

Revolutionizing clinical trial management: AI-driven patient retention and site optimization

Harnessing AI for proactive patient retention and
efficient trial execution

Introduction

Clinical trials are foundational to medical innovation, enabling the development of new therapies that improve patient outcomes globally. However, high patient dropout rates and site-level operational challenges continue to disrupt timelines, elevate costs and compromise data quality. Global estimates indicate that 15%–40% of participants discontinue prematurely, with an average attrition rate of around 30%, which impacts trial validity and delays access to critical treatments.

As the industry accelerates toward digital transformation, AI and predictive analytics are becoming essential enablers of efficient, patient-centric trials. By analyzing historical clinical trial data, organizations can better understand patient behavior, identify dropout risk factors and optimize trial design.

This brochure introduces HCLTech's AI-powered Clinical Trial Dashboard—a next-generation solution delivering predictive, prescriptive and real-time insights to improve patient retention and operational efficiency. Through interactive visualizations, automated alerts and intelligent analytics, the dashboard empowers clinical teams to anticipate challenges and act proactively. By integrating real-time monitoring and customizable reporting, the solution fosters a more patient-centric approach to research and helps accelerate the delivery of life-changing therapies.

Core capabilities and components

HCLTech's AI-powered Clinical Trial Dashboard provides a suite of predictive, prescriptive and real-time analytical capabilities designed to modernize trial management.



Predictive analysis

- **Patient clustering using multivariate analysis:** Segments patients into meaningful groups based on historical and behavioral data, enabling more tailored engagement strategies
- **Patient risk profiling:** Predicts likelihood of adverse events to support early intervention
- **Dropout prediction:** Identifies patients at high risk of discontinuation and recommends targeted retention strategies
- **Treatment response prediction:** Anticipates patient response to therapy, supporting better therapeutic planning



Prescriptive analysis

- **Optimized trial design:** Recommends sample size adjustments, design modifications and recruitment strategies
- **Real-time monitoring alerts:** Automated triggers notify teams of safety issues, deviations or emerging risks



Advanced visualizations

- **Interactive dashboards:** Provides dynamic exploration of data, enabling trend identification and actionable insights
- **Customizable reports:** Generates tailored reports for safety, operations and regulatory needs



Solution benefits

- Improved patient safety through early detection of potential risks
- Better decision-making enabled by real-time, data-driven insights
- Accelerated time-to-market through operational efficiency
- Reduced dropout rates with proactive alerts and intervention strategies
- Cost reduction through forecasting and resource optimization



Key differentiators



Predictive and prescriptive intelligence: Moves beyond traditional reporting by offering insights and recommended actions.



Precision patient clustering: Provides more accurate segmentation for patient-centric engagement.



Risk-based stratification: Categorizes patients within clusters to enable targeted interventions.



AI-driven dropout prediction: Supports timely actions to improve retention.



Real-time analysis: Delivers instantaneous insights for faster decisions.



Scalable architecture: Supports small studies to large, multi-site trials.



Seamless integration: Integrates with CTMS and EHR systems for unified analytics.



User-friendly interface: Intuitive for clinical users, reducing training needs.



Enhanced patient engagement: Supports personalized communication strategies.



Cost efficiency: Optimizes resource allocation and reduces operational overhead.

Conclusion

HCLTech's GenAI-powered Clinical Trial Dashboard is transforming clinical research by helping organizations anticipate risks, minimize dropout rates, accelerate timelines and achieve better outcomes. By partnering with HCLTech, organizations gain access to deep AI expertise and scalable digital platforms that deliver measurable results—bringing therapies to patients faster, more safely and with greater confidence.

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