Web-based Etiometry Platform Helps Clinicians Better Manage Patient Data

In this feature, Neonatal Intensive Care interviews clinicians and healthcare providers about the actual application of specific products and therapies. This interview is with Shane Cooke, the CEO of Etiometry.

Neonatal Intensive Care: What is the Etiometry Platform?
Shane Cooke: Etiometry has an FDA-cleared clinical decision support platform for critical care, which is an end-to-end data management solution for collection, analysis, visualization, and archiving of clinical data. The web-based Etiometry Platform helps clinicians manage and better utilize the enormous amount of patient data to guide decision making in the very data-rich intensive care environment. Much of the patient data generated in the ICU environment is unused in actual clinical decision making—often there is just too much data, or it is difficult to access, and the information used tends to be a snapshot of a patient’s condition which has already passed.

The Etiometry Platform enhances the use of available data to provide a full picture of a patient, enabling clinicians to anticipate and manage a patient’s dynamic condition.

The platform consists of three integrated software components: T3 Data Aggregation & Visualization, Risk Analytics Engine, and the Quality Improvement System. Together these components provide insight into the trajectory of a patient’s condition and provide comprehensive data to clinicians whenever and wherever it is needed.

Nic: Where is the Etiometry Platform most typically used?
Sc: Etiometry’s platform is typically used in intensive care units within a hospital. Given the high acuity of patients within the ICU, and the need to make quick, informed decisions regarding a patient’s care, the Etiometry Platform is well-suited for this environment. Etiometry’s platform is utilized in several different ICUs, such as pediatric and adult cardiac units, pediatric ICUs, and neonatal units. The platform is also used in the Operating Room, Post-Anesthesia Care Units, step-down units, and during the COVID-19 pandemic, the platform has been installed in regional infection control units as well.

Nic: How does the Etiometry Platform compare to other data & analytics companies or approaches?
Sc: Etiometry’s model-based approach to analytics and algorithms is unique in the market, and differs from other analytics approaches, such as machine learning. We have built a model of human physiology that accounts for a wide range of factors that impact patient conditions such as autonomic regulation, cardiovascular mechanics, acid-base balance, pulmonary mechanics, and ventilation perfusion-mismatch.

The model is dynamic, and continuously adapts to the patient in the bed as more information is captured in our platform (e.g. vital signs, ventilator information, lab results), which enables the platform and our algorithms to determine the likelihood that a patient may be trending towards an adverse physiological state. Furthermore, our model helps to answer why a patient is in a particular adverse state, which helps clinicians to determine the next course of treatment.

Etiometry has two FDA-cleared risk algorithms, powered by our model of physiology, which continuously track the likelihood that a patient is experiencing inadequate delivery of oxygen (IDO2 Index) and inadequate ventilation of carbon dioxide (IVCO2 Index). Both indices are visualized on the T3 Software, helping clinicians to determine risk levels and interventions for a patient in the ICU.

Nic: Why do I need the Etiometry Platform in the NICU?
Sc: In short, Etiometry can drive efficiency in care, and optimize decision-making and communication in the challenging NICU environment. Advancements in monitoring and support technologies in the NICU have helped improve the health of the smallest, most fragile patients. These advancements, however, have added to an already data and technology laden environment making it challenging to effectively use all the data. The Etiometry Platform enables more efficient use of clinical data, providing access and visibility to a patient’s complete data set when and where it is needed. The ability to see the trajectory of patient condition over the length of stay is important when caring for NICU patients.

Additionally, our risk algorithms have the potential to support clinicians’ early identification of at-risk patients before an event or significant deterioration of a condition occurs. These Risk Indices have been FDA-cleared and deployed in the pediatric cardiac and general intensive care environments for several years. They are now being refined and validated for smaller patients for application in the NICU.

Additional platform features are especially well-suited to the NICU environment, such as: providing clinical surveillance and remote monitoring of all patients in the units; Tools to help organize and deploy standardized protocols and patient care guidelines; Automated reporting to streamline communication
Second, our model-based approach to analytics utilizes this data in the computation of a variety of risk indices. These Risk Indices can identify specific deteriorations in physiology to aid clinicians and expedite focused individualized treatment.

Third, the collected data is permanently stored in the Quality Improvement System. This database of high-fidelity patient data is available for clinical research projects and quality improvement projects, including automated reporting.

NIC: How does Etiometry support its clinicians to optimize the benefits of the system?
SC: Etiometry's platform has been utilized in the critical care environment for several years, and we understand the patients, the challenges, and obstacles in optimizing the use of technologies and data. Our goal is to address these challenges and support the clinicians in patient care by providing a best-in-class platform, as well as clinical training and support. We are a nimble, growing company, with a talented clinically focused field team supporting our customers at the bedside and a team of engineers and data scientists to help find new ways to address clinical challenges with our technology.

The Etiometry Platform supports existing clinical guidelines in hemodynamic management, respiratory management, communication, and quality improvement. Our Quality Improvement System (QIS) is a permanent archive of all the high-fidelity patient data collected which is easily accessible and compatible with many off the shelf analytics programs for use in clinical research and quality improvement initiatives. The QIS also supports standardized reporting on clinical performance metrics, for example compliance to established patient care protocols and guidelines.

NIC: How is T3 being used by clinicians, nurses, and respiratory therapists?
SC: T3 is being used by clinicians to assess a patient’s current condition and to help inform clinical decisions either at the patient bedside or remotely. Common use cases of Etiometry include assessing patient risk with our risk indices, rounding and event review analysis, and as a valuable teaching tool.

In units where the platform has been deployed effectively it has become part of the overall patient management process, providing immediate access to critical patient data from multiple sources, visualizing and tracking unit wide patient groups, efficient visualization of specific organ system parameters for critical patients needing immediate attention, and providing historical trended data for event reviews or understanding the trajectory of the patient over a period of time.

The NICU is a unique clinical environment, which has a very heterogenous patient population. There is a need for more well-established norms for patient treatments or even normal vital signs, such as blood pressure, which Etiometry's longitudinal trends can help to elucidate.

NIC: Why should clinicians adopt the Etiometry Platform if there is nothing wrong with their current system?
SC: The Etiometry Platform excels at assembling and presenting data in a way that can support critical decision-making at the bedside. EMRs were not designed to provide this level for clinical decision support. Our platform assembles data for use at three levels: first, the individual patient data is assembled and presented in a logical and concise format at the bedside to provide immediate clinical decision support. Visualization of the trajectory of the patient’s condition is enabled through immediate availability of historical patient data—this level of visibility of detailed patient data at the bedside is unmatched.