

F R O S T & S U L L I V A N

2024 ENABLING TECHNOLOGY LEADER

*IN THE NORTH
AMERICAN CLINICAL
DECISION SUPPORT FOR
CRITICAL CARE INDUSTRY*

F R O S T & S U L L I V A N

2024
BEST
PRACTICES
AWARD



Best Practices Criteria for World-Class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each award category before determining the final award recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. Etiometry excels in many of the criteria in the clinical decision support for critical care space.

AWARD CRITERIA	
<i>Technology Leverage</i>	<i>Customer Impact</i>
Commitment to Innovation	Price/Performance Value
Commitment to Creativity	Customer Purchase Experience
Stage Gate Efficiency	Customer Ownership Experience
Commercialization Success	Customer Service Experience
Application Diversity	Brand Equity

Etiometry: Enhancing Care Quality and Patient Outcomes

Founded in 2010 and headquartered in Boston, Massachusetts, Etiometry Inc. (Etiometry) is a leading provider of clinical decision-support software for the intensive care unit (ICU) environment. The company’s Food and Drug Administration (FDA) cleared platform empowers data visualization to help clinicians make data-based decisions regarding their patients’ care and treatment, simultaneously standardizing and personalizing care. As a result, Etiometry provides unprecedented value to hospitals by reducing patients’ time on ventilators or reliance on vasoactive medications, decreasing overall length of stay and ICU readmission. These key value points translate directly to cost savings or increased throughput and revenue, thereby empowering improved care quality and enhanced financial incentives simultaneously. As such, Frost & Sullivan believes that Etiometry is positioned to become the gold standard for clinical decision support software within ICU settings.

Integration into Existing Workflows Safeguarding Use and Overall Impact

Etiometry was co-founded by two aerospace engineers, Evan Butler and Dimitar Baronov, who identified that ICUs lacked a way to access comprehensive information that could be visualized on one screen to make informed decisions. The pair contrasted this situation to the cockpit of an airplane, where digitized information that enables visualization was standard, making flying a plane simpler and more intuitive. As such, Etiometry was developed with this goal in mind. The company focused on providing information technology (IT) and software to aggregate and visualize key data that allows clinicians to understand a patient’s trajectory and make informed escalation and de-escalation decisions more effectively.

Etiometry's complex multi-variate, continuously-learning mathematical model of human physiology leverages multi-variant equations to model the key aspects of physiology, such as cardiac status, pulmonary mechanics, and acid/base balance, to enable care pathways. The platform offers multiple FDA-cleared algorithms and analytics-powered clinical pathways, which give clinicians quicker access to patient data and enable more effective care decisions.

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- Dr. Rishi Pathak
Research Director, Healthcare & Life Sciences

Etiometry recognizes the work overload placed on clinicians. As such, it understands that to impact care decisions and have a truly useful solution, it must integrate seamlessly into existing workflows, protocols and practices. As a result, the company's platform automatically pulls together all patient data and visualizes it at the bedside to ensure Etiometry's software is actionable, accessible, and directly integrated into clinicians' existing workflows and technologies, such as electronic health records (EHR). The company's Clinical Pathways functionality incorporates relative criteria and data flags to identify patient eligibility for a particular workflow, pathway, or practice.

Once initiated, the software's functionality tracks and displays visualizations of the patient's success of remaining within designated key parameters within that workflow or practice. It then provides treatment guidance that aligns to published practices and guidelines, helping clinicians make better care decisions while bolstering standardization and personalization of care. On the back end, Etiometry's Quality Improvement Application enables automated reporting to understand the efficacy of the hospital's clinical workflows.

Complete Platform Increasing Care Quality

Etiometry is the first and only clinical decision support technology with explicit FDA clearance for use at the bedside for patient trend monitoring. Its software integrates fully into EHRs, including Cerner and Epic, so that medication and other data in the EHR can be viewed in context with physiological monitoring data. Etiometry's application (app) appears directly on the patient screen so the clinician can seamlessly bring it up and toggle back and forth between the EHR screen and the Etiometry app easily, gaining a deeper visualization of the patient's parameters and aid in care decisions. Additionally, many hospitals have a dedicated screen in the patient's room for the company's software, giving clinicians direct access to patient's trended data over time as well as the EHR. Etiometry also has a surveillance dashboard and patient census view, allowing clinicians to see the entire population in a single view. The dashboard shows key metrics, workflows, and algorithms with respect to each patient, enabling clinicians to identify who needs enhanced monitoring or a change in escalation level.

Furthermore, alarm fatigue is a serious issue within the healthcare industry, as clinicians constantly hear different alarms for patients' status changes, impacting their overall responsiveness due to the constant alarms. Etiometry's software provides data visualization without having additional alarms; instead, it uses data visualization and color shading to direct that clinicians' eyes toward the most important information. Finally, its platform is an on-premises deployment installed behind the hospital's firewall, safeguarding data security as it falls behind its existing security. The company also bolsters SOC2 certification, giving it

the potential to be deployed as a cloud solution. Frost & Sullivan's research identifies Etiometry as a leading partner, leveraging cutting-edge methodologies and aligning its platform's capabilities directly with hospital and clinician needs to ensure its overall longevity and impact.

Innovation Aligned with Industry Needs

Etiometry recognizes that the user experience (UX) is of utmost importance; if the platform is not easy to use or does not integrate seamlessly into clinicians' workflows, clinicians will not use it. As such, the company continuously stays in touch with clinicians, soliciting feedback regarding usability to ensure they are maximizing value from the software, and aware of new ways it is improving workflows. Furthermore, Etiometry supports significant clinical research on the platform, including its value proposition, use cases, and usability, highlighting its value for improving patient care. Additional clinical research shows the platform's ability to indicate to the care team the risk of patient deterioration. Research also demonstrates its impact on helping clinicians safely and efficiently make de-escalation decisions, moving the patient outside of the ICU and enable greater care and a more efficient ICU environment overall.

Etiometry's platform has evolved to achieve the most impact for clinicians in the ICU. To date, it has nine FDA clearances and actively works to expand its platform and algorithms to positively impact care and continuously enhance its value proposition. The company prioritizes the most significant unmet needs for

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clinicians with a high potential for care improvement and overall impact on an ICU's efficiency. The company enables standardized and consistent care quality by digitizing protocols and practices and helps ICUs to develop protocols and practices suited for digitization. In 2023, Etiometry received FDA clearance for an artificial intelligence (AI)-based risk algorithm for adult patients with its IDO2 Index. This innovative algorithm alerts the clinician continuously of the risk that a patient is experiencing inadequate oxygenation, allowing them to identify and react to patients' changing conditions rapidly.

The platform is also being utilized in a multi-center study focused on goal-directed therapy in cardiovascular ICUs, particularly focusing on Clinical Pathways to address key issues such as hemodynamic instability after surgery, cardiogenic shock, sepsis, septic shock, acute respiratory distress syndrome, and neuro ICU needs. As a result, Etiometry can combine this data with clinician feedback to prioritize developing Clinical Pathways that will have the largest positive impact on patient outcomes.

Customer Support Driving Long-term Use

Etiometry forms close relationships with partners from the initial purchase, ensuring implementation and integration go smoothly and gaining deeper insight into clinicians' needs. Upon purchase, the company deploys a project management and clinical development team which work simultaneously to ensure a quick and easy integration. The project management team works with hospital IT departments to set up the system, including connecting devices, integrating the platform with the EHR, and connecting the patient monitoring system. Etiometry's team does the lion's share of the hard work, alleviating the labor from already overburdened hospital IT departments. The initial installation process can take as few as six

to eight weeks, enabling hospitals to leverage its innovative platform quickly and achieve value sooner. Etiometry's clinical development teams work in parallel with its project management team, configuring Clinical Pathways to clinical research and the hospital's parameters so clinicians can start using it upon installation.

Etiometry understands its platform's success is contingent on use; if clinicians do not integrate it into their workflows and practices, the hospital and ICU will not experience improved outcomes and the resulting cost savings. Thus, the company's initial training focuses on remaining onsite to answer questions, identify key points in the ICU workflow for use of the platform (such as rounding or shift handoffs), and help clinicians understand the best methods to incorporate its platform into existing workflows and ensure Etiometry becomes an accepted and routine tool within the care plan.

The company also identifies super users and implements a train-the-trainer model, enabling existing staff to train new employees. Etiometry also recognizes the significant staff renewal rate in a hospital setting due to resident and fellowship program lengths or nursing and staff turnover. As such, the company returns onsite every quarter for about a week, training new employees and helping to increase overall use cases with long-term staff. Etiometry's multi-faceted training processes ensure each member of the care team understands how to effectively leverage Etiometry within their existing workflows.

Unprecedented Value

Etiometry places a large focus on proving overall value and enhancing return on investment (ROI), as it establishes the need for its platform's ability to impact hospitals. As such, the company developed an ROI model largely based on its clinical data generated through various research studies, helping hospitals achieve various key performance indicators (KPIs) that enhance care quality and ICU efficiency.

The company specifically emphasizes reducing the length of stay, time on ventilation and vasoactive medications, and decreasing ICU readmission, since these KPIs significantly impact care quality and correlate to a reduction of care costs or an increase in reimbursement. Moreover, since most hospitals are operating at 100% capacity, by reducing the time spent in the ICU and overall length of stay, hospitals can boost overall throughput, increasing potential revenue and thereby impacting ROI. Etiometry's advanced Clinical Pathways and algorithms have led to an up to 22% reduction in time on ventilation,¹ up to a 36% reduction in length of stay,² and a decrease in ICU readmission by up to 41%.³

In addition to proving unprecedented ROI, Etiometry has received extensive positive feedback from nurses and clinicians regarding the platform's efficacy, impact on care quality, and its ability to reduce task burdens, making their jobs easier. For example, a study shows that 88% of nurses report Etiometry makes their job easier.⁴ Moreover, it makes discussions regarding a patient more specific and effective, as data is displayed through the platform, helping providers collaborate more effectively on patient status, escalation level, or an overall care plan.

¹ <https://www.etiometry.com/resources/outcomes-data-reveal-significant-impact-of-etiomety-utilization-in-liberating-patients-from-invasive-icu-treatments/>

² Gaies et al. – Circulation: Cardiovascular Quality and Outcomes – 2023

³ Borasino, S. et al. (2023) Automated Extubation Readiness Tool is Associated with Improved Outcomes Following Pediatric Cardiac Surgery. World Congress of Pediatric Cardiology and Cardiac Surgery.

⁴ Lowry, NASA TLX survey analysis from PCICS abstract

Etiometry's Success Leading to High Brand Equity

While still in the early stages of acceptance, clinicians have begun recognizing the value provided by AI-driven technologies, particularly with data-driven insights leading to overall quality improvement. Etiometry's foundation of AI technology and analytics position it as a leader within this industry. The company's reputation for setting the gold standard of technological capabilities, highlighted with its numerous case and clinical studies, showcases its AI's effectiveness and impact. As a result, Etiometry has about 45 hospital customers located primarily in the United States (US), with customers also in Canada, Pakistan, and the United Kingdom. The company maintains four regional account executives in the US to cultivate business relationships and grow its footprint nationally.

Upon experiencing value within an initial unit or hospital, Etiometry often spreads throughout the hospital enterprise, highlighting the platform's ability to bring value and enhance the ICU's efficiency. Furthermore, the company's pricing model includes an installation fee and annual subscription, calculated on a per bed per year price, thereby safeguarding value as hospitals are charged based on their size. Finally, Etiometry partners with large medical technology companies, leveraging their expansive footprints to help broaden the aperture of the organizations it can provide with the platform.

Etiometry understands that integration with EHRs, primarily Epic and Cerner, is essential to integration into clinical workflows. As such, the company continuously focuses on deepening its integration with main EHR providers, particularly Epic, as hospitals are trending toward using Epic EHR. Its deepened integration includes a single sign-on interface and gathering and aggregating data from the EHR directly onto the screen, giving clinicians a clear visualization of patient data and changes. As a result of its advanced value proposition, expansion of its Clinical Pathways to positively impact care quality, and tight integration with leading EHR providers, Frost & Sullivan believes Etiometry is positioned for long-term expansion, helping to transform care quality in ICU settings.

Conclusion

Etiometry Inc. (Etiometry) is a leading provider of clinical decision-support software for the intensive care unit (ICU) environment, helping clinicians make data-based decisions on patients' care and treatment. The Etiometry platform is an end-to-end data management software solution for the collection, analysis, visualization, and archiving of ICU clinical data. Its design facilitates the use of all available data to support the anticipation and management of the dynamic condition of patients requiring intensive care. As such, its advanced analytics and algorithms empower increased care quality, resulting in reduced length of stays and ICU readmissions, directly translating into cost savings and increased hospital reimbursement. The company bolsters consistent focus on innovation, developing additional algorithms and Clinical Pathways that directly align with clinician feedback and ICU needs. Finally, Etiometry provides consistent and ongoing training and support, ensuring that its platform is integrated seamlessly into existing workflows, thereby safeguarding its impact and overall value.

With its strong overall performance, Etiometry earns Frost & Sullivan's 2024 North American Enabling Technology Leadership Award in the clinical decision support for critical care industry.

What You Need to Know about the Enabling Technology Leadership Recognition

Frost & Sullivan's Enabling Technology Leadership Award recognizes the company that applies its technology in new ways to improve existing products and services and elevate the customer experience.

Best Practices Award Analysis

For the Enabling Technology Leadership Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

Technology Leverage

Commitment to Innovation: Continuous emerging technology adoption and creation enables new product development and enhances product performance

Commitment to Creativity: Company leverages technology advancements to push the limits of form and function in the pursuit of white space innovation

Stage Gate Efficiency: Technology adoption enhances the stage gate process for launching new products and solutions

Commercialization Success: Company displays a proven track record of taking new technologies to market with a high success rate

Application Diversity: Company develops and/or integrates technology that serves multiple applications and multiple environments

Customer Impact

Price/Performance Value: Products or services provide the best value for the price compared to similar market offerings

Customer Purchase Experience: Quality of the purchase experience assures customers that they are buying the optimal solution for addressing their unique needs and constraints

Customer Ownership Experience: Customers proudly own the company's product or service and have a positive experience throughout the life of the product or service

Customer Service Experience: Customer service is accessible, fast, stress-free, and high quality

Brand Equity: Customers perceive the brand positively and exhibit high brand loyalty

