# Pharma R&D turns to AI to cut costs, speed up drug development



Rising costs and long development cycles continue to hamper the efficiency of pharmaceutical research and development. With global R&D spending reaching $260 billion in 2023, according to McKinsey & Company, and average timelines from Phase I trials to market holding steady at ten years, the pressure to deliver better results from mounting investments is intensifying. Each successful drug launch now costs around $4 billion.

Artificial intelligence is emerging as a potential solution. Seen as a way to streamline operations and improve decision-making, AI is attracting growing interest across the sector. Yet challenges remain—notably the difficulty of integrating unstructured data, which accounts for around 80% of all biomedical information. Regulatory bodies such as the FDA continue to stress the need for transparency in AI models, underlining the importance of explainability in building trust and accountability.

Panos Karelis, Director of Customer Experience and Insights at Intelligencia AI, said effective AI depends on high-quality, well-organised data. “Good data must be comprehensive, recent and harmonised within an organisation,” he said, describing this as a “unified source of truth” that underpins reliable decision-making.

Scott Bradley, Vice President of AI and Innovation at Novartis, noted a shift from instinct-based decision-making to data-driven strategies across the industry. He said AI is not just about generating answers, but about enabling R&D teams to ask better questions. This shift is particularly important in fields such as oncology, where patient variability plays a critical role in treatment outcomes.

Both experts caution against seeing AI as a silver bullet. Karelis emphasised that AI should complement, not replace, human expertise. “The best decisions are made at the intersection of AI analytics and expert judgement,” he said. Bradley echoed the point, stressing the need to contextualise AI outputs within clinical realities.

Successful integration, they agree, also requires significant cultural change. This includes developing internal skills, promoting data literacy and securing executive backing. Both advocate starting with small, clearly defined AI use cases to prove value before scaling up.

Looking ahead, this combined approach—merging advanced analytics with expert insight—offers a way to improve R&D efficiency and accelerate access to therapies. Karelis described this evolution as a move toward “decision intelligence,” where real-time data informs strategic resource allocation.

While AI presents risks, including bias and the danger of over-reliance, leaders in the sector believe that with the right safeguards, it could help bridge the gap between high investment and successful outcomes. The aim is not just faster drugs, but better ones—delivered with greater certainty and at lower cost.

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## Bibliography

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2. <https://www.mckinsey.com/industries/life-sciences/our-insights/charting-the-path-to-patients> - McKinsey & Company reports that pharmaceutical R&D spending reached $260 billion in 2023, yet the average time from Phase I to market launch remains at ten years, with per-launch costs rising to $4 billion in 2022. These widening gaps between investment and outcomes demand new strategies to optimise efficiency and improve returns.
3. <https://www.mckinsey.com/industries/life-sciences/our-insights/the-pursuit-of-excellence-in-new-drug-development> - McKinsey & Company highlights that the average cost of bringing a drug to market, including failures, is now $2.6 billion—a 140% increase in the past ten years. This underscores the need for innovative approaches to improve returns on R&D investment.
4. <https://lifesciences.n-side.com/blog/what-is-the-average-time-to-bring-a-drug-to-market-in-2022> - Industry group PhRMA states that it takes 10-15 years on average to develop a new medicine from initial discovery through regulatory approval. This lengthy timeline highlights the challenges in accelerating drug development processes.
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7. <https://arxiv.org/abs/2307.06521> - The article 'Artificial Intelligence for Drug Discovery: Are We There Yet?' reviews the use of AI in drug discovery, focusing on diseases, targets, and therapeutic modalities. It highlights the need for sufficient ground truth and appropriate human intervention at later pipeline stages to realise AI's full potential.