



AlayaCare

Better technology. Better outcomes.

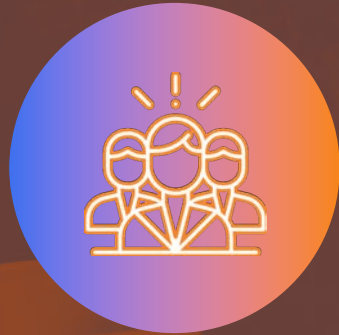
AlayaCare is an end-to-end Home Care Platform



MISSION STATEMENT

“To empower care providers to achieve better health outcomes by delivering transformative technology and data insights to focus on what really matters”

In the Data and Intelligence team, we leverage data to tackle the hardest problems facing our industry



Employee churn



Schedule & route optimization



Patient risk models

Home Healthcare

\$150 billion funneled toward subsidized home and community-based care



Alene Shaheed of Jacksonville, Fla., who moves around in a wheelchair, saw her support system fall apart during the coronavirus pandemic this year. Agnes Lopez for The New York Times

“If no one comes for three days, I don’t get a bath for three days,” said the 76-year-old. “I don’t have anyone to fix meals, so I’m eating ramen noodles until someone gets there.”



About 800,000 people are on waiting lists to receive subsidized home care. For millions of Americans, finding reliable and affordable assistance to stay at home — instead of moving into a nursing home, where Covid-19 killed tens of thousands of people — has never seemed more urgent.

The New York Times

Moving to outcomes-based reimbursements

- ✓ **Hospital readmissions** are a key **quality metric** which are frequently tied to **referrals, reimbursements** and **value-based care arrangements**
- ✓ Providers wish to **mitigate and reduce** the prevalence of **adverse events** by **leveraging data science** and **artificial intelligence** to **alert clinical managers** when a patient is at risk of a negative event
- ✓ By acting on, and **measurably improving** these **outcome performance metrics**, providers can directly and positively, affect their revenue

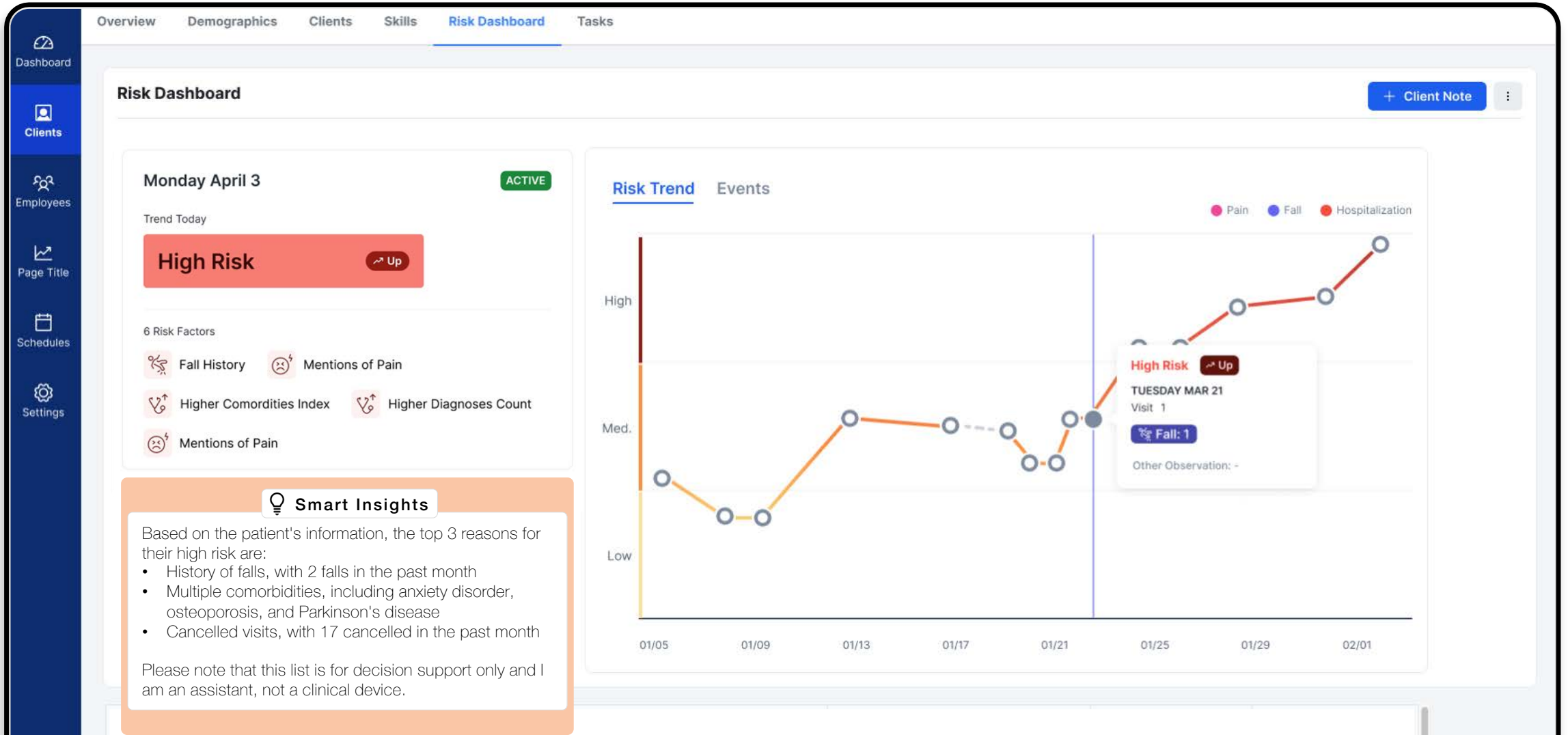


We built a machine learning model that predicts which patient at home is at risk of an adverse event

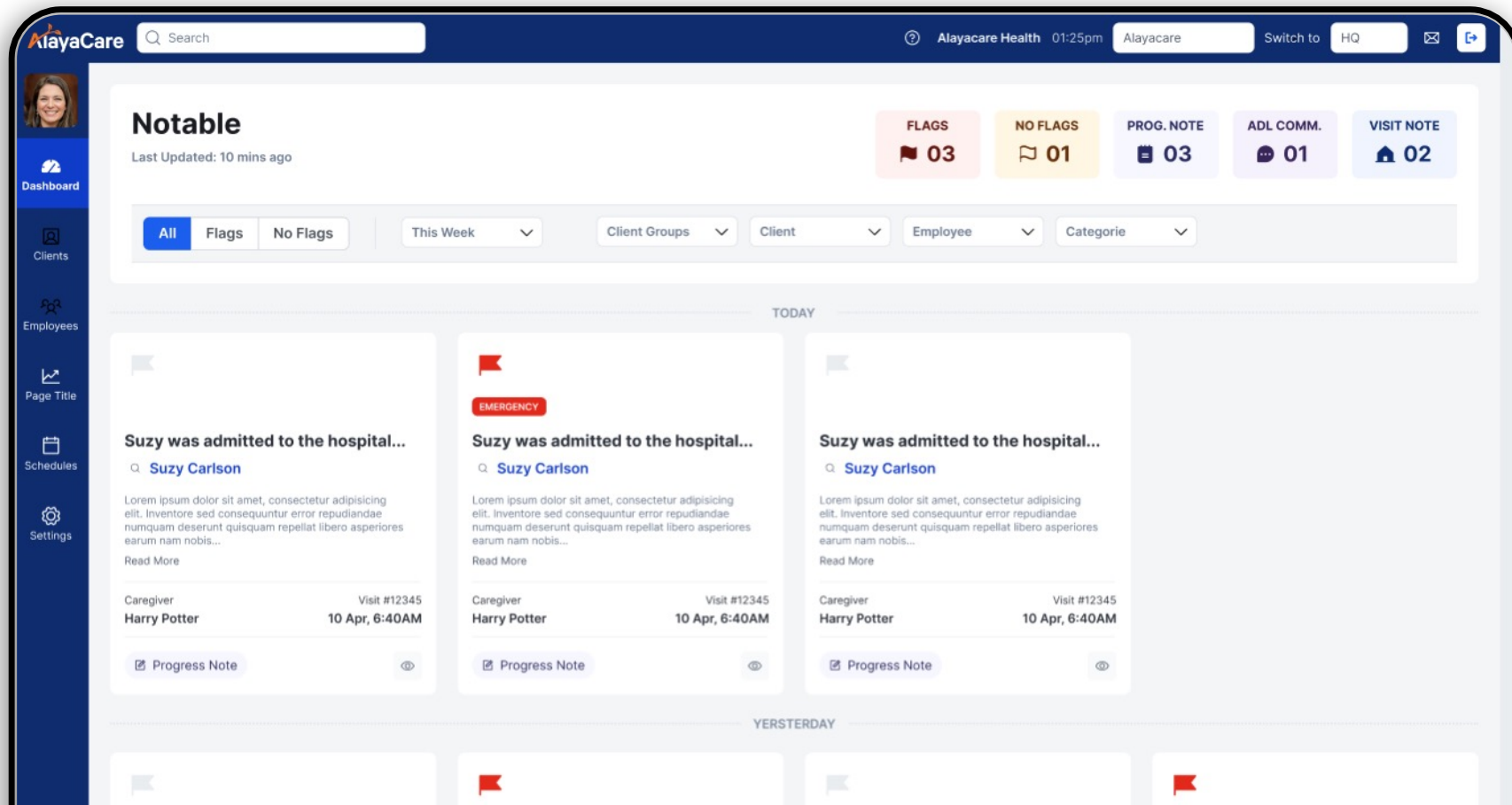
The screenshot displays the AlayaCare software interface. At the top, there is a search bar and navigation options. The main content area is titled 'Client List' and contains a table of client information. The table has the following columns: Name, Date of Birth, Status, Address, Phone, Groups, Tags, ERL, Trend, and Risk Factors. The clients listed are Erin Baptista, Allison Rosser, Martin Torff, Cooper Levin, Aspen Rhiel Madsen, and Dulce Torff. Each row shows the client's name, date of birth, status (ACTIVE, ON HOLD), address, phone number, groups, tags, ERL (3-OK Without, -), and trend (Medium, Low, High, Stable). The Risk Factors column contains icons representing various risk indicators.

Name	Date of Birth	Status	Address	Phone	Groups	Tags	ERL	Trend	Risk Factors
Erin Baptista S1015 AC00000139	03/21/1971	ACTIVE	8741 Fort Macon CT, RALEIGH, 27615	(704) 562-8028	Plymouth (PLY) - 245	WG CM Carolyn Meyers Middlesex Assistive Care (MAC) - 690	3-OK Without	Medium Down	[Icons]
Allison Rosser S1015 AC00000139	04/21/1954	ON HOLD	8741 Fort Macon CT, RALEIGH, 27615	(704) 562-8028	Plymouth (PLY) - 245	WG CM Carolyn Meyers Middlesex Assistive Care (MAC) - 690	-	Low Up	[Icons]
Martin Torff S1015 AC00000139	05/21/1986	ACTIVE	8741 Fort Macon CT, RALEIGH, 27615	(704) 562-8028	Plymouth (PLY) - 245	WG CM Carolyn Meyers Middlesex Assistive Care (MAC) - 690	-	High Up	[Icons]
Cooper Levin S1015 AC00000139	06/21/1991	ACTIVE	8741 Fort Macon CT, RALEIGH, 27615	(704) 562-8028	Plymouth (PLY) - 245	WG CM Carolyn Meyers Middlesex Assistive Care (MAC) - 690	3-OK Without	Medium Stable	[Icons]
Aspen Rhiel Madsen S1015 AC00000139	01/21/1966	ACTIVE	8741 Fort Macon CT, RALEIGH, 27615	(704) 562-8028	Plymouth (PLY) - 245	WG CM Carolyn Meyers Middlesex Assistive Care (MAC) - 690	-	Low Stable	[Icons]
Dulce Torff			8741 Fort Macon CT,	(704)		WG CM Carolyn Meyers		Low	[Icons]

And trends their risk over time to alert supervisors when to act, in natural language with LLMs



We also use LLMs to expose the most important information found in patient notes to clinical managers



And generate a summary of clinical notes for different clinical use cases

"The patient has normal blood pressure. Good overall health condition."

"Loss of appetite. Difficulty eating solid foods."

"The patient had a fever and a severe cough."

"Shortness of breath and difficulty performing daily tasks. Called 911."



"Patient exhibits normal blood pressure and good health but is experiencing loss of appetite and difficulty eating solid foods. Fever and a severe cough have also been reported. Breathlessness and difficulty with daily tasks prompted a 911 call."

Q&A Layla example

- ✓ Home care based smart assistant with a broad range of capabilities for engaging in conversations, processing documents or text, and providing decision support.
- ✓ Allow interaction in natural language between caregivers and client documentation in real-time.
- ✓ Built on top of our existing machine learning pipelines and the rich sources of data in AlayaCare to increase relevance of model outputs

Update since the last month?

In the past 30 days, the patient had 26 home visits and was hospitalized 4 days ago due to N/V and diarrhea. She reported feeling depressed and scared about symptom recurrence. The latest visit was 5 days ago. The patient experienced a pain episode 20 days ago, but no falls or new conditions were reported.

Can you explain their risk?

1. High number of hospital re-admissions (3 times in the past 6 months) coupled with a total of 8 days spent in the hospital indicating recurring health issues requiring hospital care.
2. Numerous complex medical conditions (over 10 diagnoses) including major depressive disorder, gastrointestinal hemorrhage, and repeated falls necessitating continuous management and monitoring.
3. A total of 26 home visits in the past month signals a high level of support needs, particularly considering the patient's age and health conditions.

Note: I am an AI assistant, not a clinical device. This patient update is meant to provide decision support.

Our approach to using LLMs at AlayaCare

Validation,
evaluation and
guardrails as part
of MVPs

Use available data
for augmenting
LLMs when
generating outputs

Fine-tuning to
improve
performance on
specific tasks

Use powerful third-
party LLMs only
when needed (e.g.
GPT-4)

Working with AWS Bedrock

- ✓ AWS Bedrock is HIPAA eligible
- ✓ Access to models from different providers (Amazon, Anthropic, Cohere, Meta, etc.)
- ✓ Allows easy and fast prototyping when building end-to-end solutions with LLMs
- ✓ Works well with the rest of our infrastructure, e.g. open-source LLMs deployed in SageMaker

Putting LLMs into production

- ✓ Using self-hosted open-source LLMs vs. fully-managed services
- ✓ Need to monitor model throughput, latency, cost and performance/business metrics
- ✓ Foster smaller models, when possible, to minimize latency and cost
- ✓ Model evaluation needs to be done with different levels of automation
- ✓ LLMs tend to be costly when scaling them to a lot of users
- ✓ Security and transparency of the LLM pipeline



Thank you!