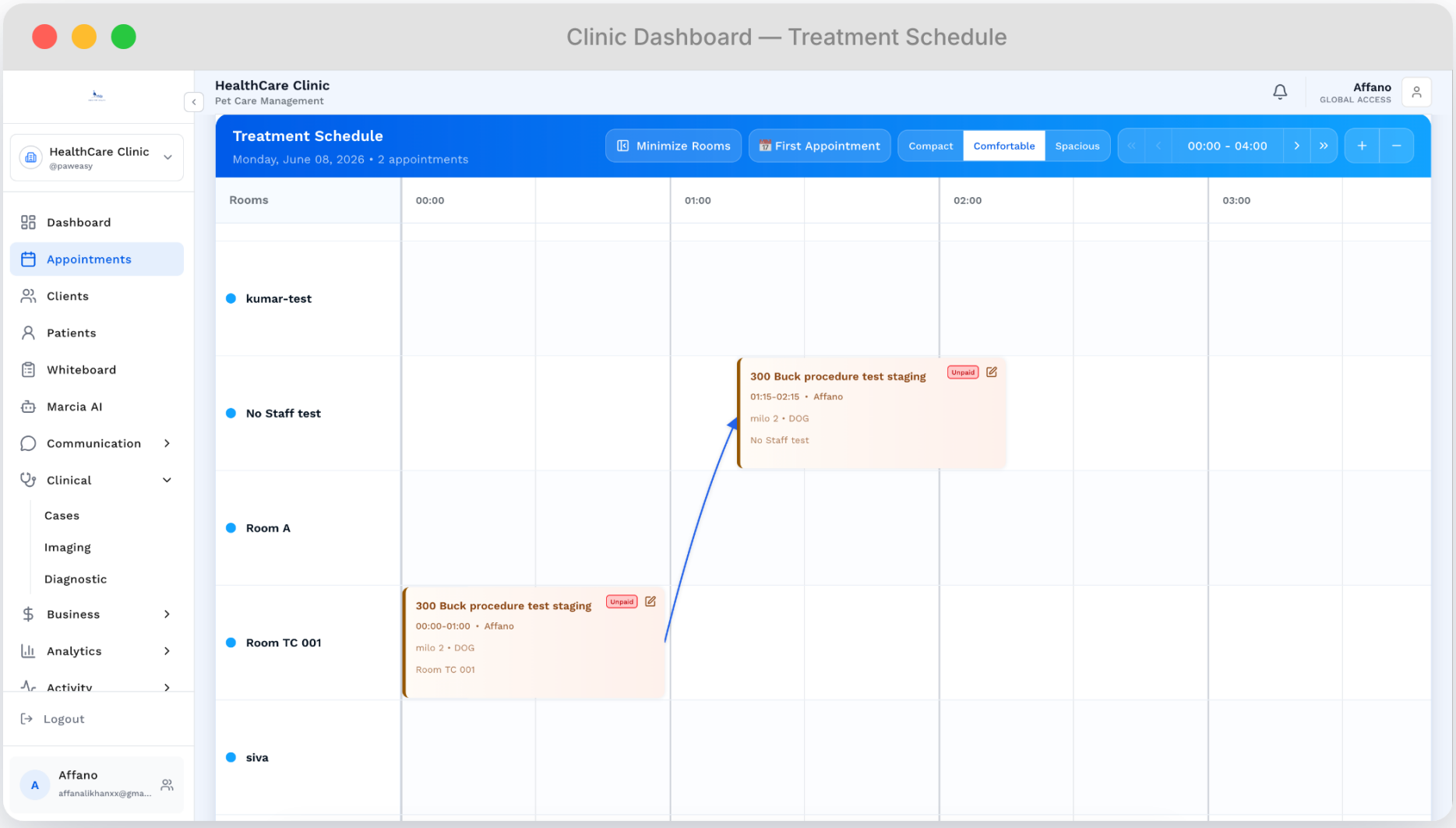
Twenty people staring at the same Excel sheet, racing to book the one open slot that fit the room, the doctor, and the time, that was scheduling before. Now a gradient-boosting model handles it in under 100ms.

BEFORE

- ✕ Shared Excel open on a lobby monitor, 20+ staff editing simultaneously
- ✕ Manual cross-check: room free? doctor available? buffer time enough?
- ✕ No-shows drain **$50-100K/yr** with zero prediction
- ✕ Double-bookings, wasted slots, angry clients

AFTER

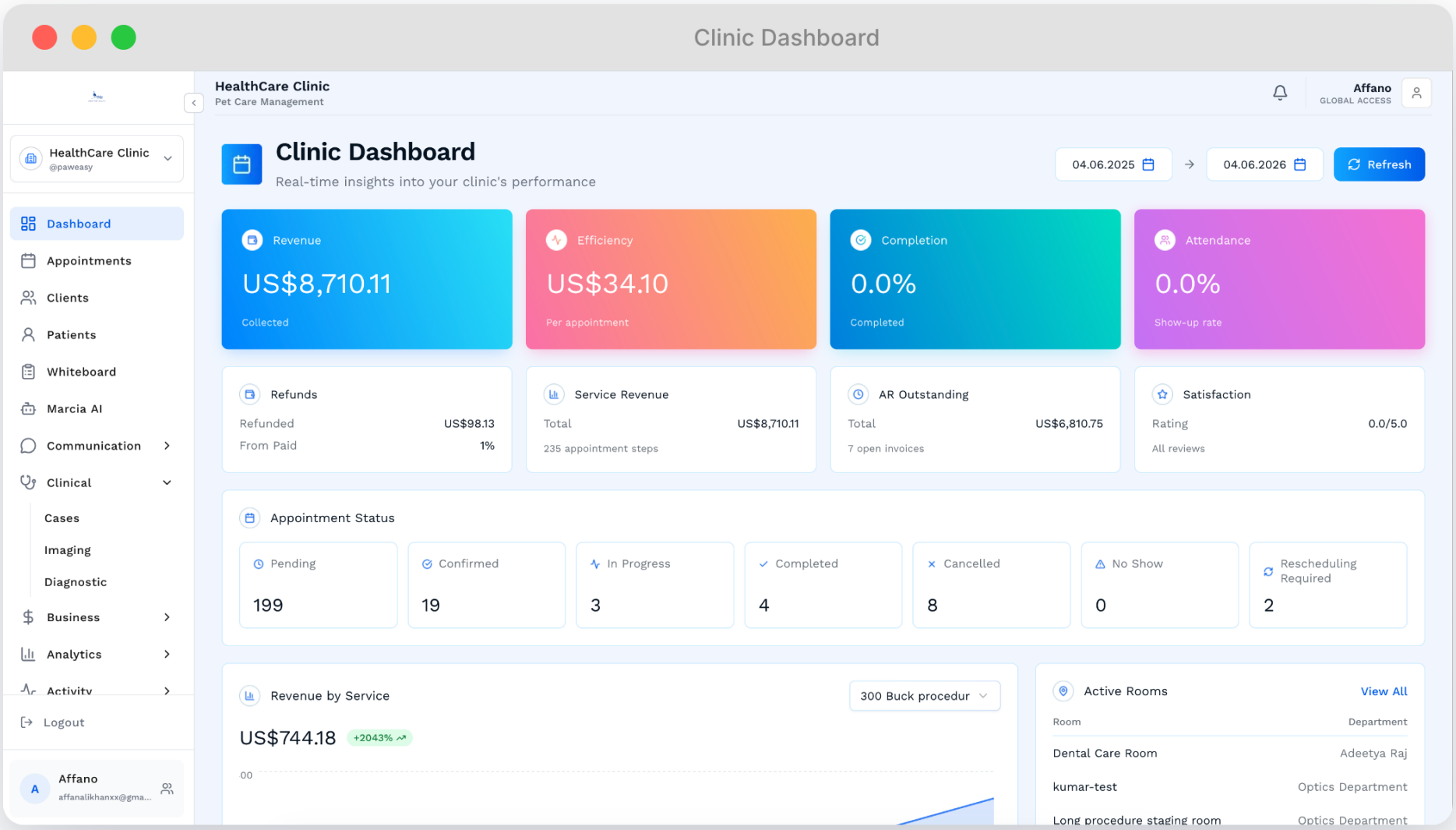
- ✓ Gradient-boosting model predicts no-shows before they happen
- ✓ AI picks the optimal slot across all constraints in <100ms
- ✓ Room, doctor, duration, buffer, all handled automatically
- ✓ Reminders sent automatically; cancellation fills slot instantly



CLINIC PORTAL · FEATURE 02 & 03

Operational Command Center

Live revenue, efficiency, completion rate, and attendance, one screen. Practice managers retired their spreadsheet patchwork for a real-time picture of clinic health.



Data-Driven Workforce Management

Before: practice managers had no idea how productive each staff member was. Now they track output, utilization, and efficiency per person, driven by data from the algorithms, not gut feel.

Per-staff productivity tracking

Appointments completed, revenue generated, avg handle time, all visible from one dashboard.

Utilization rate & workload balance

Identify overloaded and under-utilized team members. Redistribute intelligently.

Performance KPIs by role

Vets, techs, and front desk each see their own metrics. Managers see everything.

CLINIC PORTAL · FEATURE 04

Unified Patient Intelligence

Every patient's entire history in one place, surfaced instantly, enriched by AI, and connected to every other part of the system.

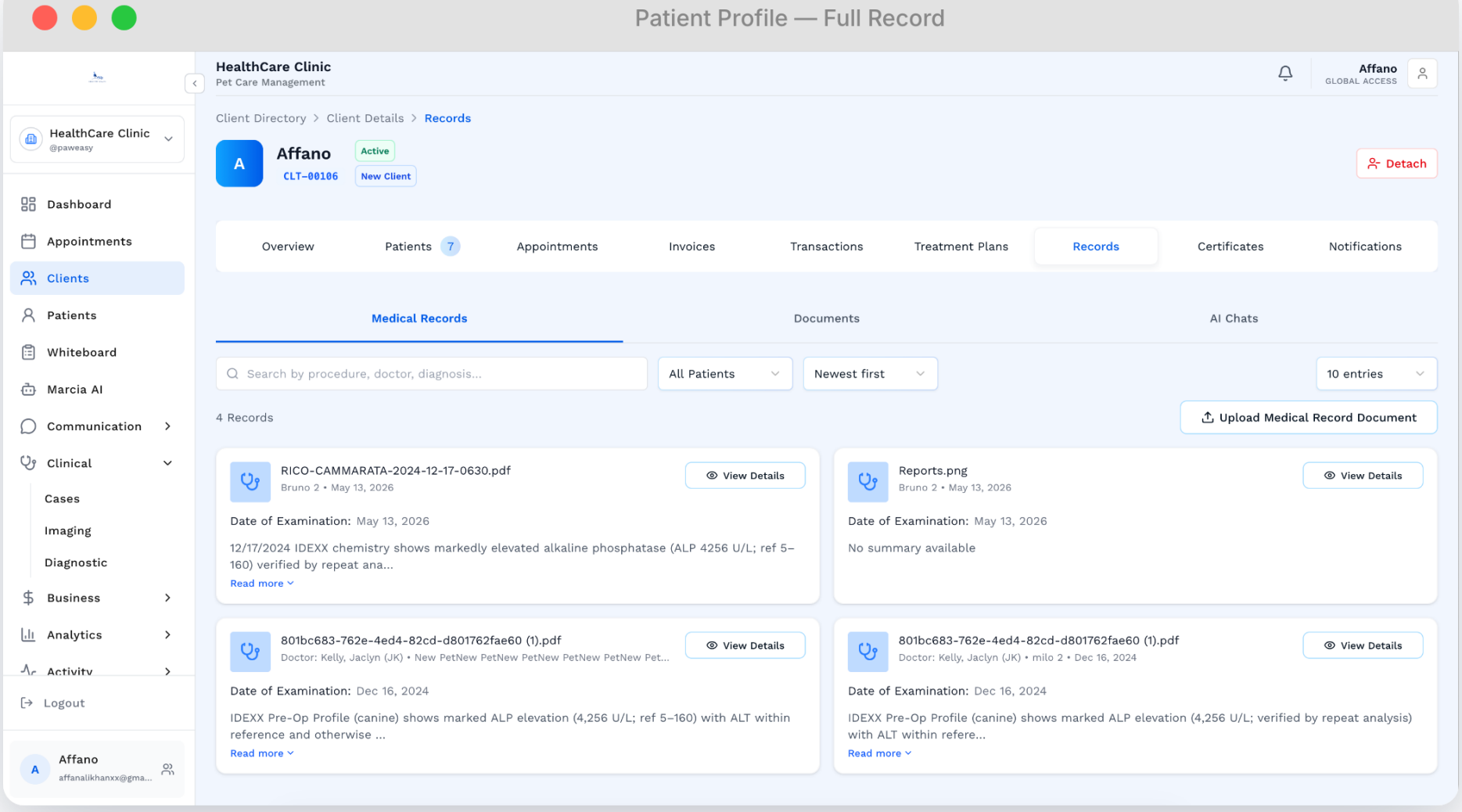
- Appointments
- Medications
- Invoices
- Treatment Plans
- Certificates
- Insurance
- Wellness Reports
- AI Actions

AI-Generated Actionable Steps

The system flags when a patient is overdue for a follow-up, hasn't visited in a concerning period, or has a health score indicating risk, prompting the clinic to act.

All Records, One Search

Type a client's email at check-in and every visit, every vaccine, every invoice pulls up instantly. No more asking "have you been here before?"



CLINIC PORTAL · FEATURE 05 & 06

Smart Inventory & Medication Control

Multiple softwares for tracking stock, purchase orders, and spending, now unified into one system. Every movement tracked at every instance.

Low Stock Alerts
Push notifications across channels before stock runs out. Never run out of a medication mid-treatment.

Vendor Purchase Orders
Raise POs to any vendor directly from the app and track delivery status in real time.

Movement Audit Trail
Every item use, every transfer, every disposal, logged with timestamp and user for full accountability.

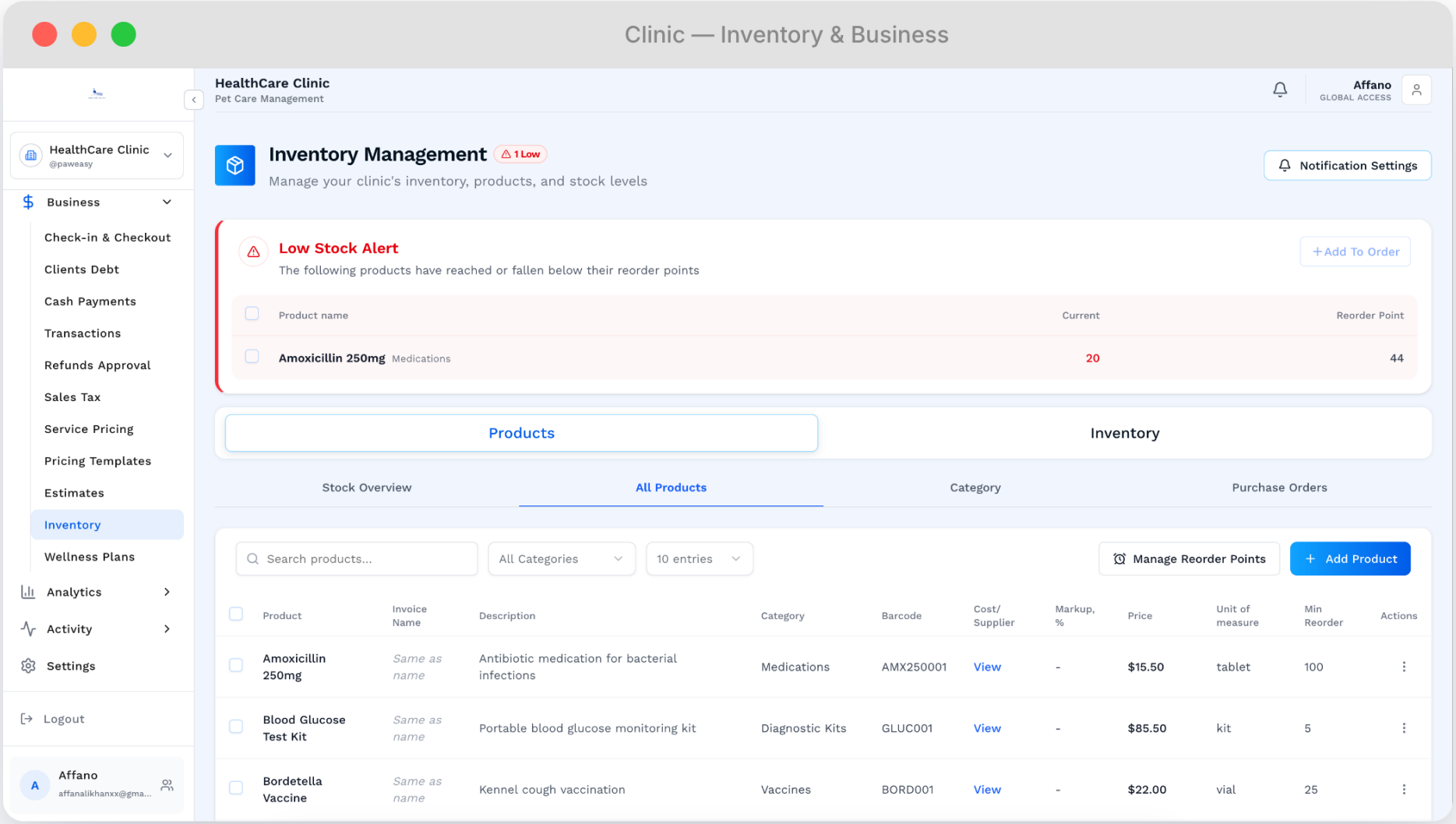
Revenue Transparency & Financial Operations

Clinics used to juggle multiple billing tools and then manually move data into ERP systems like QuickBooks or Oracle. That's gone.

Auto ERP Sync
End-of-month sync to QuickBooks and Oracle happens automatically. No manual exports.

Comprehensive Transaction Detail
Every charge, every payment, every write-off, visible in one place with filters by date, provider, and service.

One-Click Refunds
Full or partial refunds issued instantly from the transaction record. No calling payment processors.



CLINIC PORTAL · FEATURE 07 & 08

Real-Time Patient Visibility

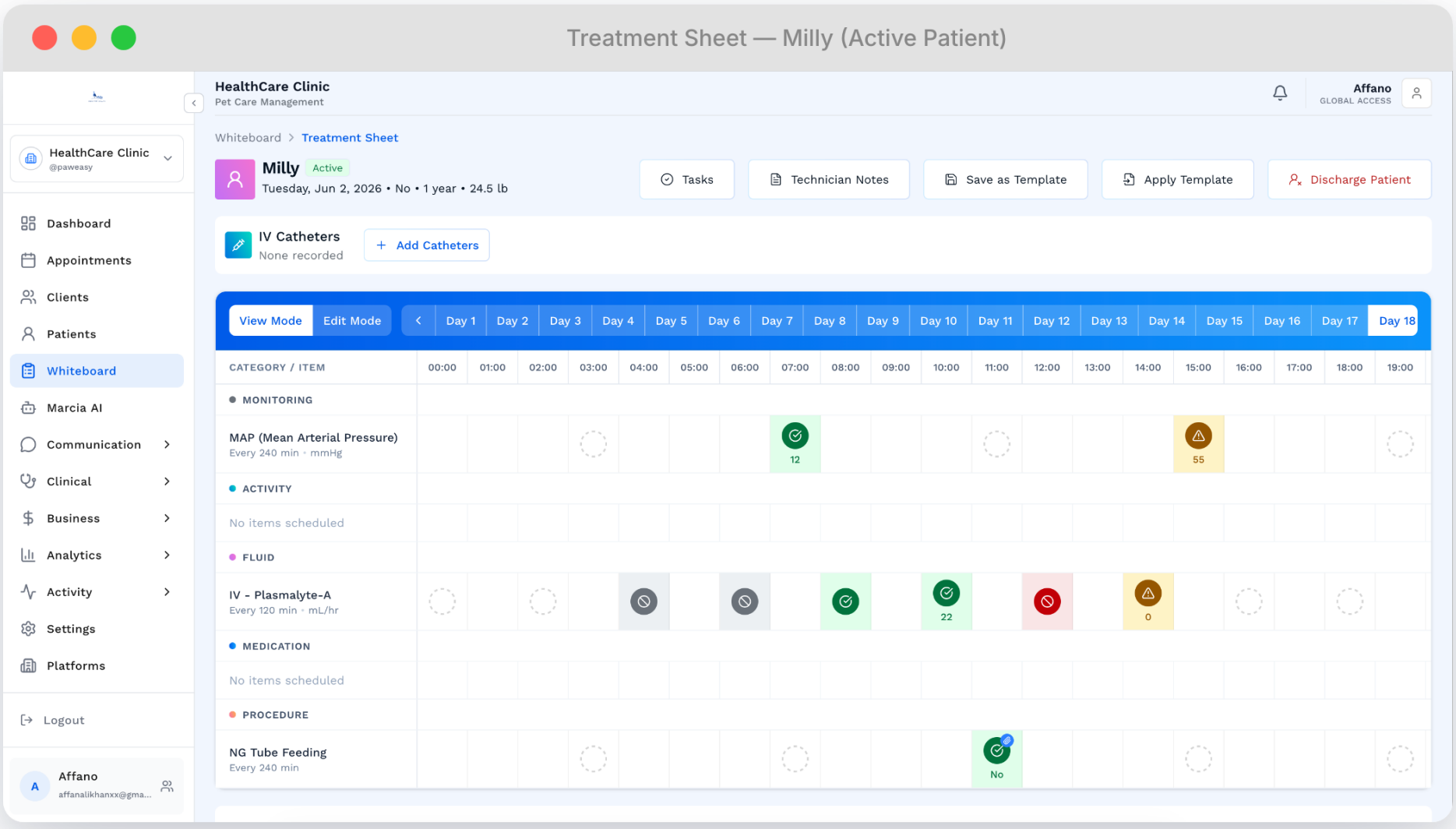
The paper whiteboard was the biggest source of information breakdown in in-patient care. Data was scattered across multiple people, perpetually out of sync, and impossible to audit.

- → Assign tasks to staff: they get notified instantly
- → Anyone can see the patient's status and location
- → No erased data. Full audit trail of every update
- → Works across shifts with live sync

Treatment Coordination

Hour-by-hour monitoring of medications, fluids, vitals, exercises, and procedures. This is the most clinically critical view in the hospital, now digital and always accurate.

- → Monitoring, activity, fluid admininistration and medication
- → Every entry logged with timestamp and the acting user
- → Auto-charges on every recorded procedure in final bill
- → Prevents the 8-12% silent revenue leak



Seamless Admission & Checkout Experience

Admission used to happen on a spreadsheet, with staff manually searching whether a patient was new or returning. Now it's a search by email, everything else populates automatically.

BEFORE

- ✕ Excel for admission, manual record lookup
- ✕ Manual invoice assembly at checkout
- ✕ Long lines, unhappy clients

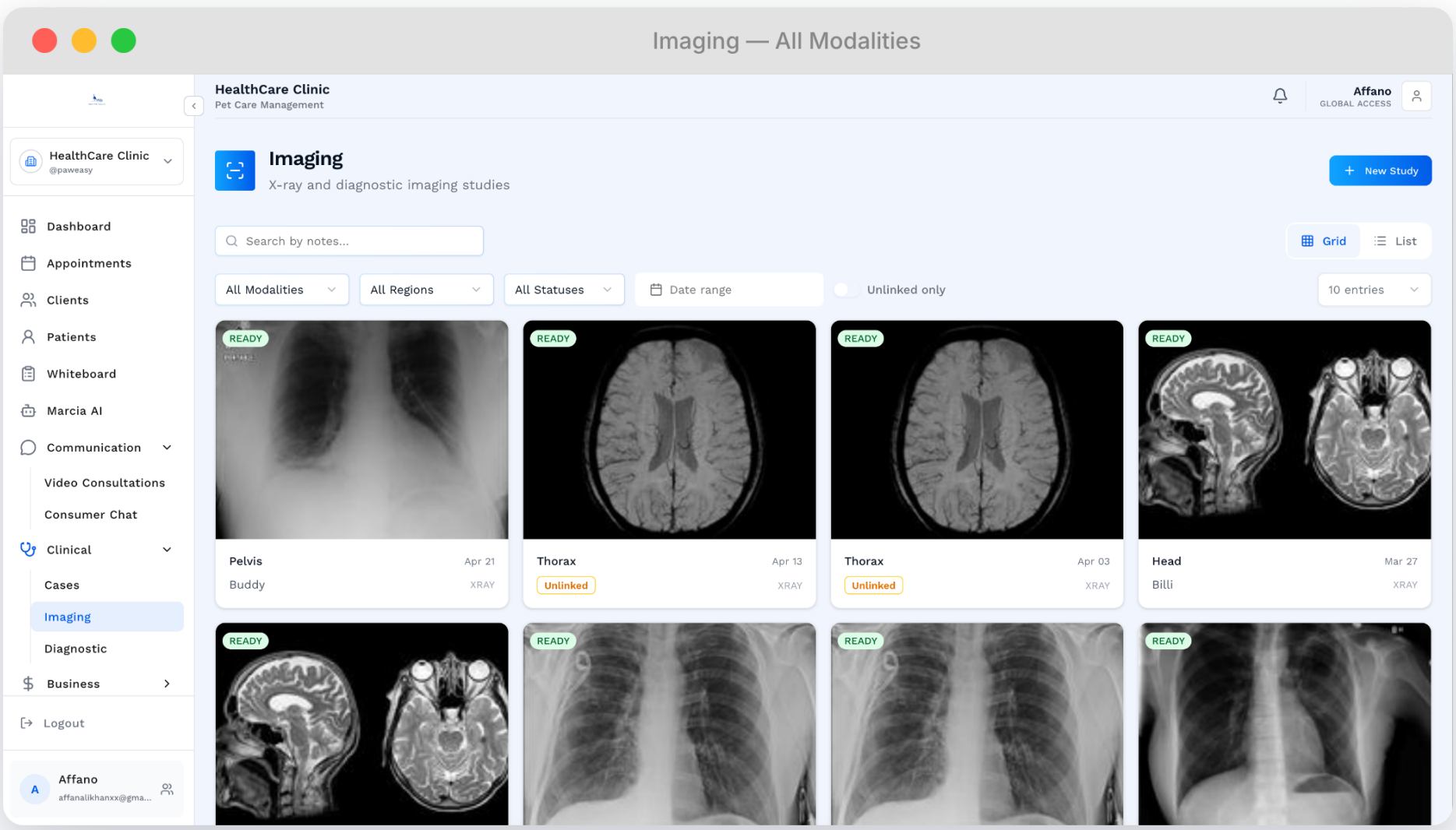
AFTER

- ✓ Search by email (triggers all history loading)
- ✓ Auto invoice from appointments and items used
- ✓ One-tap checkout with integrated payment

Advanced Diagnostic Imaging & Tracking

X-ray had one tool. CT had another. MRI something else. Sending to a specialist meant burning a CD and shipping it. Now all modalities live in one viewer, linked to the patient record.

- → X-ray scan, CT scan, MRI imagery, all in one viewer
- → Annotate and compare studies side-by-side along with history
- → Linked to patient record, auto-saved in history with timestamp
- → Digital referrals with no CDs, no faxes, and no unnecessary delays.



AI LAYER · FEATURE 11

AI-Powered Clinical Intelligence

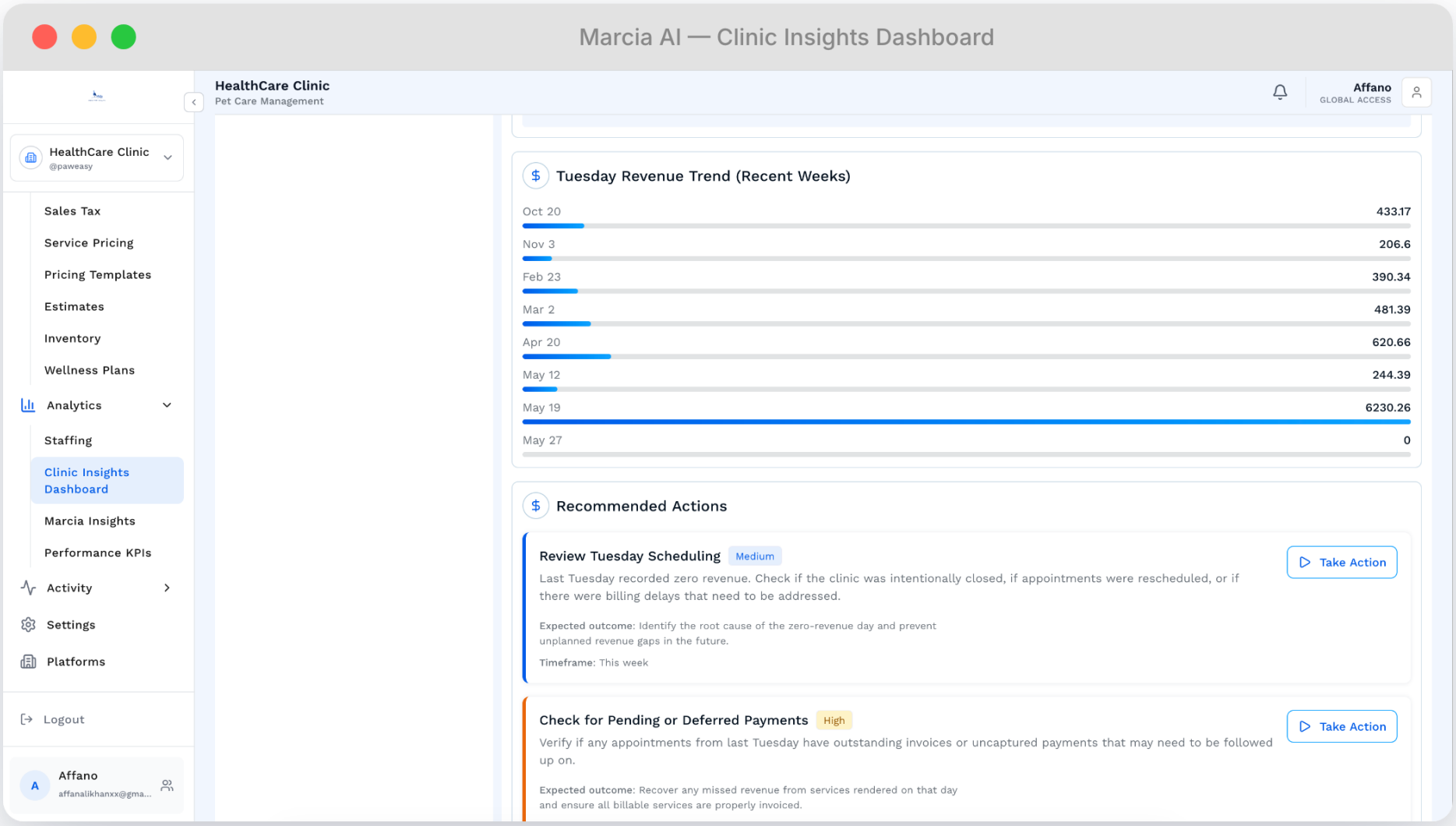
Before this, getting answers from your clinic data meant hiring a data scientist and waiting days. Now you type a question in plain English and multiple AI agents collaborate to return charts, trends, and recommended actions in seconds.

EXAMPLE PROMPTS

"How much revenue are we generating from new clients vs returning clients, and how much are we losing to no-shows?"

"Which services had the highest missed charge rate last quarter?"

"Show me the busiest days of the week broken down by doctor"



AI LAYER · FEATURE 12

Predictive Patient Forecasting

Forecasting patient volume is one of the hardest problems in clinic operations. It requires accounting for historical data, seasonal trends, local holidays, time of day, staff availability, and dozens of other signals. Previously, this took a data scientist days. Now it takes seconds.

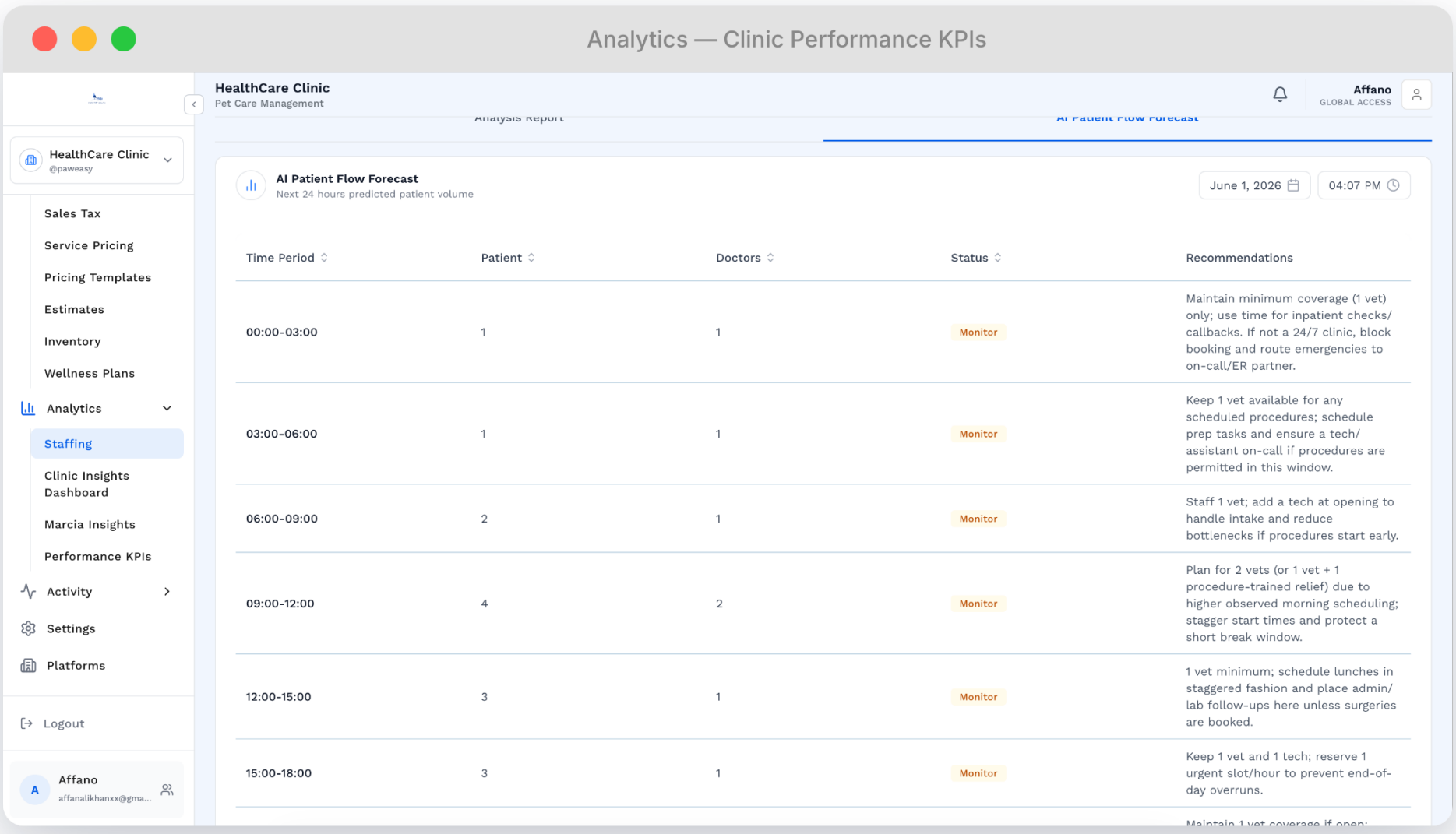
AI

Multi-Variable Forecasting

Historical patient data, seasonality, public holidays, appointment lead times, and species-level trends, all factored simultaneously.

Seconds, Not Days

No data scientist needed. Clinic managers see daily and weekly volume predictions on demand, with confidence intervals.



CHAPTER 03

For the Pet Owner. Transparency, Finally.

The consumer portal gives every pet owner something they never had: full visibility into their pet's health, AI-powered guidance, and the ability to book, consult, or act from the app or WhatsApp.

App & WhatsApp

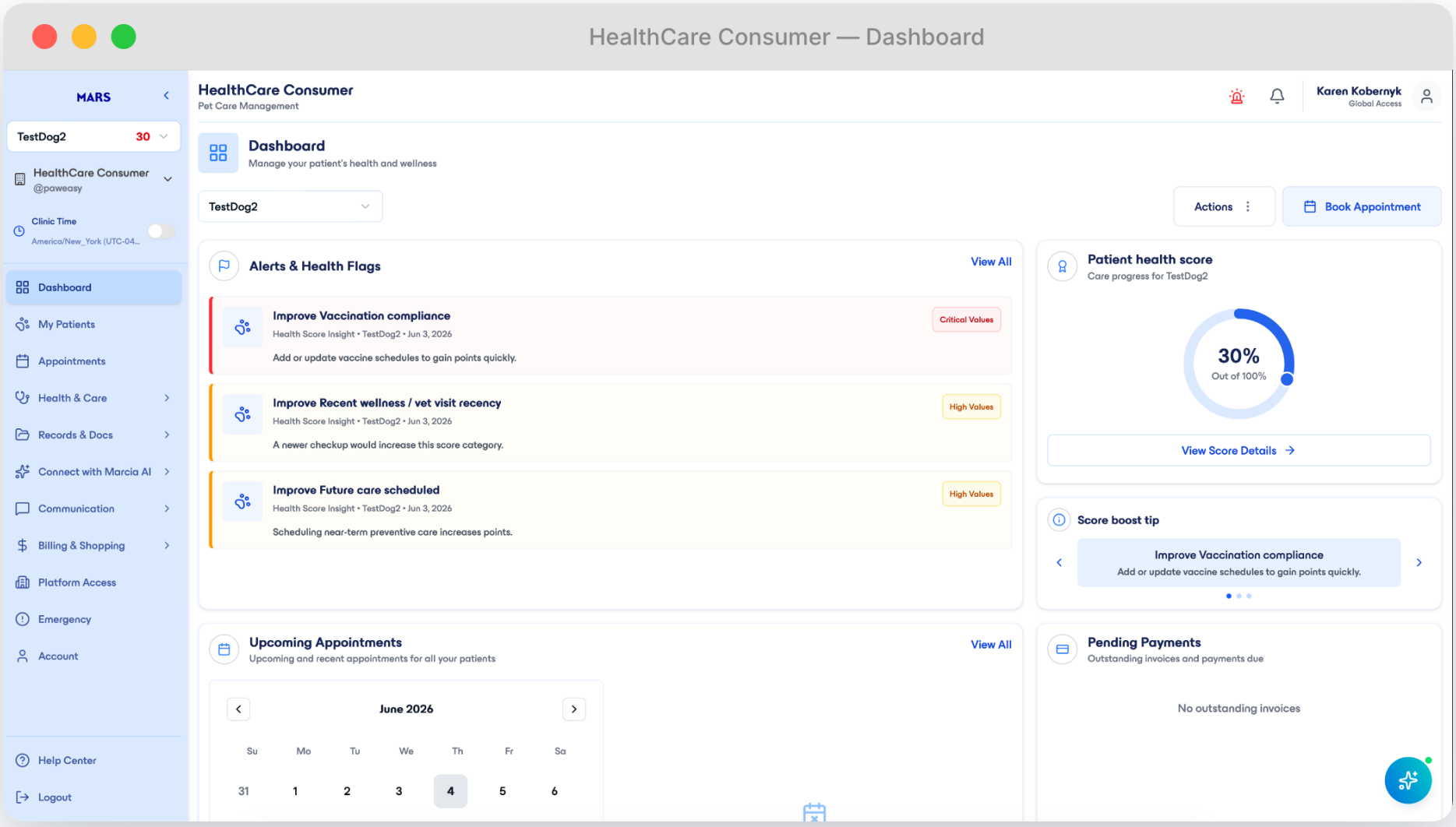
AI Agents

Digital Vet

CONSUMER PORTAL · FEATURE 13 & 14

The Modern Pet Owner Experience

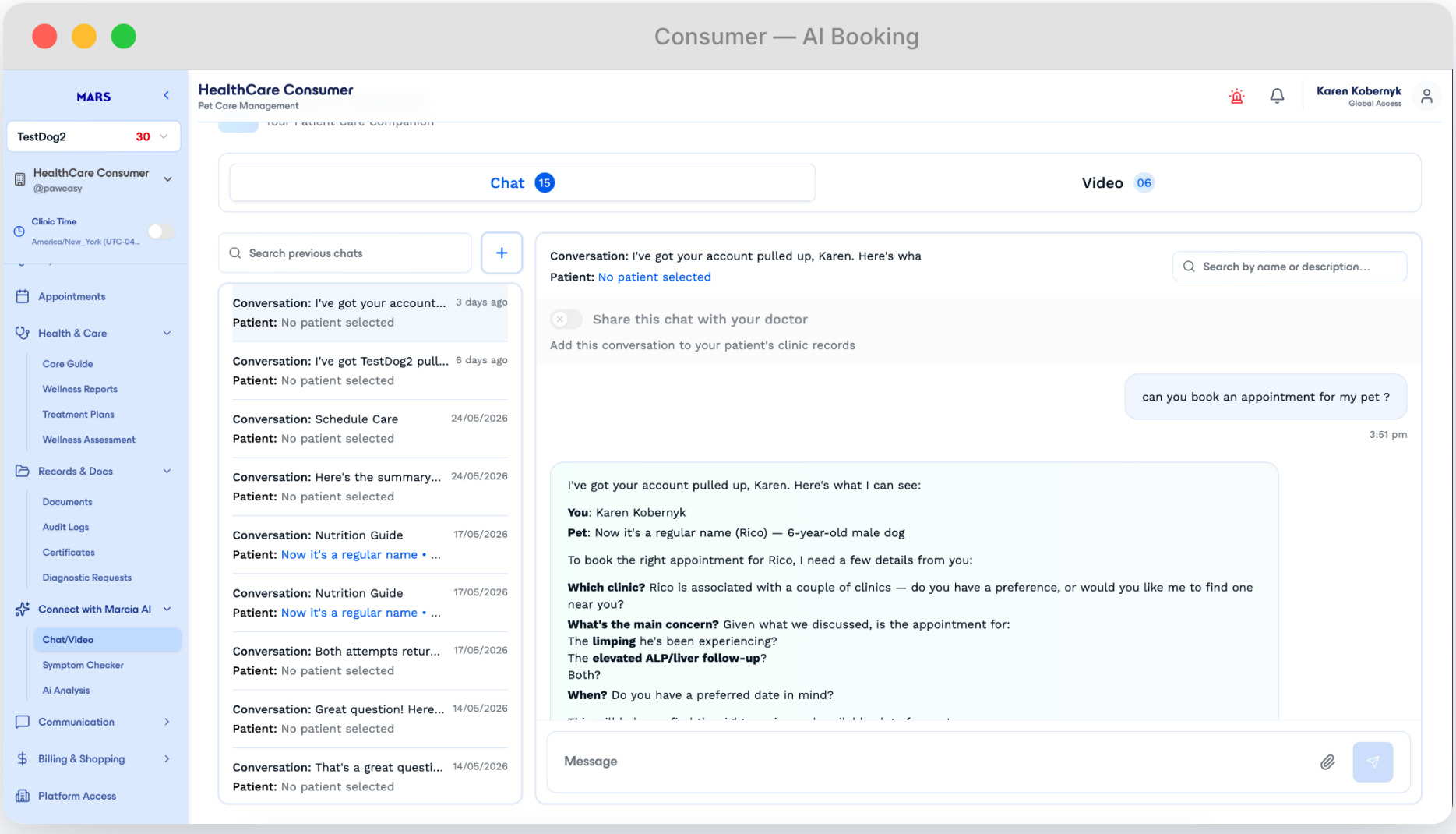
The first thing a pet owner sees: upcoming appointments, medications due today, AI health alerts, and their pet's wellness score. Everything they need, nothing they don't.



Conversational Appointment Booking

An AI agent that books appointments, finds the best discounts across nearby clinics, and knows your pet's history. Available in the app and on WhatsApp, so pet owners don't even need to open an app.

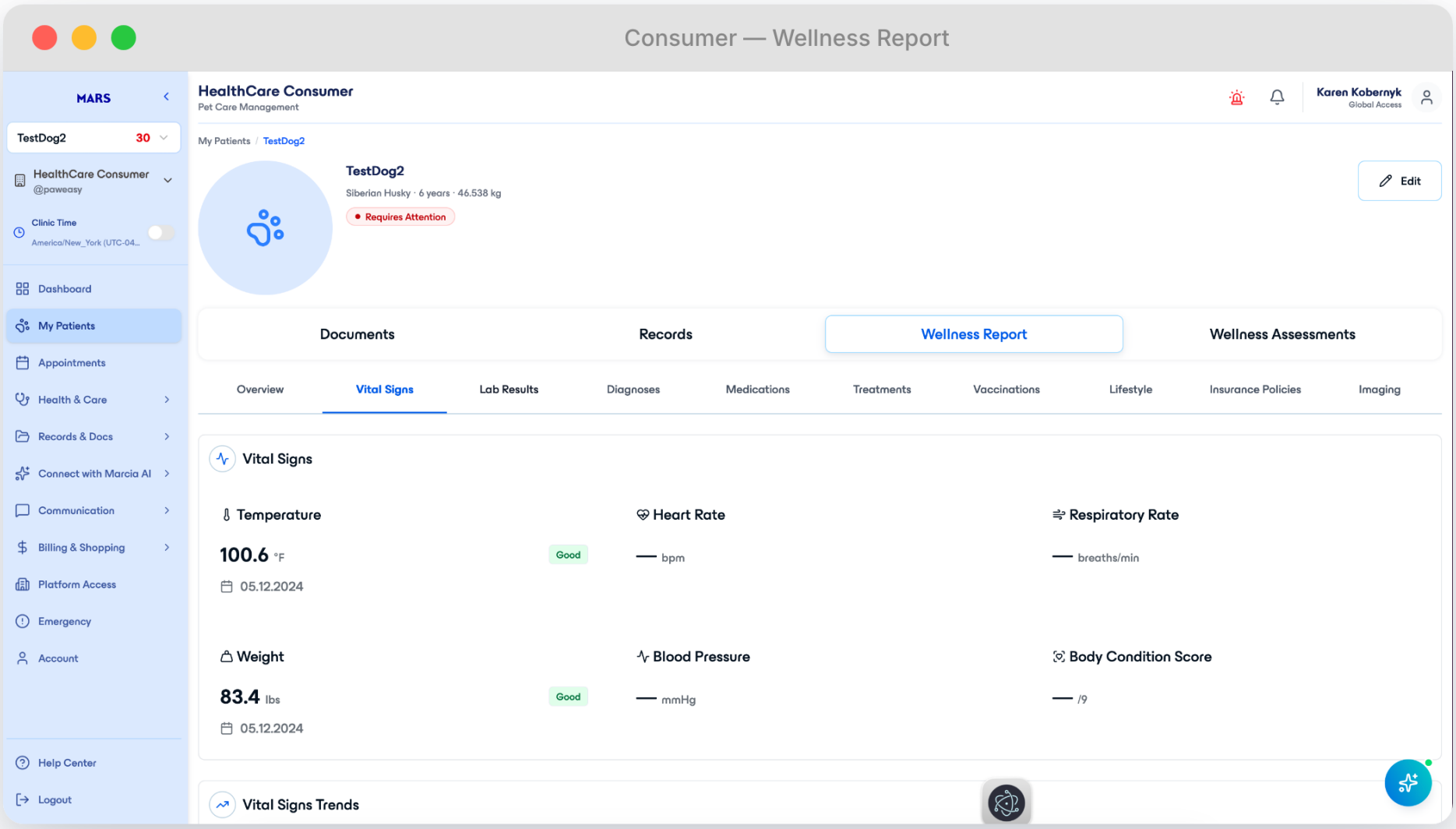
- → Natural language booking via chat
- → Finds best clinic and best slot automatically
- → WhatsApp integration (no app required)
- → Auto-confirms and sends reminders



CONSUMER PORTAL · FEATURE 15 & 16

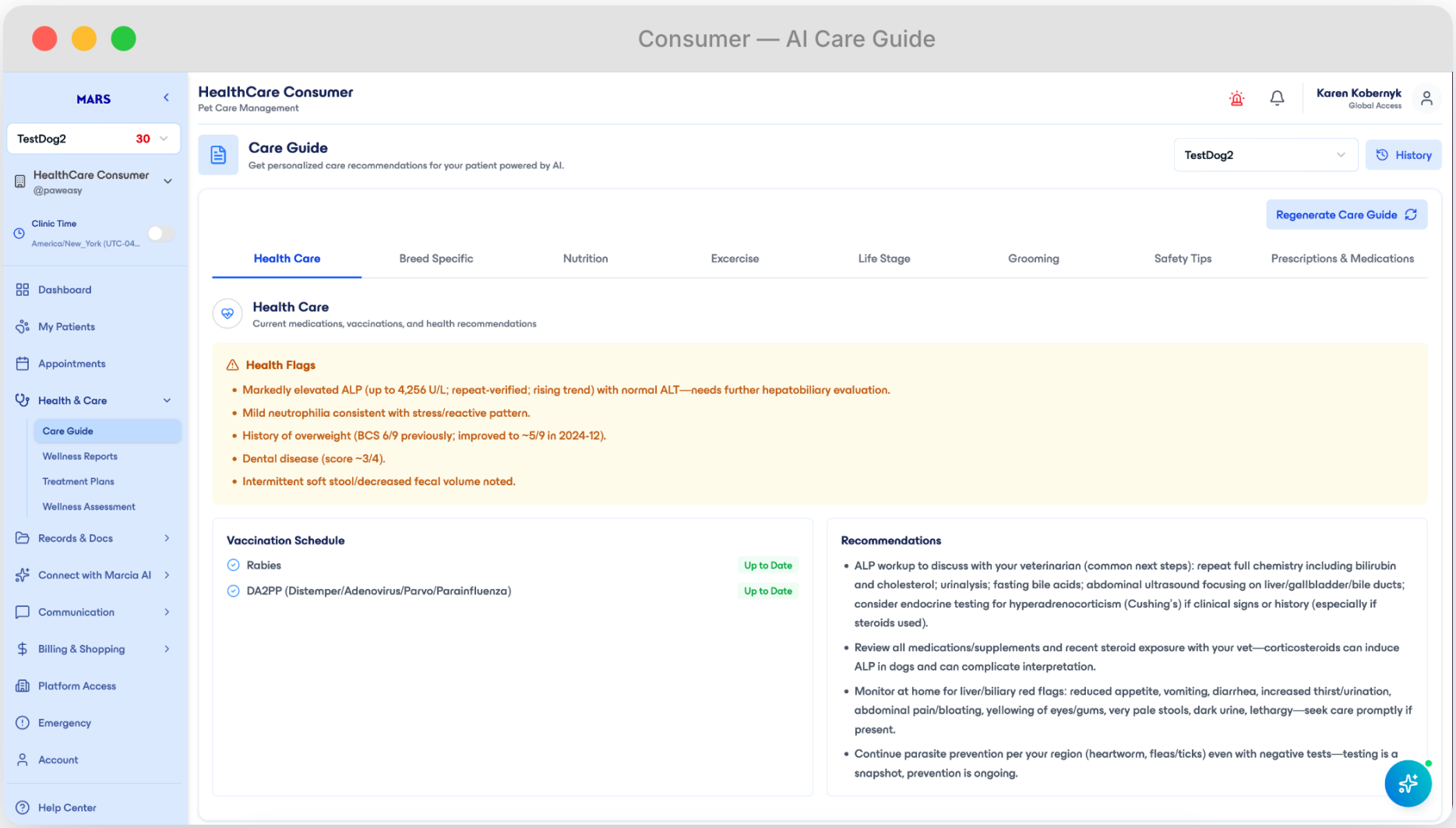
Transparent Wellness Tracking

Enriching a full pet profile used to take pet owners hours or days, feeding in documents, vaccine records, and visit histories. Now they upload their documents and the AI agent enriches the entire profile in seconds.



Automated Care Guidance

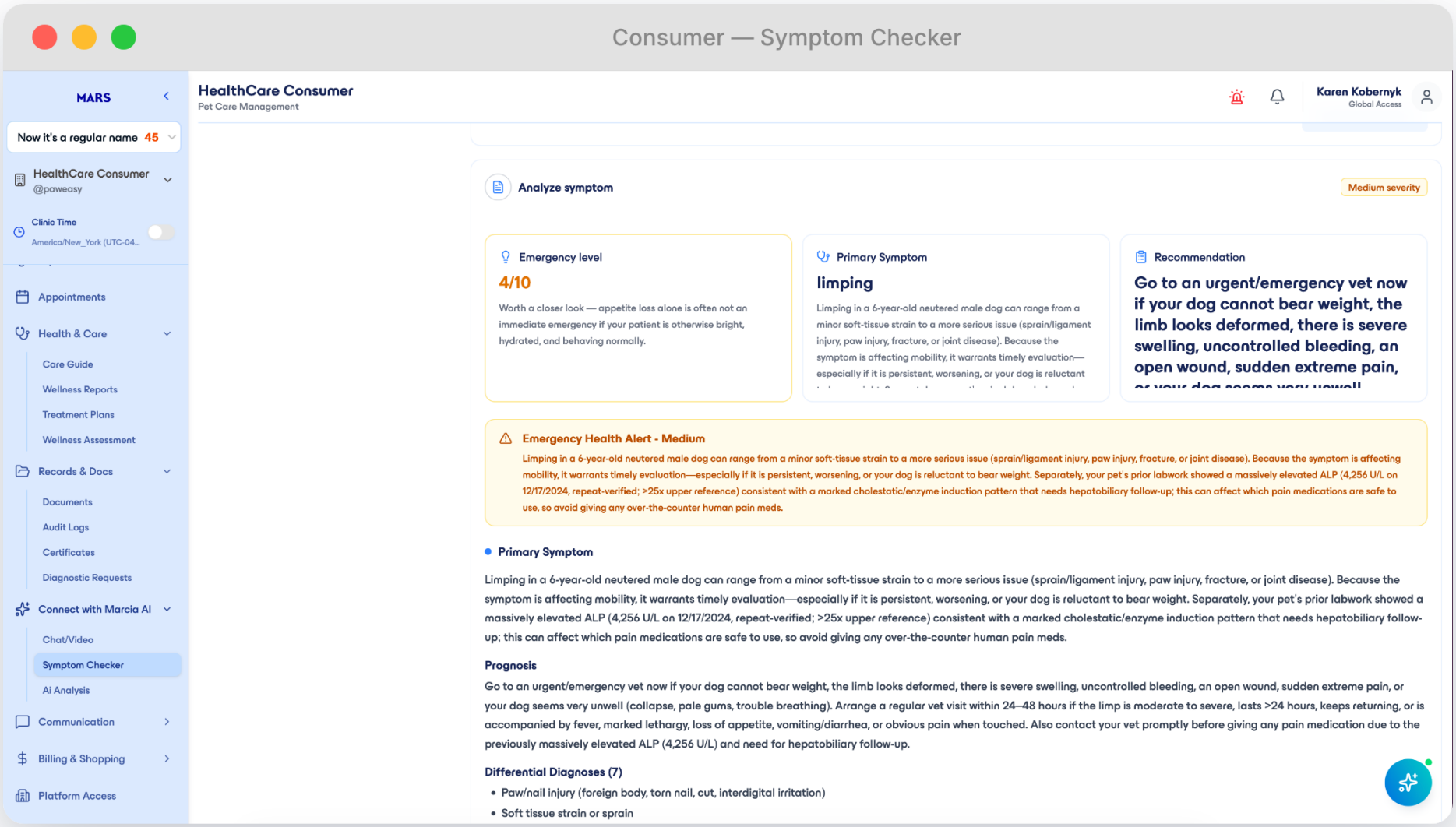
Most owners are genuinely unsure how to care for a pet, especially senior, young, or medically complex animals. The AI Care Guide uses age, breed, medication history, allergies, and appointment records to generate a clear, personalized care plan.



CONSUMER PORTAL · FEATURE 17 & 18

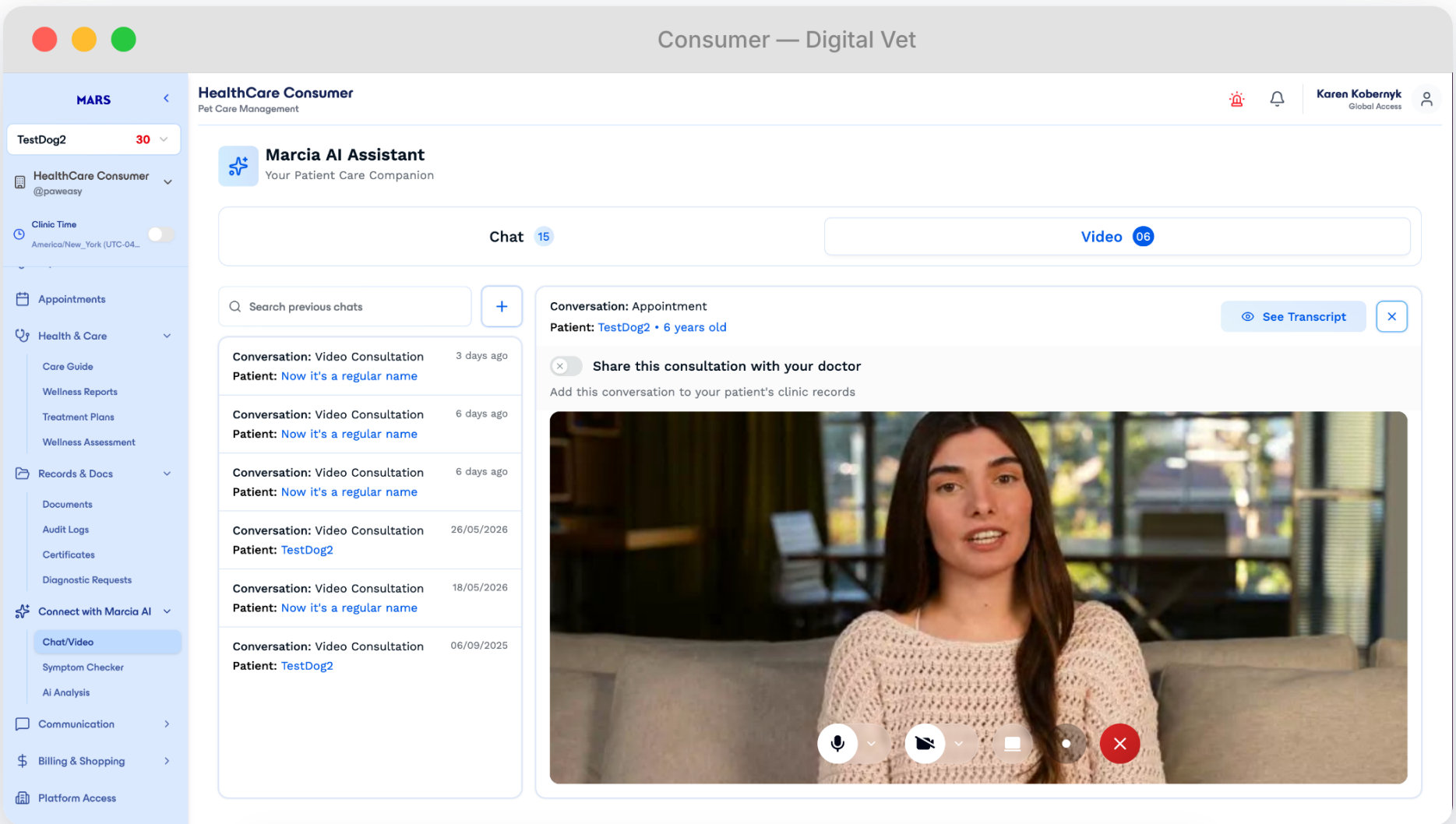
Early Symptom Assessment

A pet owner notices their dog limping or their cat not eating. They're not sure if it's serious. The AI Symptom Checker analyses the described symptom against the pet's health history and recommends whether to visit a vet, and how urgently.



Virtual Veterinary Care

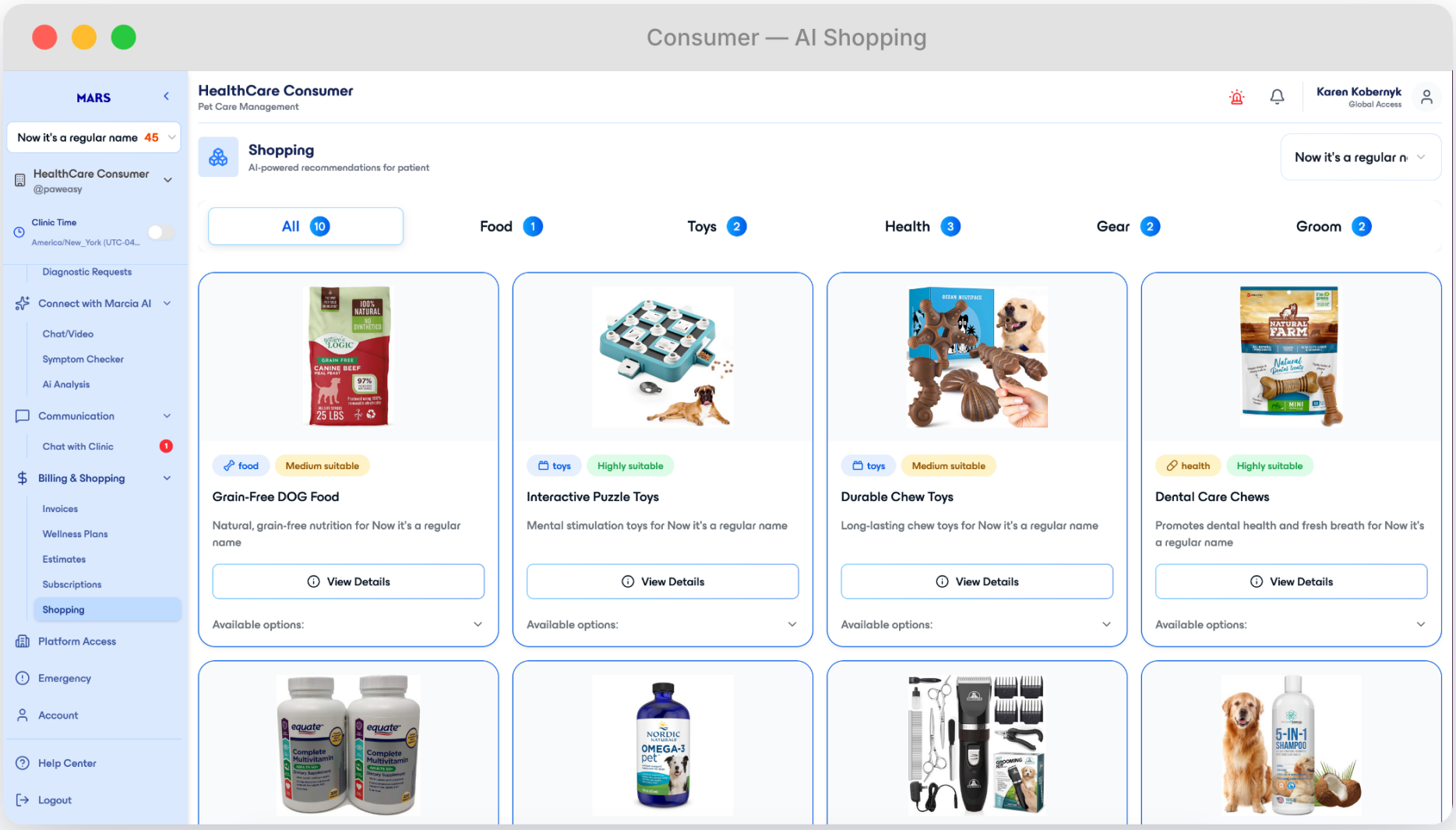
Not every concern requires a clinic visit. The Digital Vet can talk, listen, read the pet's full health record, and give expert guidance from anywhere, at any time. Fewer unnecessary visits. Better owner confidence.



CONSUMER PORTAL · FEATURE 19 & 20

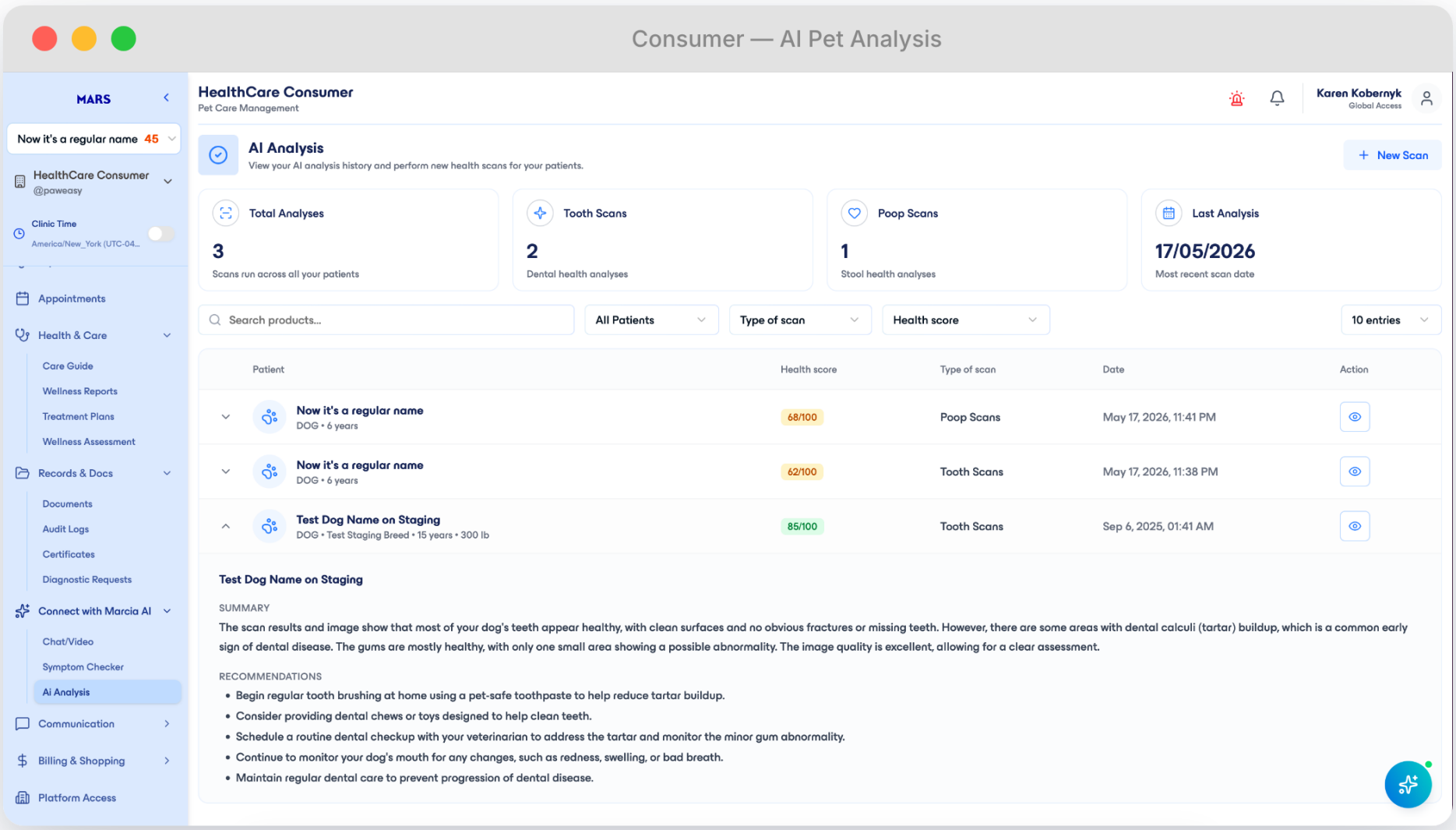
Intelligent Wellness Recommendations

The AI agent knows your pet: their breed, age, dietary restrictions, medications, and allergies. It finds the best matching products at the best prices and surfaces them proactively, so owners spend less time searching and more time caring.



Personalized Health Intelligence

Beyond just storing records, the platform analyses patterns in a pet's health over time, tracking trends in weight, activity, and visit frequency, and flags them to the owner with context and recommended next steps.



CHAPTER 04 · UNDER THE HOOD

Technology Stack

A battle-tested architecture designed for high availability, type safety, and AI-native operations. Every component selected for zero-compromise performance.

FRONTEND & UI EXCELLENCE

- Next.js
- React
- TypeScript
- Tailwind CSS
- shadcn/ui
- Framer Motion
- Redux Toolkit
- Better Auth

BACKEND, API & REAL-TIME

- Node.js
- NestJS
- Prisma
- Bun
- Socket.IO
- BullMQ
- speakeasy
- sharp

AI INTELLIGENCE LAYER

- Vercel AI SDK
- Mistral AI
- MCP
- ElevenLabs
- Tavily
- Fine Tuned LLM
- Heygen
- Tavus

INFRASTRUCTURE & DEVSECOPS

- AWS
- Amazon EKS
- Docker
- Terraform
- GitHub Actions
- SonarQube
- Playwright
- Sentry

DATABASE, CACHE & CLOUD EDGE

- PostgreSQL
- Redis
- AWS ElastiCache
- Amazon S3
- CloudFront
- Cloudflare
- Turnstile
- SentinelOne

INTEGRATIONS & COMMS

- Stripe
- Twilio
- DocuSign
- WhatsApp
- Daily.co
- Google Maps
- Resend
- SendGrid

Security & Compliance

Trust is not a feature; it is the foundation. We have built a platform that meets and exceeds the world's most rigorous security and privacy standards.

REGULATORY STANDARDS

HIPAA & SOC2

Bank-grade protection for PHI (Protected Health Information) and clinical data management.

GDPR & CCPA

Privacy by design with automated **Data Erasure on Request** and strict data sovereignty.

DEA Compliance

Precision **Audit Trails** for controlled substances with real-time reconciliation.

SECURITY ARCHITECTURE

AES-256-GCM

Military-grade **Encryption at Rest** and **In Transit** (TLS 1.3) across all regions.

Zero-Trust Auth

Secured by **OAuth 2.0**, **Passkeys**, **RBAC**, and **TOTP (RFC 6238)** authentication.

WAF & HMAC

Protected by **Web Application Firewall** and **HMAC** message integrity verification.

Governance & Resilience

Our governance model includes **Immutable Audit Logging**, **PII Redaction**, and **Continuous Disaster Recovery (DR)** with sub-second RPO across continents.

CHAPTER 06 · INFRASTRUCTURE

Built to Never Go Down

A hospital cannot close because a cloud provider has an outage. We built to that standard: multi-region, multi-AZ, and multi-cloud continuity.

Multi-Region EKS (Active-Active)

Singapore (ap-southeast-1) + US East. EKS Auto Mode. HPA scales 2 to 15 replicas on CPU 70% or memory 80%. Pods spread across AZs with strict anti-affinity rules.

Aurora Global Database

Primary writer in Singapore. Read replica in US East. AES-256 infrastructure-level encryption at rest. Recovery point objective under 1 second across continents.

Global Accelerator Continuity

Latency-based routing directs each client to the nearest healthy instance. Strict 30-second health checks trigger automated traffic failover, eliminating manual intervention.

Cloud Edge & Persistence

Global CDN with 200+ edge locations for zero-latency asset delivery. Persistent S3 storage with cross-region replication for critical medical imaging and patient records.

<1s	30s	2-15	99.99%
RPO Across Regions	Health Check Interval	HPA Replica Range	Target Uptime