



Preventing Sepsis with AI-enabled Prescriptive Analytics

THE SOUTHEAST HEALTH STORY

About Southeast Health

Southeast Health (FKA Southeast Alabama Medical Center Short Term Acute Care) is a not-for-profit community health system dedicated to improving the health and quality of life of the residents of southeast Alabama, southwest Georgia and the Florida Panhandle. Through advanced treatment and technology, it provides for the changing healthcare needs of the growing communities it serves since 1957.

AI-driven Results

- » **25.5%** average monthly reduction in sepsis
- » **\$442,000 - \$741,000** cost avoidance per month
- » **455** average monthly total avoided patient days





Background

The World Health Organization estimates that sepsis affects more than 30 million people worldwide every year. Any type of infectious pathogen can potentially cause sepsis.

If not recognized early and managed promptly, sepsis can lead to septic shock, multiple organ failure and death. WHO estimates put the worldwide mortality rate from sepsis at 6 million deaths annually.⁽¹⁾ No hospital is immune.

Southeast Health's Response

Through innovation and sustained performance, Southeast Health has earned a reputation for providing unparalleled diagnostic, clinical, surgical and patient care services. Its team of dedicated, highly trained professionals comprises board members, physicians, nurses, employees and volunteers, and a supportive community working collaboratively to ensure positive patient outcomes.



Southeast Health believes in pursuing the best in techniques, tools, and technology to empower their practitioners to provide the most effective care possible. When they heard that Jvion offers an evidence-based, artificial-intelligence-enabled solution to augment the considerable knowledge and skills of the physicians and nurses, Southeast Health became a willing Jvion partner.



Southeast Health by the Numbers

- » Staffed beds: **420**
- » Patient revenue: **\$340M**
- » Discharges: **19,963**
- » Patient days: **95,560**



The Divide between Data and Clinical Action

Providers everywhere are struggling to extract clinical value from their Electronic Health Records (EHRs). According to a recent poll conducted by Stanford Medicine and The Harris Poll, EHRs are not seen as powerful clinical tools; they are viewed primarily as data storage applications.⁽²⁾ However, a new set of solutions is emerging: Artificial Intelligence (AI) assets designed to help hospitals extend the use of their data to achieve quality and care improvement goals. This technology category includes *prescriptive analytics for preventable harm*, which is designed to target multiple clinical needs and adverse events – sepsis among them – across patient populations and care settings by enabling more effective clinical action.



Prescriptive analytics for preventable harm tools can consume disparate data and derive value from the information provided from the EHR, administrative data, other clinical data such as labs and prescriptions, and external data sources. The goal of these solutions is not to consume and standardize patient information; instead, they are focused on deriving clinical value from a provider's data to improve patient outcomes.

Southeast Health is one of the leading provider organizations currently using AI-enabled prescriptive analytics for preventable harm to drive quality improvements and lower rates of target diseases and avoidable events, including inpatient sepsis.

With the solution, clinicians are more effectively targeting patients on a trajectory toward a sepsis event, determining if something can be done to change the outcome, and — if so — identifying the most effective interventions that will mitigate a patient's risk. The system's solution is used by nurses, physicians, and other clinical resources to drive prevention efforts earlier in the episode of care before signs or symptoms are present. As a result, Southeast Health is enabling true primary prevention of sepsis events to lower rates of the infection and reduce resource demands.





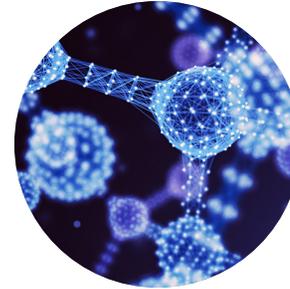
Southeast Health Adopts the Jvion Machine

Southeast Health has deployed the AI-enabled Jvion Machine—a prescriptive analytics advanced AI technology that uses Eigenspace. Eigenspace is a proven approach in solving complex challenges such as quantum mechanics, facial recognition, search and consumer behavior, and now patient deterioration.

The Jvion Machine is equipped to enable a comprehensive patient view that is amplified beyond the risk of an event to the clinical actions that will improve outcomes and ensure patient engagement.

The Eigenspace platform that underlies the Jvion Machine is an n-dimensional space within which patients are mapped along vectors and thousands of clinically relevant Eigen Spheres. Each sphere comprises patients who clinically and behaviorally demonstrate similarities. These similarities impact patient physiology and engagement propensity. Hence, they influence the effectiveness of interventions and clinical actions.

The machine is perpetually adjusting the spheres and patients mapped within the Eigenspace with every new piece of information entered into the machine.



This continual fine-tuning enables the localization and ongoing performance improvements that are characteristic of advanced AI technology.

The velocity of a patient's movement toward or away from deterioration is called a vector. The machine identifies the forces that can change the direction of a patient's velocity toward an adverse event and then maps the patient to the most appropriate and effective intervention. These interventions are rendered as recommendations based on each intervention's performance for each Eigen Sphere.



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Together, Southeast Health and Jvion Are Lowering Sepsis Rates

Southeast Health is using the power of the Jvion Machine to target potential sepsis cases within the inpatient population. The machine uses each patient's current clinical data, clinical history, and socioeconomic information to answer hundreds of questions about an individual's health and the actions that will most effectively reduce the risk of a sepsis event. Clinicians use the risk propensity outputs and recommendations to drive more efficient prevention efforts earlier in the episode of care.

This ability to see who is at risk well before any clinical signs are present is helping Southeast Health shift sepsis prevention efforts from secondary to primary prevention, thereby improving outcomes and reducing resource demands.



To date, Southeast Health system has realized:

22.5% av. monthly reduction in sepsis

455 average monthly total avoided patient days

\$442,000 to \$741,000
cost avoidance per month

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Ensuring Success—AI Adoption Considerations

Challenges to AI adoption are primarily driven by the fundamental differences between traditional technology and AI implementations. AI solutions like the Jvion Machine are intended to reduce the cognitive demands placed on clinicians. They can take data about a patient and turn it into actionable insights that drive more focused clinical attention and engagement. They are not intended to replace a clinician; they are designed to ensure that clinicians have the information they need to achieve the best possible outcome for a patient.



overall resistance to new technologies within healthcare. While there are organizations and individuals in the vanguard, the vast majority of healthcare providers are, at best, skeptical of new techniques and tools.

To overcome AI adoption challenges, it is important to have strong leadership alignment, an organizational goal supporting the adoption of AI, and a network of champions that can help roll out the solution to the broader audience.

At Southeast Health, clinical leadership owned the adoption of the Jvion Machine. They ensured that the right groups were engaged and sought change agents who would be able to effectively communicate the value and role of the machine and its outputs.

And Southeast Health nuanced their approach to implementation based on the target adverse event.

For sepsis, physician and nursing leadership collaborated to develop clinical workflows and order sets that could be applied to patients identified as high and medium risk.

This shift in mindset and clinical approach from early identification of sepsis to the primary prevention of sepsis was made possible by ensuring that the right stakeholders and leaders were aligned and engaged throughout the process.



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The Next Steps in the AI Journey

As providers continue to work to derive value from their data, AI-enabled solutions like the Jvion Machine will become a critical component to achieving clinical and quality objectives. But the success of an AI integration requires an approach that includes:

- » **An alignment of the AI asset to the strategic goals of the organization.** AI should be seen as an enabler to meeting clinical and operational strategies over the short and long term
- » **A method for measuring the effectiveness of the solution.** This is more challenging than it looks. Often AI is being applied to prevent an adverse event. Measuring the success of avoided risk can be hard to assess if a robust, proven approach is not in place
- » **The ability to quickly scale and adjust to new demands.** AI is inherently capable of addressing new challenges with very little “lift.” If a solution requires new model building and tuning for every new problem, it isn’t true AI
- » **A path to quick wins and success.** Because the drivers for AI adoption are very different from those of a traditional IT implementation, it is essential to have wins that an organization can point to as “proof” points of value. Make sure that any approach starts where success will be enabled and where champions can be leveraged to help support the broader roll out of the AI asset



For Southeast Health, success with inpatient sepsis is leading to the application of the machine to other areas even outside of the inpatient setting. This includes ambulatory care sensitive conditions, health regression, and avoidable ER and inpatient admissions.

With each new area of application, Southeast Health will work with clinicians and impacted stakeholders to ensure the right education that will lead to the most effective use of the Jvion Machine.



About Jvion

Jvion delivers healthcare's only AI-driven prescriptive analytics for preventable harm solution. By using Eigen-based technology, the machine does what simple predictive analytics or machine learning models cannot. It goes beyond high-risk patient populations to identify those on a trajectory to becoming high risk. Jvion determines the interventions that will more effectively reduce risk and enable clinical action. And it accelerates time to value by leveraging established patient-level intelligence to drive engagement across hospitals, populations, and patients.

For more information visit jvion.com, email contact@jvion.com, or find us on social media [@jvionhealth](https://twitter.com/jvionhealth).

- 1) World Health Organization Sepsis Fact Sheet, 2016
<https://www.who.int/news-room/fact-sheets/detail/sepsis>
- 2) How Doctors Feel About Electronic Health Records:
National Physician Poll by The Harris Poll. Stanford Medicine and The Harris Poll. May 31, 2018. <http://med.stanford.edu/content/dam/sm/ehr/documents/EHR-Poll-Presentation.pdf>

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