HEALTHCARE AI 2019

INDUSTRY INSIGHTS AND CONTEXT

A KLAS-CHIME Report

Artificial intelligence (AI) has been a buzzword in healthcare for several years, but how real is it? Are healthcare organizations adopting AI? How are they using it, and what outcomes are they seeing? Based on interviews with 57 trailblazing healthcare organizations, this AI primer provides insights on organizations' needed AI capabilities, common challenges, and best-practice advice.

Across the technology and healthcare industries, definitions of AI vary widely; KLAS' working definition of AI was created for use in research regarding customer satisfaction with AI technology and was formed based on advice from many leading health systems and solution partners (called "vendors" throughout).

For insights on vendor performance and customer outcomes, see the full KLAS-CHIME report: "Healthcare AI 2019: Actualizing the Potential of AI."

Definition and Capabilities of Healthcare AI Software/Services
Can the vendor you're considering provide the following technology/services?

Blue: Critical Factors
White: Nice-to-Have Factors

AI technology capabilities:
- **Prebuilt healthcare models**
- **ML platform to create models**
- **NLP/free text**
- **Supervised learning**
- **Unsupervised learning**
- **Forecasting**
- **Modeling multimedia data**
- **Deep learning**

Collaboration platform for multidisciplinary teams

Explainable AI

API access/integration

Model deployment

AI support services
(including vendor-provided data science or healthcare resources, model-performance monitoring, etc.)

Change management tools and services

Models embedded into the workflow

Data preparation

Model management

Visualization of model performance

KLAS Definition of Healthcare AI Software

Software that provides **machine learning** (ML) or **natural language processing** (NLP) capabilities for healthcare-related clinical, operational, or financial areas.

ML tools (for structured data) study and learn computer systems' algorithms and statistical models to effectively perform tasks without requiring explicit instructions, relying instead on patterns and inference to determine results.

NLP (for unstructured data) enables software solutions to understand, process, and analyze natural language (whether speech or text).

KLAS does not use the term AI to mean technology with all capabilities of human intelligence.

Common Misconceptions about Healthcare AI

In this developing space, even organizations that have successfully achieved outcomes with AI technology experienced potholes along the way, often driven by misconceptions about healthcare AI and its implementation.

Misconception: Building the models is the most time-consuming AI task.
Reality: Don't underestimate the time and effort it will take to prepare the data needed to test and build the models. Healthcare data is hard to clean and comes from many sources, and your organization may not have the expertise to feed the right variables or features into your models. Vendors and tools can help, but you need to do your own evaluation of the time and effort required to be successful with your models.

Misconception: Once the model is built, it will run itself.
Reality: Organizations must ensure long-term model applicability, accuracy, and performance. Healthcare data is often heterogenous; prebuilt models might work well in some cases, but you may have specific demographic situations to which they won't apply, generating misleading results. Adopt and closely monitor model management to prevent concept drift, and encourage your vendor to do the same. You may be surprised at how much maintenance is required to keep your models viable over time.

Misconception: There are turnkey AI solutions that can drive outcomes.
Reality: There are plenty of user-friendly products that can help you build models quickly, and some vendors can provide deep data-science and healthcare expertise. But if you want tangible outcomes from the data, you need to consider operational aspects, like how many departments, resources, and facilities across the care continuum need to be involved. Getting buy-in from all disciplines before and after the implementation is critical. Without it, your model could end up as a shiny but useless algorithm.
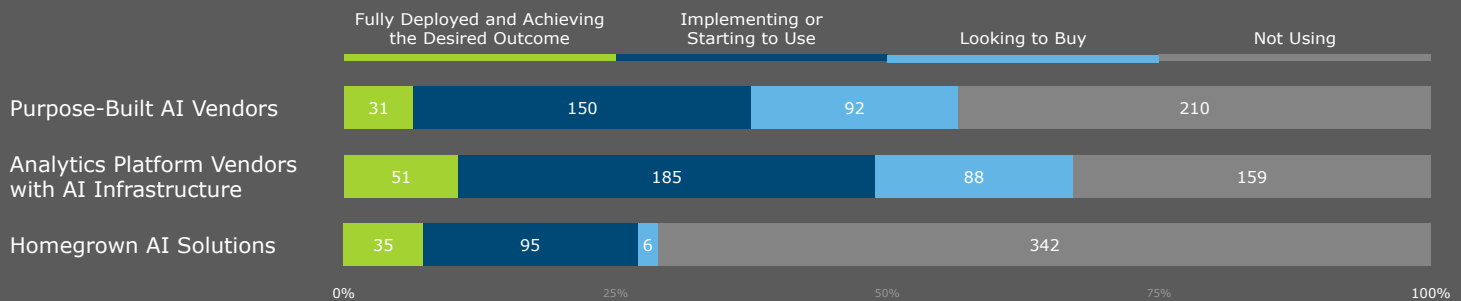
Misconception: Our organization will jump at the chance to leverage AI tools.
Reality: Remember that culture shifts take time. It can be very challenging for staff (including clinicians) to trust AI-generated recommendations. Get staff buy-in early by demonstrating explainability and applicability and by sharing success stories.

AI Adoption—From CHIME's 2019 HealthCare's Most Wired Report

As part of CHIME's recent Most Wired survey, 483 provider organizations described their progress in adopting various types of AI solutions.

	Fully Deployed and Achieving the Desired Outcome	Implementing or Starting to Use	Looking to Buy	Not Using
Purpose-Built AI Vendors	31	150	92	210
Analytics Platform Vendors with AI Infrastructure	51	185	88	159
Homegrown AI Solutions	35	95	6	342

0%   25%   50%   75%   100%

Note: Adoption of AI capabilities from EHR vendors and HIT application vendors is excluded as these vendors are not measured in this report.
Not all respondents indicated their use of all types of AI solutions, so total counts may differ.
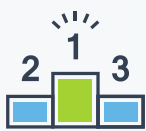
Validated Use Cases

The 57 organizations interviewed for this research report 37 distinct use cases across 11 categories within clinical, financial, and operational areas. While it is exciting to see AI being adopted across a wide variety of use cases, it is still too early to say whether these use cases can be scaled across broader customer bases.

Validated Use Cases

Clinical — 42 | 13 | 11 | 2 | 2 — **70**
Population Health
Clinical Decision Support
Clinical Research
Patient Engagement
Clinical Education

Financial — 4 | 2 | 2 | 1 — **9**
Value-Based Care Reimbursement
Revenue Cycle
Financial Health
Waste/Cost/Fraud Avoidance

Operational — 11 | 1 — **12**
Employee Experience
Bed/Patient and Staffing Management

0   70