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eBook

Delivering Data + AI Value in Healthcare and Life Sciences

How Informatica and AWS Are Powering the Patient Journey

Where data & AI come to LIFE

Contents

The State of Data + AI in Healthcare and Life Sciences

Data leaders already understand the indispensable role that data plays in modern healthcare and life sciences. It is essential to a variety of business imperatives, from improving patient outcomes to accelerating R&D and clinical trials to optimizing operational efficiency.

Data's outsized role in delivering value continues to expand and evolve as enthusiasm builds for emerging artificial intelligence (AI) applications and other advanced analytics use cases.

While the journey of integrating AI and data-driven applications more broadly — and with increasing speed, agility, and trust — into healthcare and life sciences has faced challenges, there is immense potential for transformative value. Healthcare and life sciences organizations are already tapping into data.

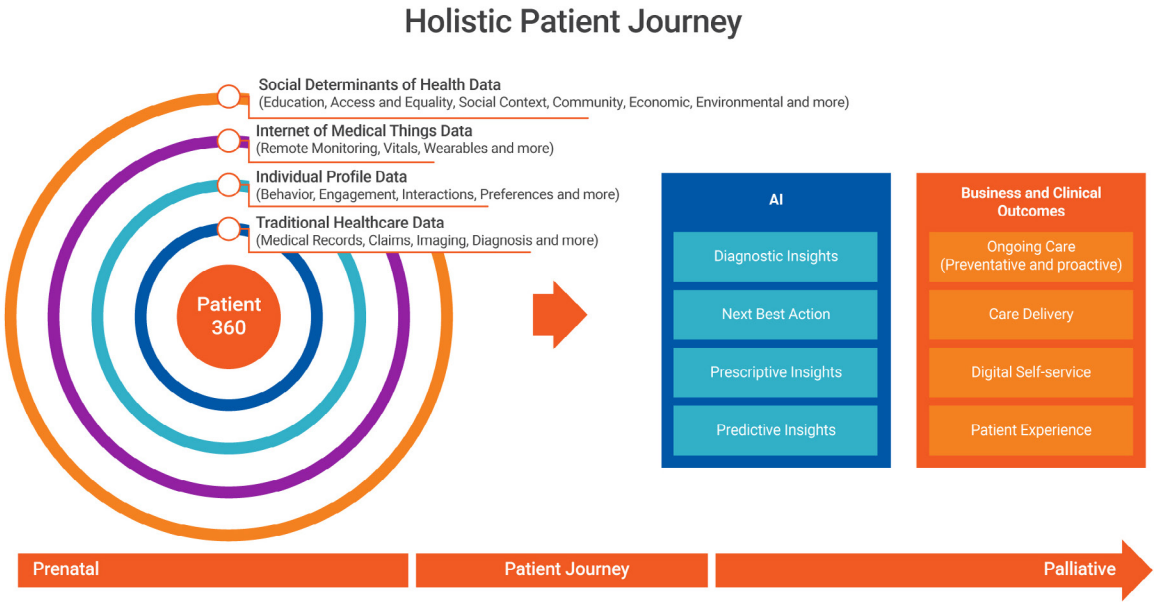


Illustration of the Patient 360 data lifecycle (patient journey). This diagram shows how Patient 360 intersects with every segment of business imperatives and the use cases covered in the subsequent pages, for healthcare providers, health plans and life sciences.

The State of Data + AI in Healthcare and Life Sciences (continued)

Success in the new era of data-driven healthcare depends upon modernizing the data management, compute, and storage capabilities that accelerate experimentation and time-to-market for emerging advanced analytics and AI use cases.

It also requires a massive investment in the data management principles and practices that build and sustain *trusted* data. Trusted, fit-for-purpose data is an absolute prerequisite for advanced analytics and AI use cases that deliver positive outcomes in healthcare and life sciences settings.

That trust is not there yet, especially when it comes to AI. More than half (52%) of Americans say they're more concerned than excited about AI in their daily lives, and just 10% report that they're more excited than concerned, according to Pew Research Center.[1] What's worse, that mistrust appears to be growing: A recent MITRE-Harris poll[2] released in September 2023 found that just 39% of American adults believe AI technologies are safe and secure — a decline of nine points from a similar poll conducted in November 2022.

Successful AI strategies will depend directly on data that is high-quality, holistic, governed, democratized and usable — the fundamental requirements to build and sustain trust in your data and the insights and use cases it empowers.

That information is the lifeblood of advanced analytics and AI in so many health-related contexts — from providers to payers to researchers and more. And most of all for patients and their health outcomes. Delivering high-value, high-impact use cases fundamentally requires trust in the underlying data and the outcomes of advanced analytics and AI.

[1] https://www.pewresearch.org/short-reads/2023/08/28/growing-public-concern-about-the-role-of-artificial-intelligence-in-daily-life/

[2] https://www.mitre.org/news-insights/news-release/public-trust-ai-technology-declines-amid-release-consumer-ai-tools

Driving the Patient Journey with Data

There is a core set of data that resides at the intersection of virtually every segment of the healthcare and life sciences industries. That data comprises the patient journey, an assemblage of every piece of information we have about a patient: appointments, clinical orders, life changes, and so forth.

You're probably already familiar with the Patient 360 concept, a related but separate data set. Whereas a Patient 360 application is best thought of as a snapshot, the Patient Journey is a complete and comprehensive view of everything we know about the patient.

It's not a use case (like Patient 360). Rather, the Patient Journey is the foundational data set that delivers all other use cases, providing the atomic detail that enables predictive analytics and emerging AI applications.

To make that a reality, data leaders and their teams must ensure that the Patient Journey is accurate and high-quality, well-managed and well-governed, comprehensive and holistic, democratized and usable, and ultimately trusted. You're going to use this data to make business decisions that drive clinical care and strategy. You have to have trustworthy, fit-for-purpose data that enables you to carefully inspect and optimize the outcomes.

That's true for providers, payers, researchers and patients — done right, the Patient Journey powers mission-critical business imperatives and use cases that connect virtually every segment of the industry.

In this eBook, we'll share three illustrative business imperatives that show the high-impact, high-value potential of The Patient Journey data and how it directly feeds emerging advanced analytics and AI use cases across three critical segments: Healthcare providers, health plans and life sciences. These are great examples of the outsized potential — and dozens upon dozens of other use cases — for advanced analytics and AI in healthcare and life sciences.

Moreover, we'll show how Informatica and Amazon Web Services (AWS) have collaborated to build the end-to-end architecture — from data management to compute to storage and more — needed to deliver trusted, fit-for-purpose data for advanced analytics and AI in healthcare and life sciences.

Use Case:

The Patient Journey for Healthcare Providers

Virtually every healthcare provider today shares a common, high-value business imperative: Improving the quality of care.

Providers must deliver exceptional care and health outcomes across all channels that attract new patients and retain existing ones — a must both for business results and for maximizing patient health outcomes.

The information that comprises the Patient Journey is fundamental for several use cases that will help deliver on that imperative. For example, an initiative to improve quality of care could include a variety of advanced analytics and AI-powered applications, such as:

- **Prescriptive analytics** that identify and mitigate underlying causes of quality of care issues.
- **Patient 360** application that creates a comprehensive view of each patient to help identify gaps in care, support prescriptive analytics, and root cause analysis.
- **Patient engagement mobile application** that helps patients become more active, knowledgeable participants in their care.

How to Get There:

Delivering exceptional customer experiences depends on clean, trusted, actionable data — which remains elusive for many organizations. Each of the example use cases above are hindered by fragmented data sources and inconsistent data quality. Specifically, successfully deploying the above examples — along with many other advanced analytics and AI use cases — requires solutions that are ready to tackle the technical challenges and deliver trustworthy, purpose-fit data.

Prescriptive analytics requires the ability to:

- Source diverse data sets at scale, including SDOX.
- Integrate next-best actions (i.e. predictive insights) into front-line applications.
- Ensure data is trustworthy, governed, and well-understood.
- Deliver a single source of truth for identities and reference data.

Use Case:

The Patient Journey for Healthcare Providers (continued)

Patient 360 requires the ability to:

- Source and integrate data from multiple applications and databases.
- Make the 360-degree view available to other applications in near real-time.
- Standardize terms and provide end-to-end transparency.
- Deliver a single source of truth for identities and reference data.

Patient engagement app requires the ability to:

- Source patient data from multiple applications and databases.
- Integrate bi-directional data and insights with mobile app in near real-time.
- Standardize common definitions and provide end-to-end transparency.
- Deliver a single source of truth for patient and provider identities.

The solution? Healthcare organizations need to **modernize their analytics and applications in the cloud**, while also ensuring **a single 360-degree view** of all patient and provider data that empowers next-best-action insights, patient self-service opportunities, and other programs that improve health outcomes and consumer experiences.

They need best-in-class data management capabilities like data integration, application integration, data governance, and master data management — optimized with purpose-built industry accelerators such as HI7/HIPAA messaging and HL7 FHIR support.

Use Case:

The Patient Journey for Health Plans

Health plans today have a vested interest in improving the health of populations. Plans need to improve health outcomes by identifying at-risk populations. They then need to develop programs, proactive interventions and reimbursement and incentive strategies to encourage participation, and monitor performance over time.

Again, the Patient Journey powers several critical use cases that contribute toward the broader business imperative of improving the health of populations:

Prescriptive analytics can be applied to identify and segment at-risk populations so that effective interventions can be designed, improving outcomes and reducing costs.

Value-based contracts that promote risk sharing, bundled payment and other reimbursement models that promote high quality while reducing costs.

Provider interoperability that enables patient data to be effectively fed to models that deliver next-best actions and other alerts via APIs.

How to Get There:

Improving the health of populations depends on clean, comprehensive and trusted data that can be used to identify patterns and generate next-best-action insights that feed effective interventions, cost savings and more. But duplicate and incomplete patient records often hinder this effort — nearly one in four patient records are duplicates, according to Black Book,[3] and 35% of all denied claims are the result of inaccurate patient identifiers or information.

These types of inaccuracies undermine trust and are the direct result of fragmented data sources and a lack of a single source of truth for patient, provider, and financial reference data. Solving those challenges depends upon data management capabilities that ensure trustworthy, fit-for-purpose data that feeds those example use cases and countless others.

[3] https://www.blackbookmarketresearch.com/blog/improving-the-patient-identification-process-and-interoperability-to-decrease-patient-record-error-rates

Use Case:

The Patient Journey for Health Plans (continued)

Prescriptive analytics and value-based contracts both require the ability to:

- Source, clean, and consolidate data.
- Harmonize and synchronize data across applications.
- Standardize common definitions across sources and systems.
- Dedupe, master, and relate consumer data.

Provider interoperability requires the ability to:

- Source required data to comply with regulations.
- Deliver data when requested using required industry standards.
- Ensure definitions and formats comply with regulatory rules and frameworks.
- Guarantee the right data is associated with the right consumer.

The solution? Health plans need **a single 360-degree view** — stored and managed in the cloud to ensure accessibility and a single source of truth — of all important patient identifiers and information, such as claims history, clinical encounter data, and any other information necessary for understanding population health. This data needs to be clean and deduped to ensure accuracy, transparency, usability and trust.

Use Case:

The Patient Journey for Life Sciences

Finally, that foundational set of Patient Journey data also drives multiple business imperatives and associated use cases in life sciences. Here's an excellent example to illustrate:

Accelerate R&D: Research and development is one of the most vital functions of any life sciences business. Speeding up that process drives both business results and new innovations that improve lives and health outcomes.

The Patient Journey is core to several use cases that support this priority:

- **Decentralized clinical trials:** Allow enrollment and participation regardless of geographical location, increasing the participant pool and speeding up pattern discovery, data-driven insights, and trial conclusions.
- **Scalable machine learning:** Build and operate the infrastructure needed to run machine learning models at scale and across R&D.
- **Real-world data (RWD):** Incorporate new troves of RWD — much of it unstructured — from outside the organization to unlock new analytics opportunities that help optimize clinical trials for outcomes and efficiency.

How to Get There:

Decentralized clinical trials and real-world data are immensely valuable but carry significant data challenges. DCTs depend on very diverse data sources, while RWD requires large amounts of high-quality, clean, and trusted data from multi-structured (structured, semi-structured and unstructured (images)) data sources.

Mitigate those challenges and accelerate R&D — along with multiple other paths to advanced analytics and AI value — with the right set of data management capabilities. For example:

Decentralized clinical trials need the ability to:

- Source, clean, and consolidate trial data.
- Harmonize and synchronize data across sites.
- Standardize common definitions across sources and systems.
- Dedupe, master, and relate provider and participant data.

Use Case:

The Patient Journey for Life Sciences (continued)

Scalable machine learning depends on the ability to:

- Source, clean, and load cloud analytic platforms.
- Deliver insights whenever and wherever needed.
- Provide common definitions and transparency.
- Dedupe, master, and relate product and reference data.

Real-world data requires the ability to:

- Source data from third parties and clinical systems.
- Source and deliver harmonized data via API.
- Standardize definitions across data sources.
- Deliver a single source of truth for consumers, providers, and reference data.

The solution? Organizations need to **standardize data** by applying digital-first approaches that enable a robust pipeline of clean, trusted data from all sources.

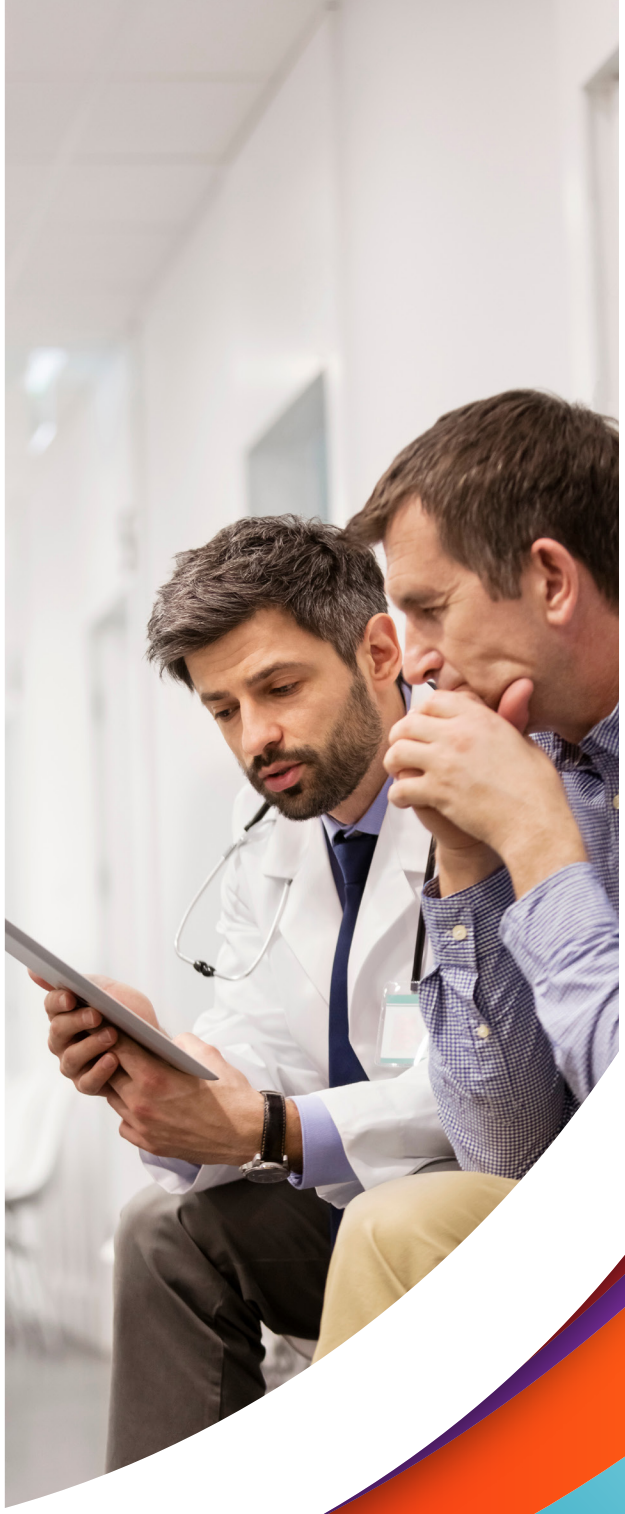
What's Needed to Get There

The unfortunate reality is that most organizations today do not have their Patient Journey data ready for primetime. Chief data officers and other data leaders are grappling with a variety of serious challenges, including:

- Fragmented data sources that generate inconsistent quality and formatting, rendering data more difficult to use and harder to trust
- Lack of a single, consolidated view of patient, provider, and financial reference data, which makes it difficult to assemble a 360-degree view of the patient and hampers use cases that help improve the health of populations
- Lack of a single, consolidated view of patient identity, which makes it difficult for providers and payers to assemble a 360-degree view that drives personalized, omnichannel customer experience

They can face numerous other hurdles that hamper data-driven business value, such as a lack of effective governance policies, standards and processes, and a lack of investment in their data management technologies.

All of this makes it exceedingly difficult to deliver value from data — it becomes incomplete, untrusted and unusable.



What's Coming Next: AI in Healthcare

The urgency to solve those challenges is growing dramatically, as excitement around newer AI applications — including generative AI — reaches a fever pitch.

The challenges, too, will grow. Healthcare data is projected to grow at a compound annual rate of 36% from 2018-2025, according to IDC — faster than any other industry. That underscores the need for strong data management, governance, transparency, and trust — without which vast amounts of potentially valuable information will go untouched. Again, consider the figure above: 97% of data generated by hospitals currently goes unused.

All of the above helps lay the foundation for AI value delivery in healthcare and life sciences, with the Patient Journey again a centerpiece. But your data must be high-quality, well-governed, comprehensive, democratized, and above all trusted to enable AI success. Otherwise, AI and other advanced analytics strategies will suffer from mistrust and other problems such as AI bias — a major challenge in terms of ensuring health equity and improving the health of populations, among other areas.

Power the Patient Journey with Informatica and AWS

The good news: Informatica and AWS have teamed up to offer comprehensive, integrated technologies that solve the challenges that healthcare and life sciences organizations face with their data and accelerate the path to value with a robust platform for advanced analytics and AI.

The Informatica Intelligent Data Management Cloud (IDMC) for Healthcare and Life Sciences is an AI-powered cloud data management platform designed to build digital-first experiences for connected patient care. IDMC addresses the unique challenges that the healthcare and life sciences industries face with data silos and massive data volumes and helps them enhance the quality of care, streamline population health management, and increase efficiencies.

IDMC and AWS HealthLake

The Informatica integration with AWS HealthLake aims to enhance the quality of care, streamline population health management, increase efficiency and reduce costs.

The major capabilities of this integration include:

- Large-scale ingestion, transformation and interoperability of data stored in AWS HealthLake with the Informatica IDMC. Utilizing the latest industry standards such as HL7 and FHIR interoperability, providers and health plans are empowered to harness real-time data, leading to enhanced patient care.
- Comprehensive visibility into data stored in AWS HealthLake with IDMC Cloud Data Governance and Catalog, enhancing data sharing and democratization, and empowering organizations to deliver insights based on trusted data and facilitate compliance with regulations.
- Harmonized master data for AWS HealthLake with the IDMC Master Data Management healthcare extension, providing a 360-degree view of consumers, providers, and health plans. This connected view of healthcare entities bolsters patient engagement, optimizes provider networks costs, and enhances clinical outcomes.

Power the Patient Journey with Informatica and AWS (continued)

Further, IDMC's integrations and accelerators with **AWS HealthLake** offer connectivity to MedPro, Salesforce, NPI Data, Veeva, Orange HRM, and other solutions, with specific extensions that include HL7, HIX, HIPAA, FHIR, and other industry requirements. AWS HealthLake is a HIPAA-eligible service offering healthcare companies a complete view of individual and patient population health data using FHIR (Fast Healthcare Interoperable Resources) API-based transactions to securely store and transform their data into a queryable format at petabyte scale, and further analyze this data using machine learning (ML) models.

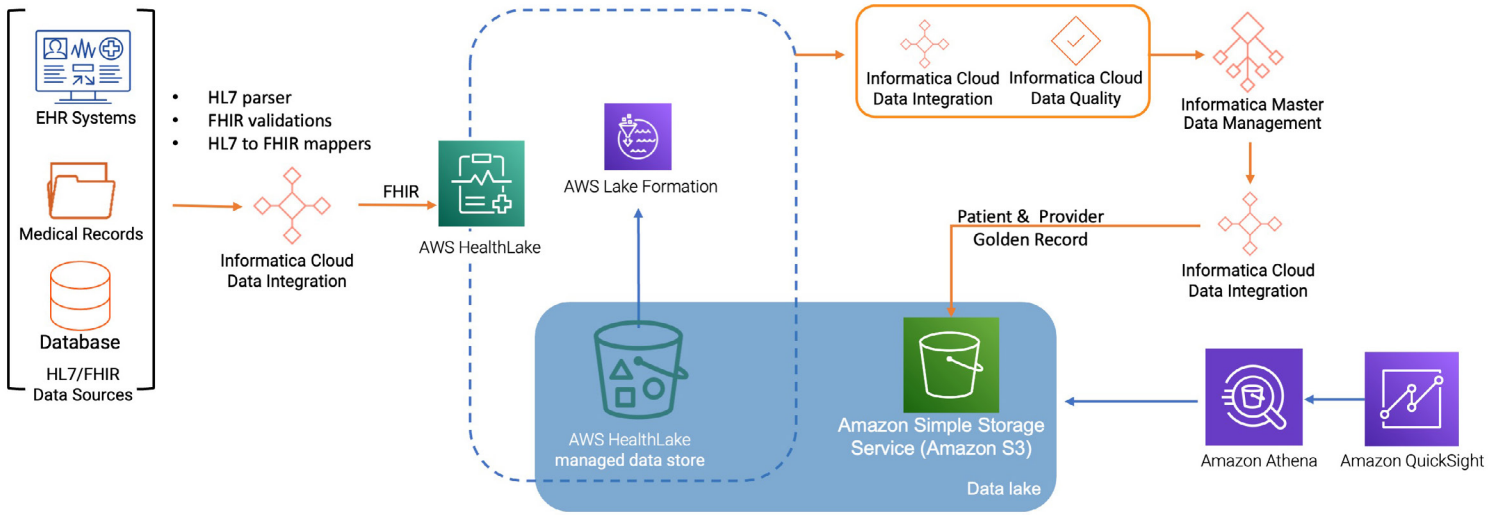
Healthcare and life sciences organizations will also be able to replicate and synchronize high-quality, trusted, consumer, provider and clinical trial data from Informatica's SaaS Master Data Management industry 360 data models and accelerators.

Power the Patient Journey with Informatica and AWS (continued)

Better still, IDMC integrates with multiple other AWS services, including Amazon Bedrock, Amazon's managed generative AI service. Informatica's integration with Amazon Bedrock provides a solution template for customers to develop enterprise data-aware generative AI applications. The solution leverages Informatica's IDMC data integration, data catalog and master data management together with AWS solution components including Amazon OpenSearch and Amazon Bedrock LLM models for natural language processing and Retrieval Augmented Generation (RAG) enhancement.

Organizations can use this foundation to empower their users with conversational generative AI experiences that are enhanced and informed with the rich context of the organization's own data. For example, healthcare providers — leveraging their comprehensive and trusted Patient Journey data — could develop new patient self-service experiences that use generative AI prompts to manage appointments, get next-best-action recommendations, and myriad other possibilities.

Healthcare Data Management on AWS HealthLake with IDMC



A Path to Generative AI with IDMC and AWS Services Like Bedrock and OpenSearch

Delivering Value with the Patient Journey

Successfully driving the Patient Journey — whether a provider, a health plan or in life sciences — depends on trustworthy, fit-for-purpose data: High quality, comprehensive, usable and trusted. And that same foundation is what's needed to design and deliver new use cases for advanced analytics and AI in healthcare and life sciences. AI is here. Is your data ready?

For further details, visit
www.informatica.com/aws-healthcare-lifesciences

For more about what Informatica brings to the industry, go to **www.informatica.com/healthcare** and **www.informatica.com/life-sciences**.

About Us

Informatica (NYSE: INFA) brings data and AI to life by empowering businesses to realize the transformative power of their most critical assets. When properly unlocked, data becomes a living and trusted resource that is democratized across your organization, turning chaos into clarity. Through the Informatica Intelligent Data Management Cloud™, companies are breathing life into their data to drive bigger ideas, create improved processes, and reduce costs. Powered by CLAIRE®, our AI engine, it's the only cloud dedicated to managing data of any type, pattern, complexity, or workload across any location — all on a single platform. Informatica. Where data and AI come to life.

Where data & AI come to

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