Flagler Hospital

How one of America’s oldest cities became home to one of America’s most innovative hospitals.

A 2018 winner of Best Hospitals by Healthgrades, Flagler has also earned the Gold Seal of Approval™ from the Joint Commission for primary stroke care centers, national accreditation for its total hip and total knee replacement programs, accreditation from the American College of Surgeons' Commission on Cancer, Center of Excellence designation for its bariatric surgery center, and ANCC magnet status for nursing excellence.

While their excellence was well documented, Flagler wanted to go further and tap into the power of AI to deliver against the goals of Value Based Care – better care and lower cost. Flagler understood the concept of Value Based Care deeply, having held organization-wide workshops on the subject. Indeed, one of the pillars of their Mind, Body + Spirit program was the economic health of their patients.

Value Based Care has many dimensions – a key one being managing clinical variation. Waste, a key component of clinical variation, accounts for roughly 30% of healthcare dollars. That is more than $750 billion per year for the US healthcare system. The problem, however, is so multi-dimensional, that it continues to persist – even grow – in the face of countless initiatives, governmental incentives, and penalties.

It starts with events. The sheer volume of events associated with any procedure (a lab, a drug, a puncture, rehab, office visits) is immense and with the advent of EMRs we capture everything.

Next is the sequence of events. What is the optimal order of events and how do manage the transition of those events where most errors occur.

Then there is the timing of events. When should the order of the events occur. Long wait times for diagnostic tests and slow follow up of test results can lead to delayed diagnosis or even disease progression.

Once you have solved that immensely complex problem, you need to solve the challenge of institutional inertia and resistance to change. Machines are partners for doctors, not replacements – but they need to be integrated into the workflow in a way that delivers against that goal.
Finally, we have to manage adherence. Systematically created, timely and detailed reporting to physicians, nurses, and pharmacists makes it possible to understand one's performance compared to peers and change practice to help remove unwanted variation in the delivery of care.

This multi-dimensional problem demands AI. The inherent challenge for Flagler was that they did not have any dedicated data science resources. They possessed outstanding SQL capabilities and understood their AllScripts implementation deeply, but machine learning was not a core capability.

“*We are delighted to engage with Ayasdi on this mission-critical task of creating clinical pathways for our patient population. Our ability to rapidly construct clinical pathways based on our own data and measure adherence by our staff to those standards provides us with the opportunity to deliver better care at a lower cost to our patients. Given the complexity of the challenge, using AI to solve this problem is the right approach, and Ayasdi’s CVM application makes it accessible to our practitioners, a key part of the value proposition given Flagler does not have dedicated data science resources.*”

–Michael C. Sanders, M.D., Chief Medical Informatics Officer at Flagler Hospital.

Flagler had read about Ayasdi’s Clinical Variation Management application in an Informatics journal and wanted to test it against their care process model for pneumonia. Their goals were simple:

• To rapidly and independently construct their own care process model

• Identify and understand the changes that would deliver better care (positive variation) and eliminate those procedures and events that did not (negative variation and waste)

• Apply those changes via order sets to their AllScripts EMR implementation

This is evidence-based medicine at its best – in service of their patients and comprehensive in its perspective.

Flagler chose pneumonia because of its wide variation in practice created an area where the hospital felt it was falling short. Flagler’s data set included 1,573 patients who were discharged with pneumonia as principal diagnosis. The data went back to 2014.

Flagler pulled data from five different systems using SQL (EMR, Surgical, Analytics, EDW, Financials) and loaded it into Ayasdi using the Fast Hospital Interoperability Resource (FHIR). Ayasdi’s CVM application created nine potential pneumonia care pathways, each with distinctive elements.
From here, Flagler identified the continuous and categorical variables that distinguished the care pathway groups (again, comprised of patients) and in particular, the “goldilocks” group. This “goldilocks” cohort had remarkable characteristics - if the events, sequence and timing of the suggested care pathway were followed patients enjoyed superior care:

- Their length of stay was two days shorter
- Their cost per episode was more than $1.3K less expensive
- Their readmissions rates were nearly 7X lower

Given Flagler’s admission rate for pneumonia, this represented a potential savings of more than $400K while delivering better care – the foundation of value based care.
The next step for Flagler was to review the findings with the Physician IT Group (called the PIT Crew) and to make the necessary changes to AllScripts. Physician buy-in is critical, as Adherence is a core module of Ayasdi’s Clinical Variation Management system and the ability to measure performance going forward creates data-driven conversations.

Perhaps most importantly, Flagler, in the span of just a few weeks had harnessed the power of AI to reshape their business without hiring a single data scientist. More importantly, Flagler has already completed, in only two weeks, its far more complex, care pathways for sepsis. Further, based on the ease of use of Ayasdi’s Clinical Variation Management application, Flagler has increased its expected care pathways production over the next year by 50% from eight to twelve covering everything from heart-surgery to childbirth.

This will have a material effect on the bottom line for Flagler – representing tens of millions of dollars in potential savings over a three-year period while delivering better outcomes for their patient populations.
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