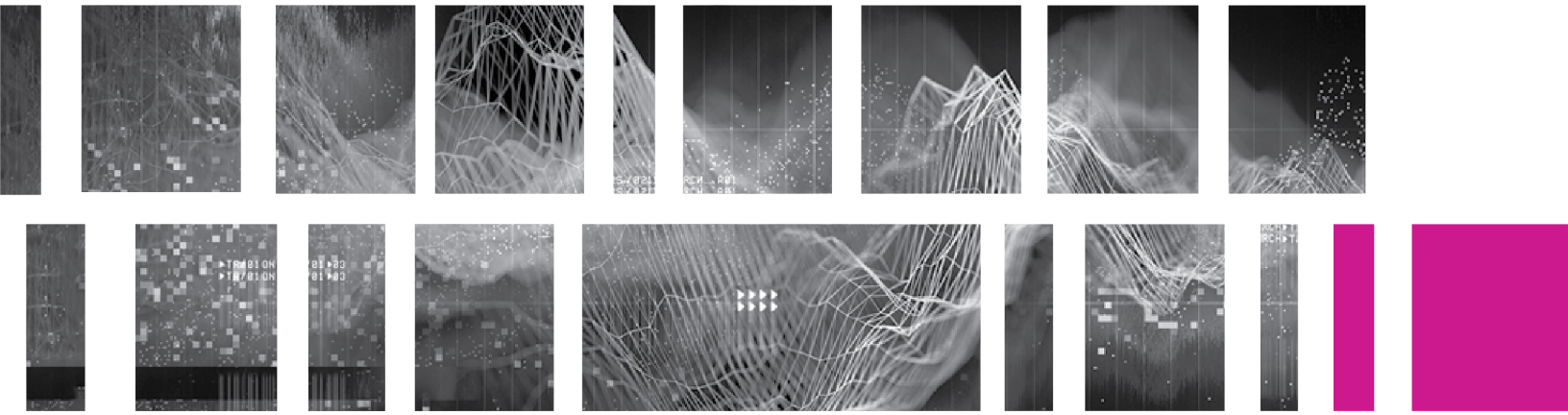
INSTITUTE @PRECISION



AN INDUSTRY BRIEF FROM INSTITUTE@PRECISION

How Health Systems are Using AI in Clinical Decision-Making

A Guide for Pharma

Chris Terrone | *Vice President, Healthcare Insights*
Cynthia Miller MD, MPH, FACP | *Vice President, Medical Director*
Greg Gregory PhD | *Executive Vice President, Partner*

The Institute@Precision is part of Precision Medicine Group, an ecosystem of organizations spanning discovery to commercialization, purpose-built for precision.

PRECISION MEDICINE GROUP® PRECISION for medicine® PRECISION AQ™

Introduction

Artificial intelligence (AI) is significantly transforming the healthcare sector, evolving from a tool to streamline administrative tasks to a tool influencing essential clinical functions. Health systems are increasingly integrating AI to improve patient care, particularly in diagnostics and treatment selection. Although the full scope of AI's impact is yet to be fully realized, its potential to standardize care, modify drug utilization patterns, and ultimately shift market share is clear. The adoption of AI in health systems is progressing swiftly, supported by external investment and internal infrastructure development and planning. Manufacturers must assess their product's AI risk, considering the potential for AI to either positively or negatively affect utilization and market share.

The decisions rendered by AI systems are fundamentally shaped by the data on which they are trained, which often includes clinical guidelines, peer-reviewed literature, and other publicly available information. This presents a unique avenue for manufacturers to contribute to or shape the data sources from which AI systems gather information.

Despite the potential, significant challenges hinder widespread AI implementation in clinical settings. Concerns around data quality and completeness, algorithmic bias, the need for robust monitoring and validation, clinician trust, cost, and the lack of clear federal guidance create barriers to uptake. Addressing these requires collaboration among policymakers, healthcare providers, technology developers, and pharmaceutical companies to establish ethical frameworks and practical guidelines.

> This white paper—based on a survey of health system decision-makers actively using AI—explores the current state of AI adoption in clinical decision-making.

It delves into how health systems are leveraging this technology, the data sources informing AI algorithms, the challenges faced, and critically, the emerging opportunities for collaboration between health systems and the pharmaceutical industry. Our focus remains on AI's application in supporting clinical decisions at an organizational level, rather than its broader use in administrative or logistical tasks.

Methodology and respondent demographics

Precision AQ surveyed 25 health system decision-makers recruited from a proprietary database. The survey was conducted in Q1 2025.

Key characteristics of the respondent pool include:

- **Active AI Use:** All respondents confirmed their organizations use AI in clinical decision-making, either extensively (76%) or in a pilot capacity (24%).
- **Decision-Making Influence:** The vast majority (91%) of respondents were leaders or contributors to their organization's AI policy decisions.

This targeted approach ensures the insights gathered reflect the perspectives of individuals directly involved in shaping and implementing AI strategies within their health systems.

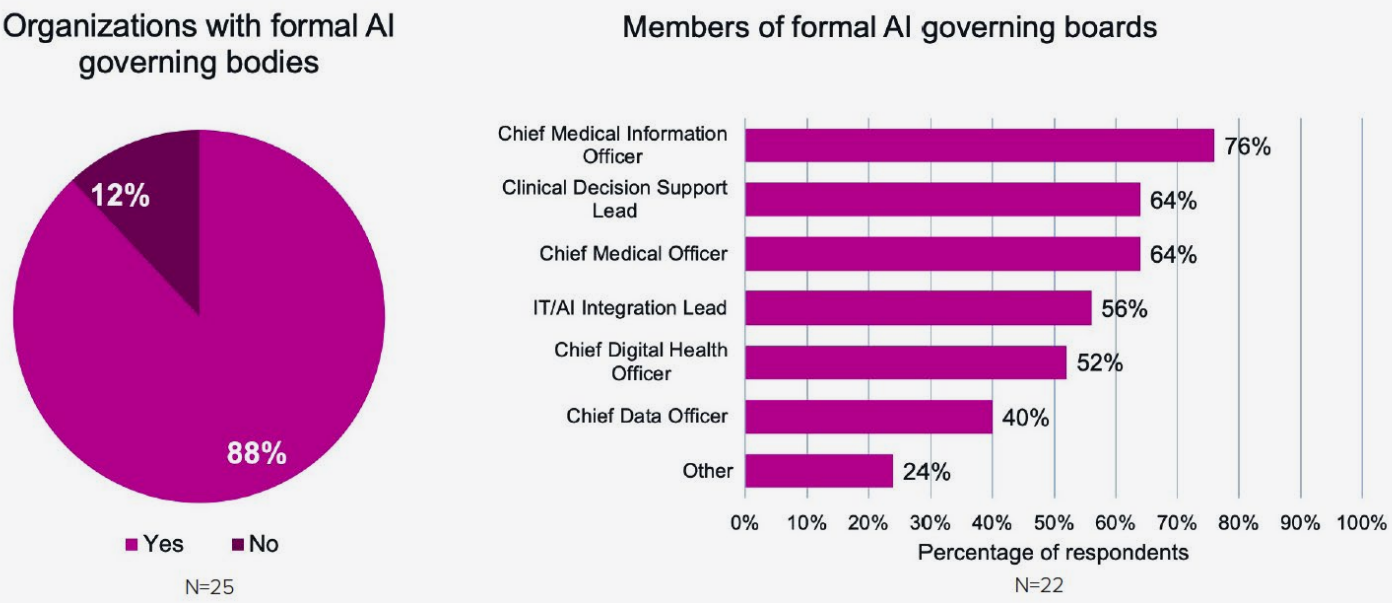
Chapter 01

The New Landscape of AI Governance and Expertise

The integration of AI into clinical workflows is not happening in a vacuum. Health systems are actively establishing governance structures and navigating the complexities of this relatively new technological domain, often anticipating further federal policy changes that could accelerate adoption.

Formal governance is common; leadership is involved: A significant majority (88%) of surveyed health systems have established formal AI governing bodies (Figure 1). The composition of these bodies typically includes high-level clinical and information officers, such as Chief Medical Information Officers (CMIOs), Clinical Decision Support Leads, and Chief Medical Officers (CMOs). This indicates a strong organizational commitment and recognition of AI's strategic importance.

The survey confirmed widespread engagement with AI, even beyond the selected respondents. When initially screening potential participants, fully two-thirds of all decision-makers contacted reported their organizations were either extensively using or piloting AI for clinical decision-making, indicating broad interest and activity in this space.



Q: Has your organization established a formal governing body to oversee the use of AI in clinical decision-making? Who are the members of this governing body?

Figure 1. Most health systems have AI-governing bodies, which include CMIOs, Clinical Decision Support leads, and CMOs.

Nascent expertise:

Despite this structural commitment, deep expertise in AI remains relatively uncommon within these governing bodies. Nearly three-quarters of respondents (72%) reported having 2 or fewer years of experience specifically in AI-driven clinical decision-making.

This suggests that many health systems are still in the early stages of developing their internal capabilities and are essentially "learning on the go." This contrasts sharply with more established areas of health information technology (IT) implementation, such as quality measure reporting, value-based contracting, patient registry development, or the implementation of e-prescribing, where decision-makers may hold decades of experience.

Reliance on commercial platforms:

The relative lack of deep in-house expertise may contribute to the observed trend of health systems predominantly relying on commercial, off-the-shelf AI platforms rather than developing bespoke or heavily customized solutions. This reliance on third-party vendors creates a market dynamic where a limited number of platform providers could significantly influence AI application across many health systems. This potentially leads to greater standardization in AI-driven recommendations, which could streamline certain processes but also raises questions about the flexibility to address community needs or take into consideration local resources.

Many health systems are still “learning on the go”

Chapter 02

How Health Systems Are Deploying AI in Clinical Practice

AI's capabilities in recognizing complex patterns in medical images, lab results, and patient data offer significant promise for earlier disease detection and more personalized treatment strategies. Conditions like cancer, diabetic retinopathy, and cardiovascular diseases have already benefited from AI-driven insights, enabling timely interventions. However, the adoption and influence of AI varies across therapeutic areas, creating a complex landscape of risks and opportunities for pharmaceutical manufacturers.

Focus on diagnosis and drug selection:
Among the various clinical applications, AI is most commonly employed to assist with diagnosis (39% of respondents) and drug selection (34%) (Figure 2). These findings highlight AI's growing role in interpreting complex patient information to identify conditions and recommend therapeutic options.

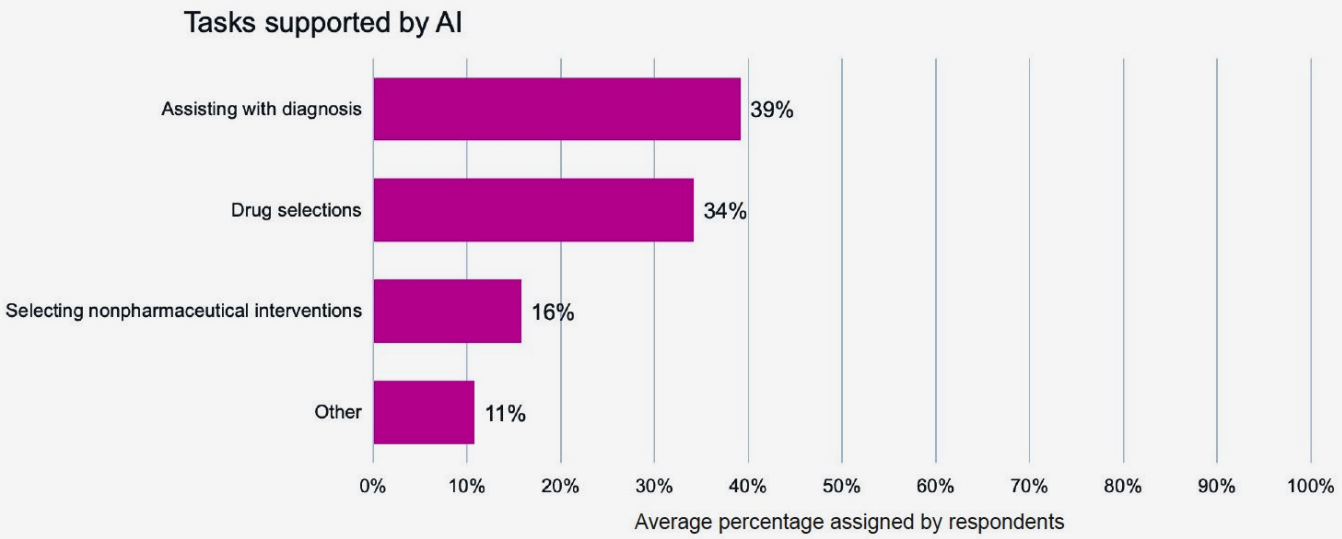
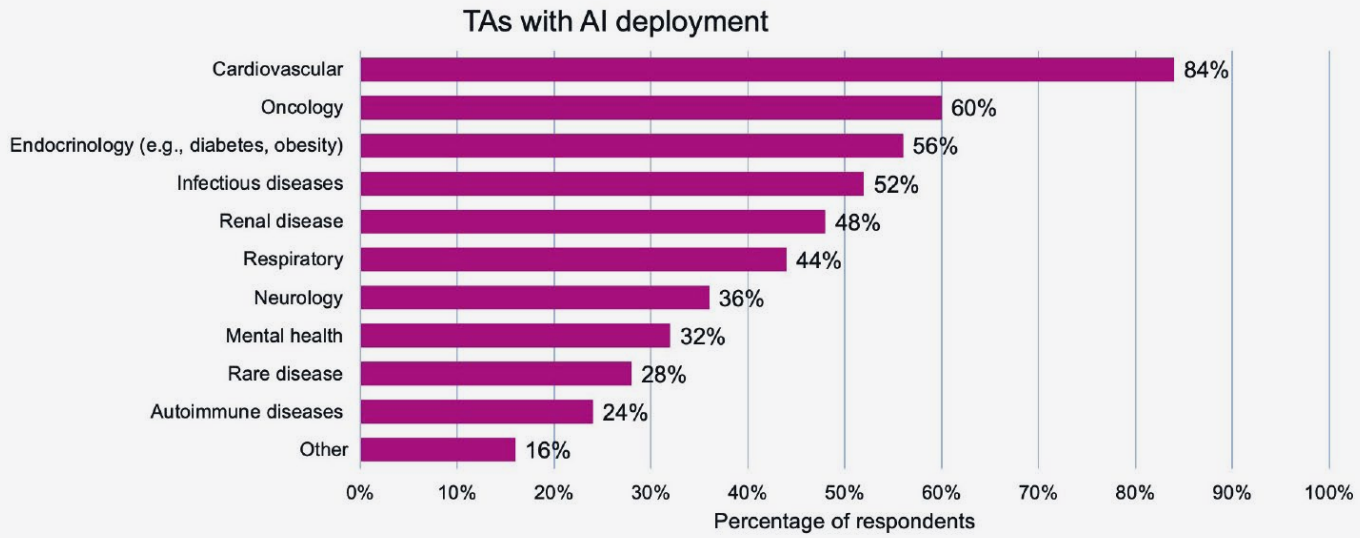


Figure 2. Diagnosis and drug selection are the most common clinical tasks supported by AI at health systems.

Insight for pharma:
Diagnosis and drug selection represent key touchpoints in the patient journey where pharmaceutical companies are well-positioned to engage. Supporting AI-driven diagnosis can accelerate the identification of patients needing treatment, potentially shortening the time to therapy initiation, which is particularly important in disease states where a novel therapy comes to market and there is a pool of untreated or undiagnosed patients. Further downstream in the patient journey, AI support for drug selection can impact uptake and market share. Actionable data supporting AI systems may support timely and correct product positioning.

Therapeutic area concentration:
AI adoption is not uniform across all therapeutic areas, but varies depending on where health systems find it to provide the most strategic clinical and economic value. Cardiovascular conditions lead the way, with 84% of respondents using AI in this area (Figure 3). Oncology (60%), endocrinology (including diabetes and obesity, 56%), and infectious diseases (52%) also show significant AI utilization. While adoption rates vary, no major therapeutic area reported less than 24% usage, indicating broad applicability.



N=25

Q: In which therapeutic areas does your health system use or plan to use after AI for clinical decision-making? *(Select all that apply)*

Figure 3: Cardiovascular conditions are the most common conditions in which health systems are implementing AI decision-making.

Insight for pharma:

The prevalence of AI use within specific therapeutic areas is a critical factor for manufacturers. Companies need to assess the "AI exposure" or opportunity for their portfolios based on the disease states their products treat. A drug targeting a condition where AI decision support is more common (like cardiovascular disease) may be more susceptible to AI-driven shifts in prescribing patterns compared to a drug in a less AI-penetrated area. Similarly, for drugs entering areas where AI is less often utilized, more investment may be required to maximize AI capabilities.

Chapter 03

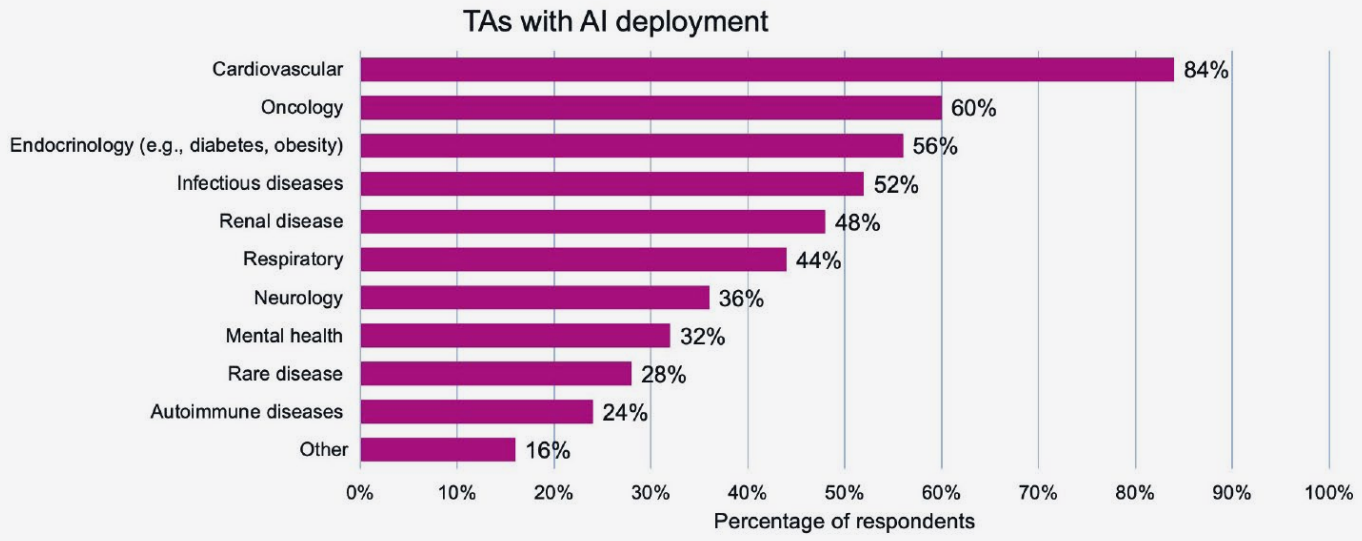
The Data and Guidelines Informing AI in Clinical Decision-Making

The effectiveness and reliability of AI in clinical decision-making hinge on the data sources used for algorithm training and the guidelines referenced for recommendations.

Dominance of EHR data: Electronic health record (EHR) data is the cornerstone of patient-level information used in clinical AI systems. An overwhelming 96% of health systems using AI for drug selection incorporate EHR data. Patient demographics are also a key input (80%).

Claims data (68%) and genomic data (more than 50%, particularly vital in oncology) are other significant patient-level data sources factored into AI models.

Clinical guidelines as primary reference: Clinical practice guidelines are the most influential form of drug-level data for shaping AI recommendations, cited by 92% of health systems (Figure 4). Other important inputs include peer-reviewed literature and prescribing information (labels), each cited by 60%.



N=25

Q: What types of drug-specific data does your AI system use to support drug selection?

Figure 4: Clinical guidelines have a prominent place in informing health systems' clinical decision-making AI.

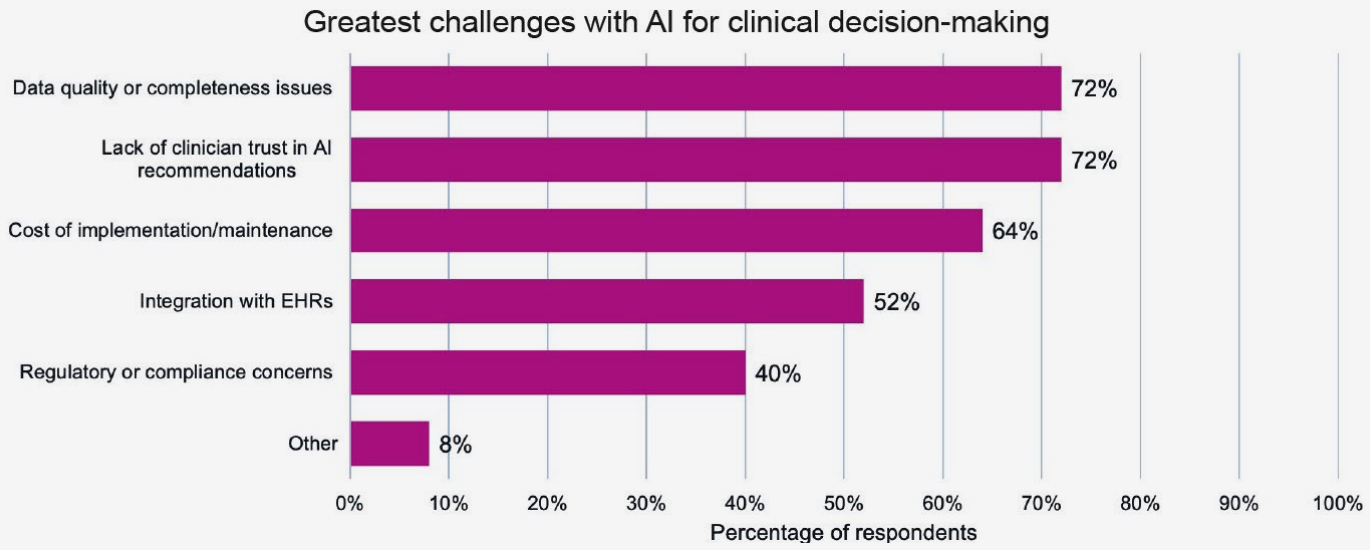
Insight for pharma:

The heavy reliance on established clinical guidelines underscores their continued importance, even in an AI-driven environment. A product's inclusion and favorable positioning within guidelines significantly increase its likelihood of being considered by AI algorithms. Manufacturers must continue to prioritize generating evidence that supports guideline inclusion and working with professional societies that guidelines are refreshed in a timely fashion Over time, it may be useful to explore whether AI systems prioritize guidelines by certain professional societies, how consensus statements or scientific statements are treated, and how strength of evidence ratings are handled.

Chapter 04

Expectations, Challenges, and Measuring Impact

Despite the enthusiasm for AI, health systems face considerable hurdles in its implementation and are actively working to measure its impact.



Q: What challenges does your health system face with AI for clinical decision-making? *(Select all that apply)*

Figure 5: Data quality and clinician trust are the greatest challenges facing health systems when deploying AI for clinical decision-making.

Key challenges: Several barriers impede the seamless integration of AI into clinical workflows (Figure 5): for patient outcomes. Building trust requires transparency, validation, and demonstration of clear value.

1. **Data quality and completeness (72%):** The adage "garbage in, garbage out" holds true. Inconsistent, incomplete, or inaccurate data limits the reliability and effectiveness of AI models. Incomplete data also has the potential to amplify or over-index on certain information.

2. **Lack of clinician trust (72%):** Healthcare providers remain cautious, often citing concerns about the "black box" nature of some algorithms, potential biases, and the ultimate responsibility

3. **Financial constraints (64%):** The cost of acquiring, implementing, integrating, and maintaining sophisticated AI systems is a major barrier for many health systems.

4. **Regulatory uncertainty:** The evolving landscape of federal and state regulations governing

AI in healthcare creates uncertainty and can slow adoption.

Measuring impact: Encouragingly, health systems are not implementing AI blindly. Nearly all respondents

(96%) indicated that they are actively measuring the impact of their AI solutions, suggesting a commitment to understanding return on investment (ROI), clinical effectiveness, and identifying areas for improvement.

Anticipated benefits: While facing challenges, health systems clearly foresee significant benefits from integrating AI, driving their continued investment and exploration in this domain. These likely include improved diagnostic accuracy, optimized treatment selection, enhanced operational efficiency, greater standardization of medical care, and ultimately, better patient outcomes.

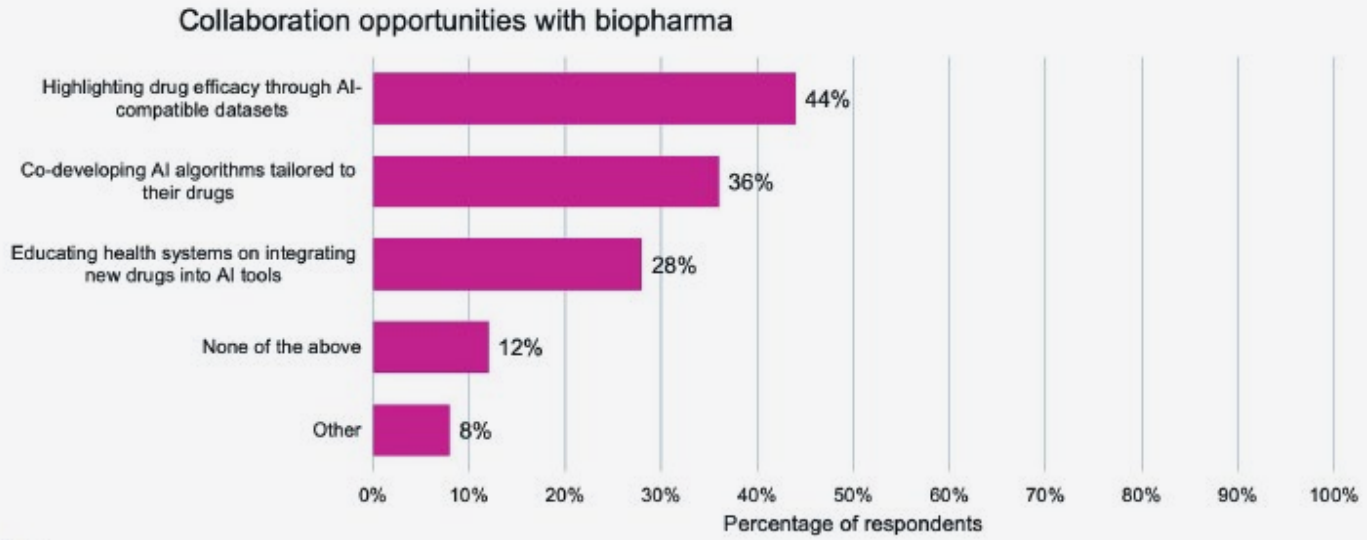
> Health systems face considerable hurdles in its implementation.

Chapter 05

How the Pharmaceutical Industry Can Collaborate and Contribute

The challenges and evolving needs of health systems in the AI space create clear opportunities for collaboration with the biopharmaceutical industry. Health systems recognize the unique expertise and data resources manufacturers possess.

Willingness to partner: A substantial majority of health systems are open to collaboration. Two-thirds indicated they are likely to seek partnerships with biopharma companies specifically to improve AI-driven clinical decision-making.

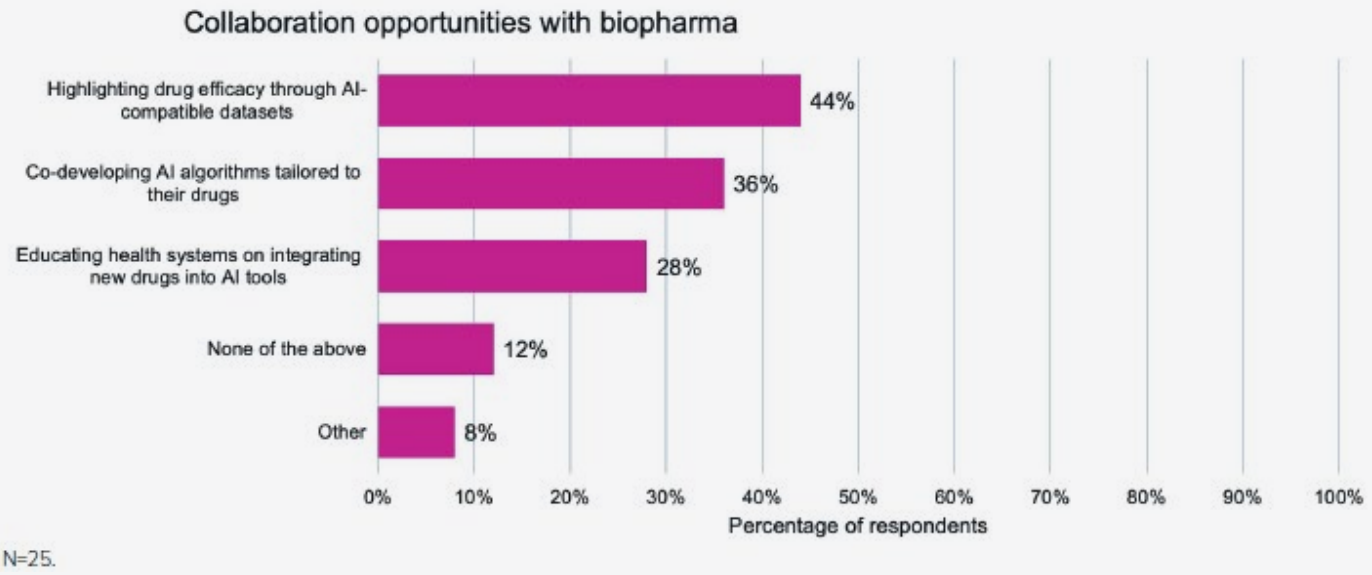


Q: Which of the following collaboration opportunities could biopharma companies explore within AI-driven health systems? *(Select all that apply)*

Figure 6: Health systems see an opportunity for AI collaborations with biopharma on drug efficacy datasets and drug-specific algorithms.

Valued contributions: data and evidence: When asked which types of data or evidence from biopharma companies would most improve AI-driven clinical decision-making, particularly for drug selection, health systems overwhelmingly pointed to (Figure 7):

- **Real-world evidence (RWE) (84%):** Demonstrating how therapies perform in routine clinical practice is highly valued.
- **Comparative effectiveness (CE) studies (80%):** Data comparing a drug's performance against alternatives is crucial for informing treatment choices.



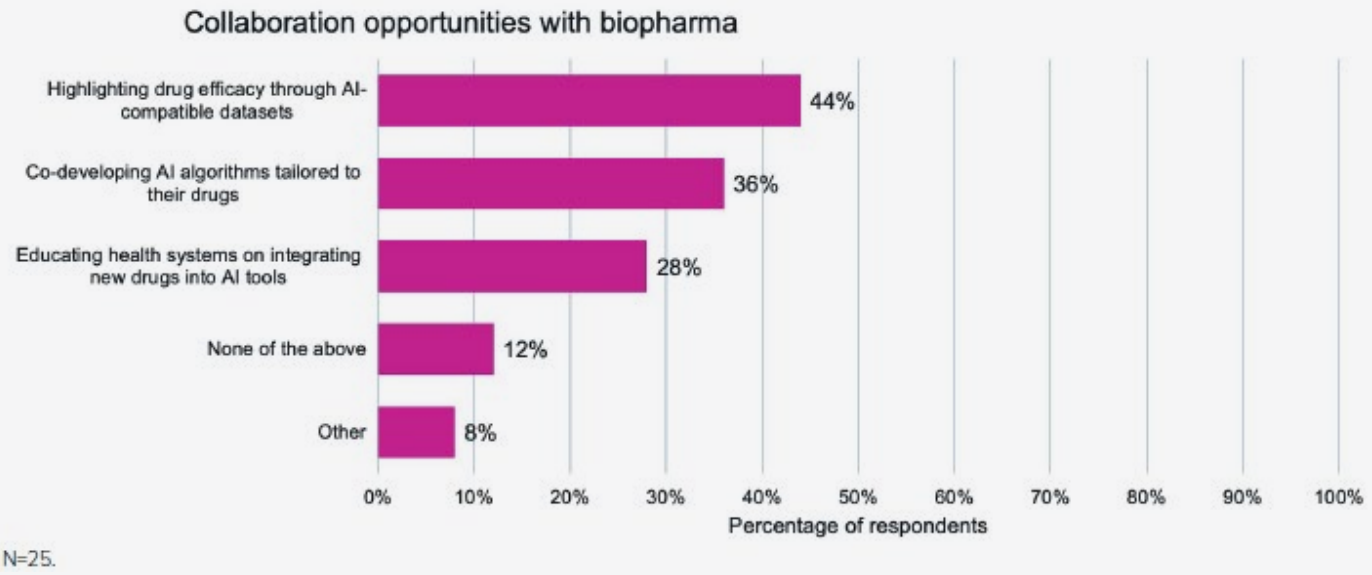
Q: What types of data or evidence from biopharma companies would improve AI-driven clinical decision-making, specifically in drug selection?

Figure 7: RWE and CE studies would be perceived as biopharma's most valuable contribution to AI-driven clinical decision-making.

This highlights the need for manufacturers to generate and package RWE and CE data in formats that are readily usable by AI systems.

Future roles for biopharma: Looking ahead, health systems see several key roles for biopharmaceutical companies in the AI ecosystem

- **Providing high-quality data:** This was the most cited future role, acknowledging manufacturers' access to valuable datasets and expertise in understanding the patient journey.
- **Collaborating on AI tool development:** Health system preferences are sure to vary in this area even among respondents who are willing to collaborate. Manufacturers should seek to understand health system perceptions of the appropriate role of pharma in these collaborations.
- **Offering training for clinicians:** Helping healthcare professionals understand and effectively use AI tools.



Q: What role do you see biopharma companies playing in the future of AI-driven clinical decision-making?

Figure 8: Biopharma's future role in AI-driven clinical decision-making includes data sharing and regulatory advocacy.

Offering training presents a potentially lower barrier to entry for engagement compared to the complexities of providing, cleaning, and delivering large datasets. It allows manufacturers to build relationships and demonstrate value while navigating the technical hurdles of data sharing.

Insight for pharma:
Potential areas of training may include examples of how AI could be used in clinical decision-making, case studies demonstrating how other systems are piloting AI initiatives, and best practices for implementing AI within their own organizations.

Specific collaboration opportunities: Health systems expressed willingness to partner in several areas:

- **Highlighting drug efficacy via AI-compatible datasets (44%):** Presenting efficacy data in a structured, machine-readable format.
- **Co-developing AI algorithms targeted to specific drugs (36%):** Creating tools designed to identify optimal patient populations or predict response to particular therapies. Thinking ahead, if certain algorithms gain traction, manufacturers could shape clinical trial design to yield results that will be aligned with the ways those algorithms interpret value.

Importantly, only 12% of respondents selected "None of the above," indicating a strong general interest in exploring collaborative avenues.

Six strategic imperatives for biopharma in the age of AI-driven care

The integration of AI into clinical decision-making is accelerating, driven by health systems seeking to improve diagnostics, optimize treatment selection, and enhance overall patient care. While challenges related to data quality, clinician trust, cost, and regulation persist, the trend towards greater AI adoption is clear.

For pharmaceutical market access teams, this evolving landscape presents both significant risks and compelling opportunities.

1. Stop Thinking About AI as a Tech Trend— Start Mapping It as a New Channel of Influence.
The most powerful voices in clinical decision-making may no longer sit on pharmacy and therapeutic (P&T) committees, they may sit behind the algorithms guiding diagnosis and treatment. Biopharma teams must proactively map the dominant AI platforms in use across U.S. health systems, understand how they source data, and identify the "curators of care" shaping how drugs are surfaced in clinical pathways.

2. Your Portfolio Is Now in the Path of the Algorithm. Act Accordingly.
Drugs no longer compete solely on label and price—they compete on how AI interprets their utility relative to alternatives. Manufacturers should proactively evaluate their portfolio by "AI exposure": which products are in AI-dominant therapeutic areas? Which are absent from the datasets that train these tools? Which may be deprioritized by logic trees baked into algorithms?

3.Your Evidence Needs to Be Machine-Readable, Not Just Peer-Reviewed.
AI doesn't care how well your data is published if it can't find, parse, and apply it. RWE and CE studies must now be designed with structure, standardization, and AI-ingestibility in mind. If your data isn't influencing the guidelines or platforms that shape treatment logic, it may be invisible in tomorrow's care delivery.

4. Think Like a Data Supplier, Not Just a Manufacturer.
Pharma sits on some of the richest clinical and patient data in healthcare. But health systems and AI vendors often can't—or won't—use it. The opportunity is to rethink compliant data partnerships; not just sharing data, but shaping how the right data gets to the right systems, in the right format, to reflect the real-world value of your therapies.

5. Clinicians Don't Trust Black Boxes— They Trust You to Help Them Understand Them.
There is a growing appetite for education; not just on AI, but on how to use AI responsibly in high-stakes clinical decisions. Pharma companies can lead in building CME-accredited, disease-area–specific training programs that demystify AI tools and help providers critically interpret what algorithms are recommending and why.

6. Want to Shape the Future? Help Build It.
In certain cases—particularly where patient identification is complex or care is fragmented—biopharma has an opportunity to co-develop clinical algorithms or decision support tools. Done responsibly and transparently, these tools can help ensure the right patients are surfaced at the right time for the right therapies. This isn't just collaboration, it's strategic infrastructure-building.

Conclusion

The future of treatment decisions will increasingly involve AI. Proactive engagement, strategic data generation, and collaborative partnerships will be essential for pharmaceutical companies to navigate this new era effectively, ensuring their innovations reach the right patients and demonstrating value within an AI-augmented healthcare system.

Authors

Chris Terrone
Vice President,
Healthcare Insights

christopher.terrone@
precisionaq.com

Chris Terrone supports market research initiatives for pharmaceutical manufacturers across the payer, health system, and employer channels. His experience spans more than 15 years in market access agency, managed care, and market research organizations, where he has helped more than 50 life science clients find answers to their most pressing strategic questions. As Vice President, Healthcare Insights, Chris also collaborates with other subject matter experts within Precision AQ to develop and share thought leadership on established and emerging healthcare and technology trends that are critical for manufacturers to understand. He has worked with organizations such as NCQA and AMCP to author white papers, peer-reviewed publications, and posters. Prior to his 12 years at Precision AQ, Chris worked in Medical and Analytic Affairs for Medco Health as senior writer and managing editor of the annual Drug Trend Report.

Cynthia Miller
MD, MPH, FACP
Vice President,
Medical Director

cynthia.miller@
precisionaq.com

Cynthia Miller is a board-certified internist with 20 years of experience in healthcare. She has extensive expertise in patient care delivery, utilization management, population health, and strategic thinking.

As Vice President, Medical Director on the Access Experience Team, Cynthia develops market access strategies for products throughout their lifecycle. She has expertise in areas including Medicaid, Medicare, medical and pharmacy benefits, cardiovascular disease, diabetes, psychiatry, immunology, neurology, and rare diseases.

Cynthia holds a bachelor's degree in chemistry from Wellesley College. She earned her Medical Degree from NYU and completed an Internship and Residency in Internal Medicine/Primary Care at NYU/Bellevue. In 2019, she attained a master's degree in public health from the University of Florida.

Greg Gregory
PhD Executive
Vice President, Partner

greg.gregory@
precisionaq.com

Greg Gregory is a recognized leader in market access, pricing, and commercialization strategy, with over 25 years of experience spanning biomedical research and strategic consulting. His experience spans launching blockbuster therapies that achieve rapid market success, developing innovative access and pricing strategies for rare diseases, and driving multi-billion-dollar acquisitions through defensible pricing strategies—all while ensuring patients gain timely access to transformative therapies.

Greg holds a PhD in iImmunology & molecular pathogenesis from Emory University, a BS in microbiology from the University of Rochester, and completed a postdoctoral fellowship at the Children's Hospital of Philadelphia.

To learn more about Precision AQ, visit

www.precisionaq.com

PRECISION AQ™