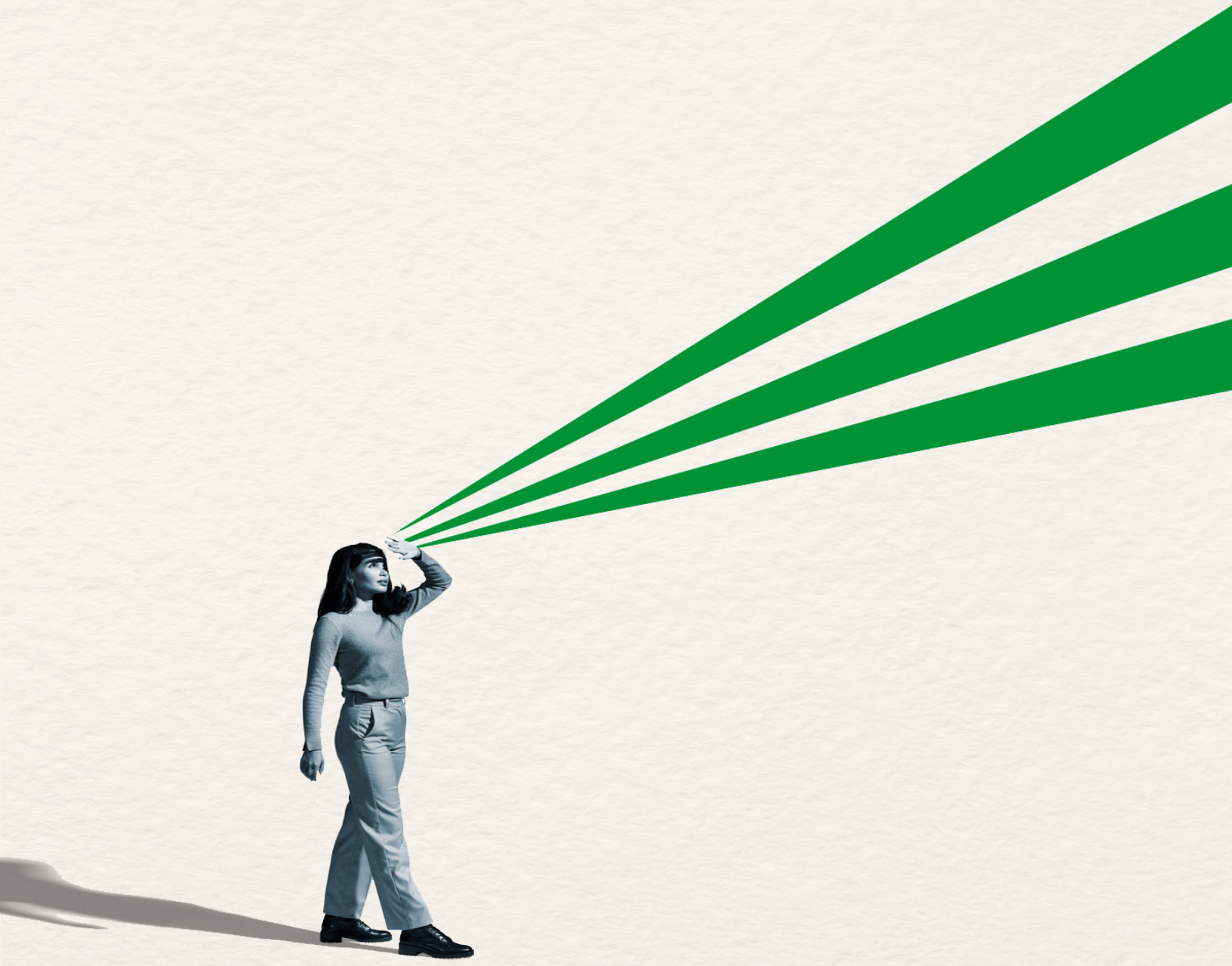
White Paper

QCentrix®

Elevating Operational Quality with the Power of AI

The sophistication of AI accelerates quality assessment and improvement



OVERVIEW

The clinical data management space is ripe for innovations centered on quality improvement and cost saving. The complex data network within hospitals and health care systems can be difficult to understand. Artificial intelligence (AI) technologies have the power to take on this complexity and yield insights that can drive business practices focused on performance and efficiency at both macro and micro levels. Enterprise adoption of AI is on the cusp of an explosion: although only 9% of US businesses currently implement AI in some form,[1] the International Data Corporation (IDC) predicts that by 2025, at least 90% of new enterprise apps will feature embedded AI.[2] The global AI software market is forecast to grow rapidly during that time, reaching $126 billion by 2025.[3] IDC Senior Vice President and Chief Analyst Frank Gens believes it is hard to overstate the impact AI will have on enterprise operations in the coming decades. "*By 2025, we expect to see enterprises using AI-enabled and AI-led apps to gain competitive advantage*," Gens predicts.[4] Health care and hospital systems are no exception. According to the American Hospital Association (AHA), "*forward-looking hospital and health system leaders see AI as perhaps the most effective path to a more productive, efficient and higher-performing health care organization.*"[5]

> ***One of the biggest opportunities to leverage AI in health systems is with clinical data: data integrity + AI-powered analytics = actionable insights into best practices that fuel ROI, operational excellence, agility, and growth.***

[1] Will Knight. "AI Is All the Rage. So Why Aren't More Businesses Using It?" WIRED (July 30, 2020). https://www.wired.com/story/ai-why-not-more-businesses-use/.
[2] N.A. "IDC FutureScape Outlines the Impact "Digital Supremacy" Will Have on Enterprise Transformation and the IT Industry." International Data Corporation (October 29, 2019). https://www.businesswire.com/news/home/20191029005144/en/IDC-FutureScape-Outlines-Impact-Digital-Supremacy-Enterprise.
[3] Shanhong Liu. "Artificial Intelligence Software Market Revenue Worldwide 2018-2025." Statista (December 7, 2020). https://www.statista.com/statistics/607716/worldwide-artificial-intelligence-market-revenues/.
[4] N.A. "IDC FutureScape Outlines the Impact "Digital Supremacy" Will Have on Enterprise Transformation and the IT Industry." International Data Corporation (October 29, 2019). https://www.businesswire.com/news/home/20191029005144/en/IDC-FutureScape-Outlines-Impact-Digital-Supremacy-Enterprise.
[5] N.A. "Market Insights: AI's Impact on Health Care." American Hospital Association (accessed February 22, 2021). https://www.aha.org/center/emerging-issues/market-insights/ai.

Based on thousands of cases, hundreds of partners, and thousands of data abstractions per day, Q-Centrix has learned how best to use AI and clinical data to improve operational quality. Far beyond just automation, AI tools in the hands of talented humans can drive deep exploration of data to unearth patterns and trends that comprise true business intelligence. We think the future of quality unites humans and technology, and based on our surveys and experiences, we have invested in realizing its promise for our business and our partners.

Key Inputs:

- **Data integrity**: High-quality, timely, and valid data enable organizations to craft meaningful benchmarks and policies for patient care.
- **AI-powered analytics**: Sophisticated computing tools can enhance human capabilities and efficiency.

Key outputs:

- **ROI**: More powerful and efficacious data analysis can uncover opportunities to reduce costs by streamlining workflows.
- **Operational excellence**: Excellence in execution produces superior results that heighten organizational value.
- **Agility**: Real-time data and rapid analysis can enable organizations to sort through data and pinpoint the best ideas.
- **Growth**: Careful management of systems and structures can support organizational growth and expansion.

Challenges in clinical data management:

Given the increasing volume and complexity of clinical data, high-end computing solutions such as AI technologies are often the best choice for analysis.[6] But we know these technologies are only as good as the input they receive. Poorly organized or managed data will yield poor results. Q-Centrix offers solutions to simplify quality data management and drive performance improvement. These solutions set the stage for AI-powered analytics to fully explore clinical data and detect important patterns.

[6] Sabyasachi Dash, Sushil Kumar Shakyawar, Mohit Sharma & Sandeep Kaushik. "Big Data in Healthcare: Management, Analysis and Future Prospects." Journal of Big Data 6, 54 (June 19, 2019). https://doi.org/10.1186/s40537-019-0217-0.

AI-powered solutions:

Despite its great promise, adoption of AI in health systems has been slow, in part because leaders may not be convinced of its value in terms of ROI and may be hesitant to try new technologies without strong case studies to prove they work.[7] But operations are one aspect of hospital and health care systems where the ROI and success of AI-enabled technologies have been addressed. There are clear financial and operational advantages to increasing efficiency in administrative tasks like patient scheduling and financial collections.[8] Using AI technology to adjust workflows and systems can reduce costs and improve outcomes by allowing us to learn from data in new ways.[9]

Our AI-powered tools and approach in action:

Quality assessment

Partnering with thousands of hospitals has given us unique insight into the limits of data abstraction without AI—and of AI without human interaction. Using the thousands of data points processed by our Clinical Data Experts, our AI technology spots trends that might be missed by individuals. This innovative platform provides statistically confident measures of quality and uses historical quality data to focus resources on areas of concern. Quality departments can use this macro-level analysis to measure quality, gather data on areas of improvement, and align their goals, leading to data-based policies that improve patient care, all while reducing auditing costs. Data integrity ensured by experienced Clinical Data Experts and analyzed by advanced AI makes this possible.

Identifying best practices

As much as we can discover from our data, there are equally valuable lessons to be learned from our processes. Our Clinical Data Experts perform thousands of transactions per day, and we can evaluate these processes to identify what works best. Through our 10 years of experience in the quality abstraction space, we have identified key quality indicators, such as work habits, workflow strategies, raw times, quality scores, etc. We created a “benchmarking engine” to analyze processes and quality indicators, which allows us to establish benchmarks for individual processes and to compare multiple processes and set new standards based on the most efficient ones.

[7] Millicent Abadicio. “AI in the Hospital Setting – Challenges and Trends.” Emerj (September 8, 2020). https://emerj.com/ai-sector-overviews/ai-in-the-hospital-setting/.
[8] Millicent Abadicio. “AI in the Hospital Setting – Challenges and Trends.” Emerj (September 8, 2020). https://emerj.com/ai-sector-overviews/ai-in-the-hospital-setting/.
[9] N.A. “AI in Healthcare: How It’s Changing the Industry.” Healthcare Information and Management Systems Society, Inc. (May 5, 2020). https://www.himss.org/resources/ai-healthcare-how-its-changing-industry.

Extracting meaning from unstructured data

AI can also help us extract meaning from large sets of unstructured data, such as survey results, interview or discussion transcripts, and other collections of documents. Topic modeling can uncover the common topics that occur in such a data set. We use topic modeling to programmatically identify common themes from hundreds of user-submitted responses, enabling our product development teams to target their efforts to enhance our processes and technology. We envision future opportunities to utilize this same technology in the clinical data space, such as analyzing feedback from patients who received a certain treatment to identify common themes in their narratives.

Workforce capacity planning

Given the size and diversity of our workforce and the needs of our partners, it is an ongoing challenge to optimize our clinical resource utilization. Historically, we have approached this using a combination of relatively basic calculations and subjective feedback from upper management. As we strive to achieve 90%+ resource utilization, a more robust methodology is needed. We are exploring advanced techniques in time-series forecasting to derive a more accurate measure of workforce capacity and help optimize resource use. AI-based models can lift the burden of large-scale manual planning, allowing leadership to manage the workforce at scale and more easily address any one-off needs.

What we've learned:

- Centralization: A single, centralized enterprise solution can maintain compatibility and consistency in technology and data abstraction standards across all sites.[10]
- External expertise: External experts offer objective perspectives and valuable experience that can lead to transformative solutions across the spectrum from data transaction to technology implementation.
- Collaboration: Data scientists, project managers and IT experts bring complementary viewpoints and skill sets that combine to create practical solutions that drive significant improvement.
- Immediacy: Timeliness of data plus the power of AI enables experienced Clinical Data Analysts to turn data into actionable items.

[10] N.A. "Elevating Health Care Quality through Centralization." Q-Centrix (2021).

Concluding thoughts:

Our approach to AI-enabled data integrity and process improvement unites people and technology to elevate operational quality both internally and for our partners. In addition, minimizing the number of audits performed results in cost savings, and implementing best practices introduces efficiencies, both of which boost ROI associated with AI-powered technologies, improve output, and speed delivery of results. Furthermore, applying these tools and approaches has helped us to become more tactical with our quality efforts within just one year, to meet the growing demands of our growing business, and to focus our finite resources more efficiently and allow our growth to continue.

About Q-Centrix

Q-Centrix believes there is nothing more valuable than clinical data—it is critical in delivering safer, consistent, quality healthcare for all. Providing the industry's first Enterprise Clinical Data Management (eCDM™) approach, Q-Centrix utilizes its market-leading software, the largest and broadest team of clinical data experts, analytics and reporting data structure, and the best practices from more than its 1,200 hospital partners to curate meaningful, high-fidelity, complete, and secure clinical data. Its solutions address a variety of clinical data needs, including regulatory, cardiology, oncology, trauma, research and more. For more information about Q-Centrix, visit www.q-centrix.com.

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