From sales to compliance, AI agents promise to augment workforce capabilities, streamline workflows, and enhance productivity.

Transforming commercial pharma with agentic AI

Key takeaways

1 Three quarters of pharmaceutical companies are already planning, piloting, or deploying agentic AI in a range of business operations, including compliance, data standardization, and market intelligence. Seven percent are in full production.

2 Barriers to full agentic deployment include the complexity of designing, orchestrating, and managing advanced agentic workflows; data governance and integration; and navigating regulatory compliance.

3 To scale, companies must put trustworthy AI agents into day-to-day workflows, feed them clean shared data, and let them hand off work across systems — enabling innovative use cases such as faster content cycles, better HCP engagement, and quicker submissions with clear human checkpoints.

Amid the turbulence of the wider global economy in recent years, the pharmaceuticals industry is weathering its own storms. The rising cost of raw materials and supply chain disruptions are squeezing margins as pharma companies face intense pressure — **including from countries like the US** — to control drug costs. At the same time, a wave of expiring patents threatens around **$300 billion in potential lost sales by 2030**. As companies lose the exclusive right to sell the drugs they have developed, competitors can enter the market with generic and biosimilar lower-cost alternatives, leading to a sharp decline in branded drug sales — a "patent cliff." Simultaneously, the cost of bringing new drugs to market is climbing. **McKinsey estimates** cost per launch is growing 8% each year, reaching $4 billion in 2022.

In clinics and health-care facilities, norms and expectations are evolving, too. Patients and health-care providers are seeking more personalized services, leading to greater demand for precision drugs and targeted therapies. While proving effective for patients, the **complexity of formulating and producing** these drugs makes them expensive and restricts their sale to a smaller customer base.

About the poll

Between May and July 2025, MIT Technology Review Insights conducted a poll exploring where pharmaceutical companies are in their deployment of agentic AI, including use cases, priorities, and challenges. The 250 executive respondents represent the pharmaceuticals, biotech, and bioengineering industries and come from nine countries: Canada, US, France, Germany, Italy, Spain, UK, Brazil, and Switzerland.

The need for personalization extends to sales and marketing operations too as pharma companies are increasingly needing to compete for the attention of health-care professionals (HCPs). **Estimates suggest** that biopharmas were able to reach 45% of HCPs in 2024, down from 60% in 2022. Personalization, real-time communication channels, and relevant content offer a way of building trust and reaching HCPs in an increasingly competitive market. But with **ever-growing volumes of content** requiring medical, legal, and regulatory (MLR) review, companies are struggling to keep up, leading to potential delays and missed opportunities.

Under pressure to innovate, streamline workflows, and enhance productivity, AI presents the pharmaceuticals industry with a unique opportunity to leverage the vast quantities of available data — the health-care sector **generates around one third of the world's data** — and transform it into actions and insights. While generative AI is already estimated to create between **$60 billion and $110 billion a year** in economic value for the pharma and medical product industries, agentic AI promises the next phase of transformation: from AI tool to AI coworker.

Pharma's agentic ally

Although still early days for agentic AI – which can execute multi-step tasks under policy constraints with human sign-offs – ever more enterprises are experimenting with agents. **Gartner predicts** that at least 15% of day-to-day work decisions will be made autonomously by AI agents by 2028, up from 0% in 2024. And **Salesforce predicts** adoption will grow 327% by 2027, leading to a 30% productivity gain.

In pharmaceuticals, 75% to 85% of workflows include tasks that could be augmented or automated by agentic AI, **according to McKinsey**. And AI agents could take on the 40% of workflows that include tasks too complex or costly for humans to manage, leading to, perhaps, the greatest productivity boost for pharma (see Figure 1).

According to a summer 2025 poll of 250 industry executives by MIT Technology Review Insights, pharmaceutical companies are already actively embracing agentic AI. Nearly three quarters of respondents (73%) say they are planning, piloting, or deploying agentic AI initiatives in commercial and medical affairs operations. Seven percent are in full production so far, with most companies still in the planning and experimental phase. Of the more than a quarter currently abstaining from agentic AI, 14% say they are only using traditional AI or automation tools and 13% are not pursuing agentic initiatives for now (see Figure 2).

Organizations are deploying agentic AI across a wide range of use cases, including regulatory compliance, market and competitive intelligence, and data standardization, which were most frequently rated a medium or high priority by respondents (see Figure 3).

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>
> Jeff Headd, Vice President of Data Science, Johnson & Johnson

Figure 1: The potential benefit of agentic AI in pharma

Work will transform

75%-85% **Agentifiable workflows**
Processes in life sciences where key activities can be augmented or automated by agents

35% **Lower-complexity agents**
Agents that require minimal coding, with mostly business-driven build and oversight and rewiring mechanism for adoption

40% **Superpowered work**
Workflows can be extended by agents doing work that is currently too complex or costly for humans

Roles will change

95% **Roles with AI sidekicks**
With agents as integrated teammates, employees' impact for patients can be amplified

25%-40% **Freed-up enterprise capacity**
Assigning agents to tasks where they excel (and humans don't) can free up time for where humans' unique abilities are needed most

10+ **New role types needed**
Agentic workforce can succeed with help from humans in new roles such as agent orchestrator and AI governance or quality manager

Revenue will be affected

5%-13% **Growth impact**
Expanded and better assets, more eligible patients reached, and revenue pulled forward within 3-to-5 year time frame, with potential for incremental 1% to 3% CAGR above baseline growth

6%-8% **Cost efficiency**
Potential savings from increased productivity, reduced vendor spend, and optimized operations

3.4-5.4 percentage points **Impact to EBITDA**
Full potential enterprise-wide impact on EBITDA within a time horizon of 3 to 5 years

Note: Numbers do not include physical AI or growth from AI products.
Source: MIT Technology Review Insights poll, 2025

Eight in ten respondents ranked medical literature review and real-time scientific insights as a medium or high priority. This reflects the challenges of navigating an era when so much new life sciences research is published daily. Scientific literature platform **ScienceDirect experienced** a 17% increase in newly published articles in 2024. And **PubMed**, a biomedical and life sciences literature database, saw over 1.5 million new citations added over the 12 months prior to June 2024. AI itself is no doubt contributing to this rise in published output.

"[AI] agents can play a critical role in helping us stay up to date with what's happening externally," says Jeff Headd, vice president of data science at Johnson & Johnson. "That can be advances in academic science, in what our competitors are doing, or in how global regulatory bodies are thinking about different diseases or different treatment classes." AI agents can track talking points and produce network maps of key opinion leaders whose views shape industry priorities.
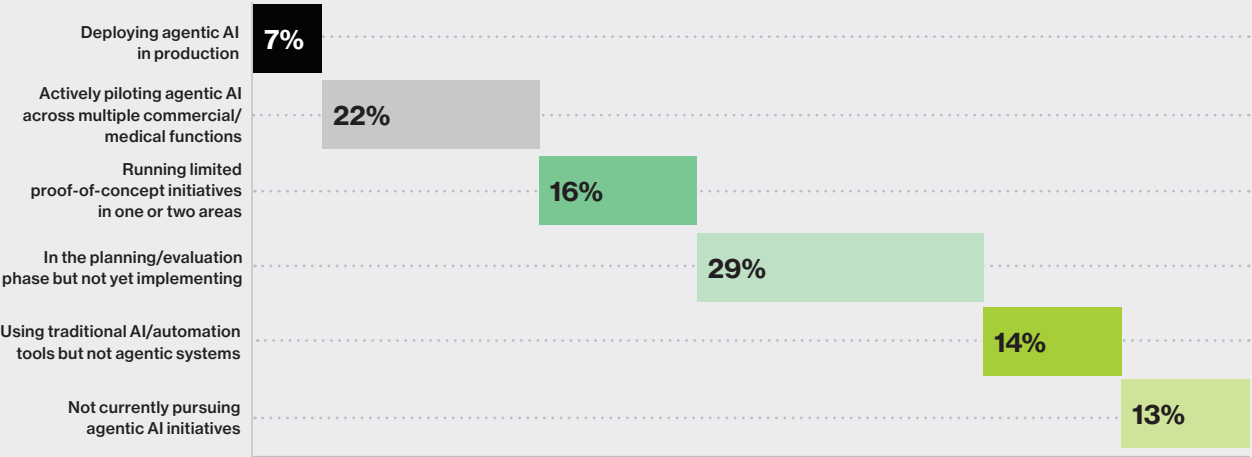
More than three quarters (77%) of respondents rated commercial content creation and adaptation a medium or high priority. This is perhaps unsurprising considering the ever-increasing quantities of business that content pharma companies produce, from advertising materials to operating procedure documents for sales teams. Due to strict medical review and compliance requirements, companies have tended to rely on pre-approved one-size-fits-all material – but agentic AI can enhance and enable far greater adaptation for

"AI agents can accelerate and innovate across the whole medical-marketing workflow, including research, strategy, execution, and optimization to create relevant and personalized content and services for a specific health-care professional to engage with."

Joaquín Labado, Health Care and Life Sciences Managing Director, Globant

different audiences. "[AI] agents enable research, strategy, execution, and optimization to create relevant and personalized content for a specific health-care professional to engage with," says Joaquín Labado, health care and life sciences managing director at Globant. AI agents can also perform time-intensive but low-stakes tasks, like branding and visuals, freeing up the time of communications teams to focus on core strategic goals.

Figure 2: Most pharma companies are pursuing agentic AI initiatives; 7% are already in production
Around one quarter are not currently using or considering agentic AI for medical affairs and commercial operations.

Deploying agentic AI in production	7%
Actively piloting agentic AI across multiple commercial/medical functions	22%
Running limited proof-of-concept initiatives in one or two areas	16%
In the planning/evaluation phase but not yet implementing	29%
Using traditional AI/automation tools but not agentic systems	14%
Not currently pursuing agentic AI initiatives	13%

Source: MIT Technology Review Insights poll, 2025

Agentic AI's adoption blockers

The path from isolated pilots and use cases to wider rollout can be a challenge, especially for larger organizations in highly regulated settings. The most common barrier, cited as a critical or major barrier by 60% of respondents in our poll, is the complexity of designing, orchestrating, and managing advanced agentic workflows. The next most prevalent challenge is navigating regulatory compliance and validation requirements, rated a critical or major barrier by over half of respondents (55%) (see Figure 4).

The opaque nature of large language models (LLMs) raises concerns about safety and control, especially in sectors like pharma. "We don't know how the LLM makes its decisions, and we cannot exactly predict the outputs," says Labado. "Rather than create discomfort in a highly regulated industry, it's a chance to set clear agentic rules and guardrails that let us innovate at speed while staying compliant."

And AI is currently moving faster than regulations can keep up. This creates an environment of uncertainty about whether AI-driven decisions or outputs are consistent with relevant laws and requirements, especially given that different jurisdictions may have different rules. For example, the pharmaceuticals industry is watching to see whether the European Union AI Act's definition of "high risk" AI – which incurs stronger rules and restrictions – will apply to them.
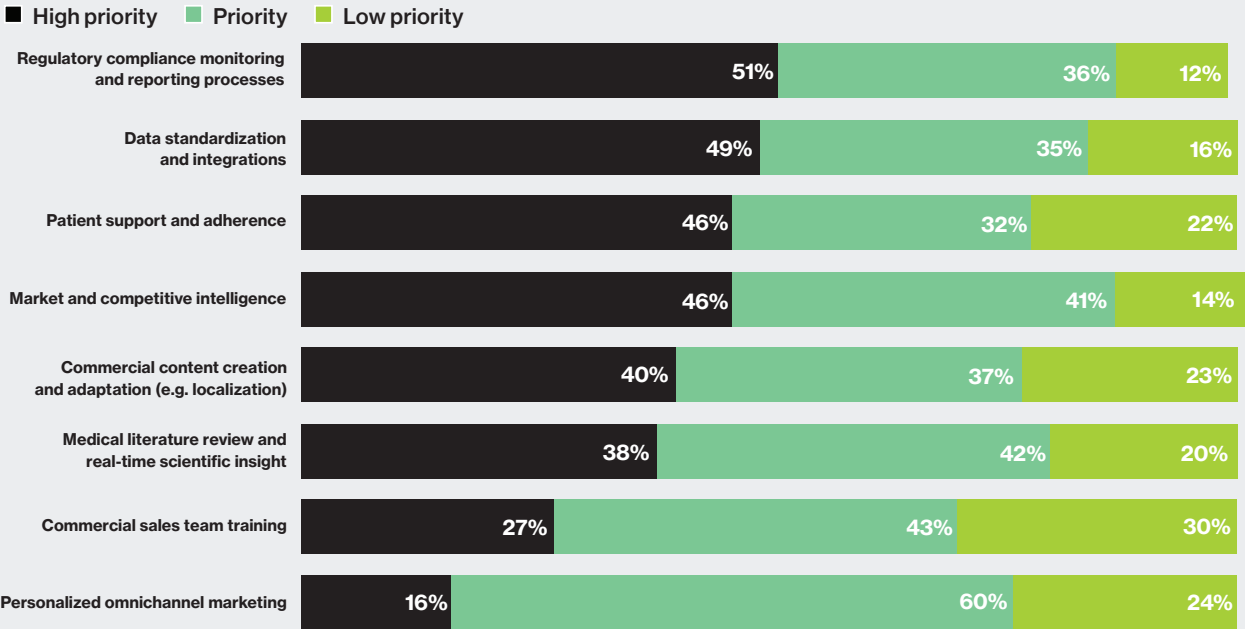
One of the critical guardrails in this dynamic regulatory environment will be embedding "compliance by design" into the foundation of AI technologies. "It's important to build systems that can embed legislation and regulatory documentation directly," says Frank Defesche, senior vice president and general manager of life sciences at Salesforce.

Technology infrastructure limitations and system operability were flagged as a critical or major barrier by 42% of respondents. "We operate a lot of different customer-facing teams: sales representatives, medical science liaisons, and patient-facing roles," says Headd. "We have an opportunity to compliantly facilitate connection and collaboration between them."

Realizing agentic AI's potential

Deploying agentic AI at scale requires a major internal effort to clean and prepare data. There appears to be
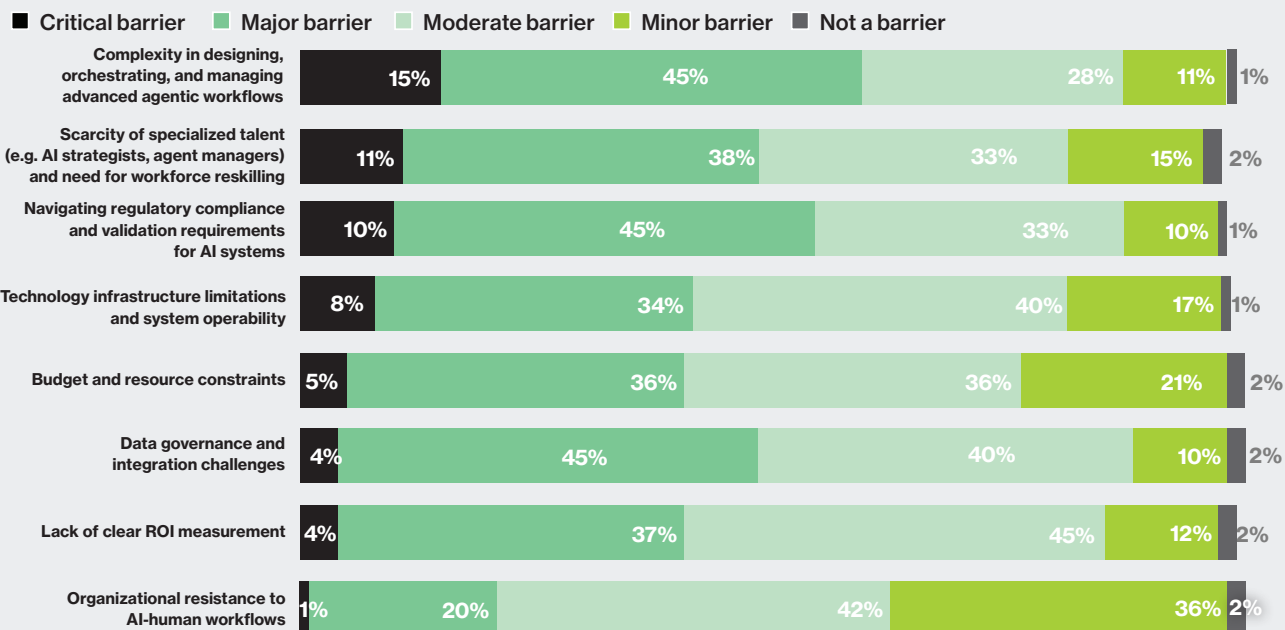

Figure 3: In the next two years, pharma executives are looking to agentic AI for support in a broad range of business activities

Half say regulatory compliance and data standardization are high priority use cases.

■ High priority   ■ Priority   ■ Low priority

Use case	High priority	Priority	Low priority
Regulatory compliance monitoring and reporting processes	51%	36%	12%
Data standardization and integrations	49%	35%	16%
Patient support and adherence	46%	32%	22%
Market and competitive intelligence	46%	41%	14%
Commercial content creation and adaptation (e.g. localization)	40%	37%	23%
Medical literature review and real-time scientific insight	38%	42%	20%
Commercial sales team training	27%	43%	30%
Personalized omnichannel marketing	16%	60%	24%

Source: MIT Technology Review Insights poll, 2025

Figure 4: Tech complexity, regulations, talent, and data governance are top challenges for pharma companies deploying agentic AI

Organizational resilience to AI-human workflows is viewed as the least significant barrier.

■ Critical barrier ■ Major barrier ■ Moderate barrier ■ Minor barrier ■ Not a barrier

	Critical barrier	Major barrier	Moderate barrier	Minor barrier	Not a barrier
Complexity in designing, orchestrating, and managing advanced agentic workflows	15%	45%	28%	11%	1%
Scarcity of specialized talent (e.g. AI strategists, agent managers) and need for workforce reskilling	11%	38%	33%	15%	2%
Navigating regulatory compliance and validation requirements for AI systems	10%	45%	33%	10%	1%
Technology infrastructure limitations and system operability	8%	34%	40%	17%	1%
Budget and resource constraints	5%	36%	36%	21%	2%
Data governance and integration challenges	4%	45%	40%	10%	2%
Lack of clear ROI measurement	4%	37%	45%	12%	2%
Organizational resistance to AI-human workflows	1%	20%	42%	36%	2%

Source: MIT Technology Review Insights poll, 2025

a strong determination to address this challenge, as 84% of poll respondents say data standardization and integration is a medium or high priority for their company in the next two years (see Figure 3). Indeed, Headd argues that agentic AI can only deliver on its promise if organizational data is up-to-date, searchable, and tagged with the right metadata. "How do we make our data interoperable between different functions, business units, and systems, so that agents can search, digest, and act upon this data?" Headd asks.

To fully reap the rewards of the AI co-worker, companies must embed the technology into their existing workflows. "Instead of viewing it as a standalone, isolated tool, it needs to be embraced as an embedded and inseparable element of core business processes," says Defesche. Organizations must also guarantee human-in-the-loop oversight, with agents enhancing decision speed and quality, not replacing judgment. "It's essential to establish clear human oversight, specific handoff points where critical decisions must remain in human hands," says Defesche.

And to enable agentic AI at scale into the future, companies need an IT architecture that enables inter-agent communication protocols. "Once we

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start seeing teams and workflows of AI agents working together, there will be a need for more agent management platforms and protocols — a control room that shows what the agents are doing, when people should step in, and how each run can learn from the last. It's important that this workflow can be centralized in architectures that specialize in agent management," says Labado.

Centers of excellence (CoEs) could be one means of helping organizations ensure consistency by providing a

foundation layer of standards, tooling, and best practices as well as encouraging proactive opportunity spotting. "AI adoption could be accelerated through a human-led, agent-powered CoE that unites experts, agents, and enterprise platforms – prioritizing use cases, running pilots, measuring value and safety, then scaling through reusable components, workflows, and governance," says Labado.

Innovating in commercial pharma

Agentic AI promises to revolutionize the commercial and operational backbone of pharmaceutical enterprises. From streamlining compliance and orchestrating workflows to creating tailored content at scale and augmenting sales, marketing, and medical teams, AI agents can address long-standing inefficiencies that have plagued an industry grappling with rising costs and complexity. Agentic AI could also enhance innovation, competitiveness, and agility to help the pharma industry be more proactive, personalized, and relevant.

However, realizing this potential requires more than just technological adoption. Success will hinge on companies' ability to clean and standardize their data, embed agents into existing workflows, and build an architecture to facilitate agent interactions across platforms, tasks, and functions. It will also require compliance-by-design technologies with appropriate guardrails and human-in-the-loop principles. With nearly three quarters of polled organizations already experimenting with agentic AI and 7% in full production, the path forward is clear: Those that can bridge the gap between promising pilots and scalable deployment will gain an edge.

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Augmenting the commercial workforce with agentic AI

For many organizations, employee resistance can be a major hurdle when deploying new technologies. But for the pharma executives we polled, this seems to be the least of their worries. Just 21% rated organizational resistance to AI-human workflows a critical or major barrier (see Figure 4). Key to building support is taking a strategic approach to messaging and demonstrating how agentic AI can enhance, not hinder or take away, employees' jobs, says Jeff Headd, vice president of data science for North America at Johnson & Johnson.

"We invested heavily in learning and up-skilling on how to use AI. One of the messages we've emphasized is that AI is not going to take your job, but another human using AI might, so the goal is to become an expert at using it to bring the most out of yourself," says Headd.

For commercial teams, agentic AI has the potential not only to support them in their training and interactions with patients, caregivers, HCPs, and payers, but to augment their very capabilities. For roles like sales agents and medical science liaisons, this could herald a whole new level of agility, personalization, and enhanced compliance in their outward-facing interactions.

In the context of training and development, AI agents could offer on-demand tips, guidance, and chatbot-based support. They could create situational simulations, including rehearsing dialogue and responses to questions by drawing on pre-approved content and scoring the quality of an individual's commercial engagement. AI agents could also help field trainers calibrate different coaching scenarios.

In customer-facing situations, AI agents could produce pre-meeting briefings that include, for example, relevant clinical data, physician interaction history, and product information to quickly and easily bring employees up to speed, enhancing personalization and even proactively generating plans of action. "AI agents can gather and synthesize real-time data ahead of an HCP call and then create a dynamic engagement plan that saves time and makes interactions more personalized, more effective, more orchestrated," says Frank Defesche, senior vice president and general manager of life sciences at Salesforce.

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