Pharma's AI moment: balancing promise with pragmatism

Key findings on the trends and challenges faced by pharma businesses, based on 100+ conversations with industry leaders

Commentary by Matthew Wise, Head of Data, CCD Partners

Artificial intelligence has become the defining story in pharma this past year, moving from hype to real-world application. What once felt experimental is now woven into how companies approach research, development, and engagement with patients. The question is no longer whether AI will change the industry, but how quickly, and how responsibly, it can be adopted.

The most visible progress has been in discovery and development. AI platforms are being used to identify new targets, model disease pathways, and support smarter clinical trial design. Patient recruitment, once a costly and slow bottleneck, is being accelerated by predictive algorithms that help match the right patients to the right studies. These are tangible shifts that promise to reduce timelines and bring therapies to market more efficiently. Manufacturing and supply chains are also feeling the impact. Predictive models are being applied to anticipate disruptions, monitor quality in real time, and optimise production schedules. In an industry still dealing with the aftershocks of pandemic-related disruption, this ability to stabilise supply chains is becoming a strategic advantage.

Yet the excitement is tempered by the challenges of implementation. Data quality and fragmentation remains one of the biggest hurdles, with critical information siloed across markets, health systems, and companies. Regulators are beginning to probe more deeply into AI use, asking how decisions made by algorithms can be explained, audited, and trusted. For smaller biotechs, the financial burden of building AI capacity adds another layer of complexity, especially in an environment where funding is tight.

At the same time, the risks of relying on AI in such a heavily regulated and high-stakes industry cannot be ignored. Algorithms trained on incomplete or biased datasets may produce misleading results that jeopardise trial outcomes or patient safety. Over-reliance on "black box" systems also raises questions of accountability: if an AI model guides a critical decision, who is responsible when something goes wrong? Regulatory frameworks are still catching up, and until clear standards are in place, companies risk both reputational damage and legal exposure if their AI tools are not transparent, well-validated, and properly governed.

Which companies are set to benefit the most from AI? With AI advancing at breakneck speed and access to high quality tools becoming more widespread, it's more of a question of culture rather than technology. Firms that are curious, collaborative, and willing to adapt are already pulling ahead, while those treating AI as an add-on risk falling behind. The challenge now is to use it with discipline as well as ambition, ensuring the promise translates into real progress for patients and for business.

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