USF | Muma Case Review
A publication of the Muma College of Business | University of South Florida

Volume 9 Number 2 31 DECEMBER 2024

STACEY BRANDT, JESSICA COX, KRAIG KALBY, JASON ROBB

RELYING ON ARTIFICIAL INTELLIGENCE IN MEDICAL CODING REVIEW[1]

Results of a 6-month pilot with AI (Artificial Intelligence) technology found TGH $1 million in uncaptured revenue, but was it worth the potential risk of improper coding?

Anthony Escobio, the Vice President of Revenue Cycle at Tampa General Hospital (TGH), pondered this question as he reviewed the findings from the Palantir 6-month pilot, which assessed 13,000 infusion patients in the Emergency Department. Palantir's new AIP (Artificial Intelligence Platform) solution, which had a code review function to detect and learn coding rules, could help identify potential missed coding opportunities using Palantir's Large Language Models (LLMs) to scan through unstructured clinical documentation notes.

Escobio's decision of whether to implement this technology solution relied on several unanswered questions. First, there was the question of how accurate AI could be in this new application. Second, there was the question of scope and the ratio of AI to human involvement in the process. Were they ready to take humans out of the coding process altogether, and rely completely on Palantir's solution? Or would they still need the 36 TGH coders involved, causing them to continue to pay for those resources, in addition to the Palantir AIP solution? According to the Centers for Medicare and Medicaid Services (CMS), the fiscal year (FY) 2022 Medicare FFS estimated improper payment rate was 7.46% (American, 2021). The TGH goal was to be 95% accurate.

If Escobio decided to move forward on the Palantir AIP solution, it would, without a doubt, bring in a significant volume of missed revenue for the organization. In addition to increasing revenue, the additional workload that could potentially be removed from the human coders, overworked physicians, and remaining Revenue Cycle team would have an invaluable impact on the workforce's morale. Though the positive gain was obvious, Escobio had to evaluate if this was the right decision for the organization based on the potential risks of implementing a new and industry-disrupting technology. Was he confident in the technology? There was still much to be known about Artificial Intelligence – including if it was safe to use in this complicated healthcare business where so much was at stake.

Balancing these concerns with the knowledge that if he were to approve this solution, TGH could stand to gain a significant revenue increase. However, if he chose not to approve this solution, they would digress back to identify the best solution to review all the medical coding in the approximate 187,000 encounters per year, in hopes of finding similar recaptured revenue from missed codes. No, he thought to himself, this was not going to be an easy decision to make.

Editor: [Kraig Kalby]

Industry Overview- Hospital Clinical Documentation, Coding and Revenue Cycle

What is Clinical Documentation?

Clinical documentation is the process of documenting a patient's medical care into their medical record. At TGH, a physician or other authorized healthcare professional can enter the information into official records. The patient's healthcare provider is responsible for documenting complete and comprehensive clinical information, not only to capture the patient's diagnosis and treatment journey, but it is also how hospitals are paid by commercial insurance companies and government payers (i.e., Medicare, Medicaid).

What is Medical Coding?

Medical coding is the action of taking a patient's health care information such as medical procedures, diagnosis, necessary medical equipment, and medical services information from the physician's notes and applying universal medical alphanumeric codes. Healthcare providers and insurance companies use these standardized codes for billing and record-keeping.

A medical coder is a trained professional who translates details from a patient's medical documents, such as physician's notes, lab reports, procedures, and diagnoses into universal medical codes to maintain accurate medical records. Medical coding is used to correctly ensure the facility bills and collects on the services provided. Coding is also important in accurately assessing an organization's quality of care. Insurance companies and healthcare providers use medical codes for the diagnosis, procedure, and medical services provided. The codes act as a universal language to quantify healthcare visits and make physicians' clinical documentation more precise for insurance companies and other physicians who may have a hand in the patient's care journey.

According to the American Academy of Professional Coders (AAPC), the following scenarios can further illustrate how coding and billing work. An example of diagnosis grouping in an inpatient facility is provided below.

Examples of Diagnosis Grouping in an Inpatient Facility

A patient was admitted to an acute care hospital with a diagnosis of chronic obstructive pulmonary disease (COPD) with acute exacerbation. The patient was discharged after a four-day stay. If a claim had been submitted with this *single* condition, the DRG assignment would reflect what is found in Figure 1.

ICD-10-CM Code	Descriptor	DRG	DRG Description	Payment*
J44.1	*Chronic obstructive pulmonary disease with (acute) exacerbation*	192	COPD without CC/MCC	$11,000

Figure 1: Single Condition DRG Assignment

However, when a clinical documentation specialist (coder) reviewed the documentation before discharge, they noticed that on the second day of the four-day inpatient stay, the patient was put on ventilator assistance. They observed P02 (partial pressure of oxygen) <55, PCO2 (partial pressure of carbon dioxide) >50, and pH (power of hydrogen) <7.35 levels documented in the lab report. The coder sent an inquiry to the attending physician. The patient's chart was appropriately documented and re-coded. In this scenario, the patient was discharged on day four with the diagnoses of COPD with acute exacerbation and acute respiratory failure with hypoxia and hypercapnia resulting in a more accurate DRG assignment as displayed in Figure 2. This example shows that the more severe the DRG grouping, the higher the reimbursement is expected to be.

ICD-10-CM Code	Descriptor	DRG	DRG Description	Payment*
J44.1	*Chronic obstructive pulmonary disease with (acute) exacerbation*	190	COPD with MCC	$15,000
J96.01	*Acute respiratory failure with hypoxia*	190	COPD with MCC	$15,000
J96.02	*Acute respiratory failure with hypercapnia*			
ICD-10-PCS Code				
5A09357	*Assistance with respiratory ventilation, less than 24 consecutive hours, continuous positive airway pressure*	190	COPD with MCC	$15,000

Figure 2: Updated DRG Assignment

What is Revenue Cycle?

The revenue cycle is what connects the patient's care with their benefit plans through a highly regulated standard bill form. The bills produced by the revenue cycle team allow the ability to create cash flow that pays for the care, but more importantly, serves as the primary source of reliable healthcare data for everything from quality and safety to efficiency and cost.

The detailed story behind every encounter is codified with incredible specificity. Using highly trained staff and advanced technologies, the contemporary hospital coding department functions as an intelligent abstracter of extremely complex medical conditions and associated treatments. This data is used to fuel payment streams and inform all facets of healthcare delivery across the world. The reason that claims data is the most highly relied upon data source available for most applications is because of the trust in international coding standards and the industry's reputation to ensure accuracy with its reporting

(Escobio, A., personal communication, August 2023). Figure 3 depicts the revenue cycle management process.

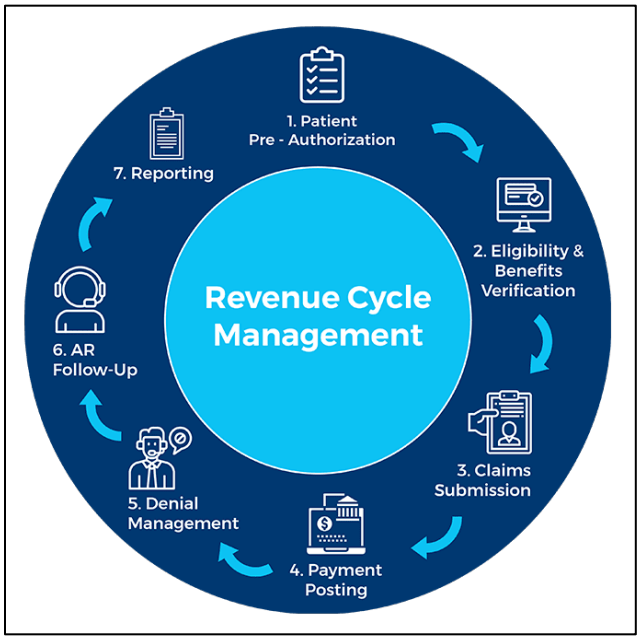


Figure 3: Revenue Cycle Management

TGH Overview

Tampa General Hospital (TGH) is a private, not-for-profit hospital and one of the most comprehensive medical facilities in Florida. TGH serves a dozen counties among other competitors, as depicted in Exhibits 1-3, and has the only Level I Trauma Center in the Tampa Bay area (TGH fact sheet, n.d.). The hospital provides a robust inventory of medical helicopters and is one of the only two American Board of Anesthesiology-verified burn centers in Florida. TGH has a leading organ transplant center, a certified comprehensive stroke center, and multiple other high-quality centers that specialize in complex ailments. TGH is also highly active in academia as the primary teaching hospital for the University of Southern Florida Health Morsani College of Medicine (TGH fact sheet, n.d.). As an academic health system, it focuses on three missions: Patient care, Teaching, and Research. Through its mission as an academic health system, TGH has become the region's safety-net hospital that cares for anyone, regardless of their ability to pay. It funds 34% of the health charity care costs in Hillsborough County and in 2020 the hospital provided a net community benefit worth more than $182.5 million (Tampa General Hospital, 2021).

TGH prides itself in being a leader within the medical community and focuses on its shared purpose of "We Heal. We Teach. We Innovate. Care for Everyone. Every day." (TGH fact sheet, n.d.). TGH's strategy is guided by its vision to be the safest and most innovative academic health system in America. Serving an area of over six million people, TGH differentiates itself by being a high-acuity academic medical center that cares for the sickest patients, teaches future physicians and clinicians, and conducts leading advanced research.

Tampa General's Culture of Innovation

Tampa General was no stranger to innovation and embraced Artificial Intelligence, Predictive Analytics, and Machine Learning. In 2019, the organization launched a high-tech "mission control" clinical command center which uses artificial intelligence and predictive analytics to improve and better coordinate patient care at a lower cost. Tampa General's Business Intelligence team, under the Information Systems Division, produced a solution to supplement the existing workforce by using Artificial Intelligence. The team went to work to identify a potential solution.

The Business Intelligence team had already been working on a long-term innovation strategy for the organization, with a desire to compete using data and analytics. According to Etter Hoang, Senior Director of Data Analytics at Tampa General, "The data capabilities at TGH were lacking in strategy and structure (no data warehouse, tooling that only allowed for basic reporting and dashboards). TGH needed a solution that would allow them to organize and ingest data to deliver insights to the clinical and operational teams to drive improvements and value to the organization and patients" (personal communication, September 2023).

Hoang also noted that Tampa General was lacking in data engineering expertise to design a modern data architecture that would allow the data team to grow with the ever-changing demands of healthcare, such as the deployment of artificial intelligence and machine learning.

As such, the team was already in the market for a technology partner and developed a brief list of potential partners, including IBM Watson, Qlik, Microsoft, Google, and Palantir. While the first four potential vendors had the technology, TGH partnered with Palantir because they offered a true partnership where they would bring their engineers and solve the organization's hardest problems alongside the TGH team.

The culture of innovation did not just arise during this time, it was adopted years ago to execute a future vision. TGH adopted an electronic health record system (EHR) called Epic a decade earlier as they wanted to modernize their record system while having interoperability to work with multiple other systems. This was a key feature that added an enormous amount of value to the Palantir project. This provided the data set vital to the first Palantir pilot.

Revenue Generation

Being a non-profit organization, TGH generated revenue through multiple means. The first and most substantial generator was patient services that were billable through the care provided. Exhibit 4 provides TGH's primary service areas and market share for fiscal years 2020-2022. The services included everything from surgeries, tests, treatments, and medical stays. Patient insurance or government programs, such as Medicare and Medicaid, typically pay for these types of services. Other areas that were unique to the non-profit status included donations, fundraising, grants and research funding, investments, and community benefit programs. These lines of revenue generation supported ongoing operations to provide the best care in the region and funded state-of-the-art research that facilitated breakthrough technology and continued growth. Hospitals relied on clinical documentation by the care providers to generate appropriate billing codes. Exhibits 5 and 6 provide a brief overview of hospital finance basics and TGH's 2020-2022 financials that present insight into the unique economic environment in which hospitals operate.

Technology Overview- Tampa General Hospital

While undergoing his process to assess vendors and decide on which solution or combination of solutions to move forward with, Escobio had to consider the value-adds of each vendor and how adopting their technology would affect the TGH ecosystem. For the problem that TGH was looking to solve, the technology solutions that Escobio was considering were Palantir AIP, Milagro AI, and 3M Health Innovation Systems.

Palantir was an innovative publicly traded company that built software to empower organizations to create and govern artificial intelligence. Palantir had a wealth of healthcare expertise to inform Tampa General's analytics roadmap; They had the team needed to work with Escobio and the organization's leadership to identify their biggest challenges and create a solution while removing any blocks during the process. Palantir AIP (Exhibit 7), the solution being considered, would allow TGH to leverage the power of their existing machine learning technologies alongside Large Language Models (LLMs), directly in existing platforms that TGH was already using. LLMs were deep learning algorithms that could recognize, summarize, translate, predict, and generate content using large datasets. This solution would be created through collaboration between Palantir and TGH who would retain the intellectual property on the custom solution.

3M was a multinational conglomerate with over 60,000 products in its portfolio ranging from adhesives to advanced AI solutions. The solution that Escobio was assessing was M*Modal Catalyst which was 3M's cloud-based clinical intelligence platform and core natural language understanding (NLU) technology framework that underpinned the 3M M*Modal clinician solutions portfolio and unified it into a cohesive whole to drive clinical tasks and smarter workflows. This solution was interoperable with TGH's EMR and served as an extensible and flexible framework to aggregate, abstract, and present clinical information, both structured and unstructured. A semantic reasoning engine that leveraged NLU technology allowed for the development and deployment of task-specific, purpose-built workflow applications and solutions designed to improve clinical, operational, and financial outcomes. Escobio was very bullish on 3M and felt that the company was creating some amazing things but was unsure if this solution would cover the gaps that TGH currently had.

The MilagroAI platform fully automated the current complex, manual, costly process of EMR data preparation and clinical data understanding (data abstraction). Health systems were using the MilagroAI platform to automate complex and costly repetitive tasks such as surveillance for hospital-acquired infections or coding and dramatically sped up the process of developing new AI-based predictive algorithms with better results. The solution Escobio was considering was Automated Coding, where MilagroAI's advanced technology transformed the medical billing processes by interpreting the clinical language used in patient charts in real-time, accurately assigning medical charge codes with unparalleled precision, all without requiring human intervention. In comparison to Palantir AIP, it was a similar solution but required a custom-built NLP (Natural Language Processing) vs. LLM (Large Language Model) that AIP was using.

Milagro was the only vendor with a proven track record in the healthcare space. It was also a start-up much smaller in scale than the other options in the market. With a strategic partnership, TGH could help a smaller and more agile Milagro develop their technology and build out a platform capable of supporting larger healthcare systems, but at a discounted rate for TGH. Therefore, it could deliver a higher yield ROI for TGH, whereas the other vendors would require more physical and human capital to deliver.

When evaluating the technology and which vendor to ultimately partner with, there were four primary factors Escobio had to consider: Capital Investment, Human Capital Investment, Return on Investment, and Speed to Market.

Milagro required the least amount of capital investment, required very little human capital uplift, presented the strongest return on investment (10:1), and had the fastest speed to market as they already had a proven track record working with reputable organizations in the industry. Hence, Milagro has heavily integrated into TGH operations since the beginning of their agreement which started in 2020.

The market caught up with the ambitious startup Milagro. Now, larger AI companies like Palantir outpaced Milagro in terms of new development. Even though Milagro was strategically aligned with TGH in terms of coding, Palantir received the heaviest capital investment and human capital uplift. Palantir had a scale unparalleled to any technology except EPIC (TGH's EHR) and therefore could outpace Milagro in terms of future development.

Escobio had the obligation to not only partner with the vendor that could deliver the best overall return for TGH today but also remain on the lookout for the best technology of tomorrow. This was where Escobio's regular touchpoints with TGH Innoventures (the innovation and venture capital arm of TGH that worked with emerging healthcare companies that were redefining the care experience for clinicians and patients) would pay dividends.

Escobio knew there were gaps in TGH's technology stack around coding, which was why it was TGH who sought out a technology solution. Escobio also knew that the current process needed to change but was still unsure of the direction to take. Part of the discussion was around TGH's risk tolerance and innovative spirit – was TGH on the bleeding edge of technology, known as early adopters? Was TGH more on the 'fast follower' side of the technology adoption curve?

Mark Moseley, MD, President of USF Tampa General Physicians and Board-Certified Emergency Medicine said of his physician colleagues that they were "skeptical by nature (laggards on the adoption curve) and did not go into medicine to be glorified data entry specialists" (personal communication, September 15, 2023). This was because everything done in medicine for the last couple of decades has taken the physicians away from the bedside. In his opinion, there must be a return to "sanity" in medical practice.

TGH Clinical Documentation and Coding Challenges

Part of the reason for incomplete clinical documentation which could lead to miscoding was due to the business's nature. For instance, there was less than ideal clinical documentation in the Emergency Department given the high volume of critically ill patients and the intensity of the work at hand. Every minute spent typing was a minute not spent with a patient, according to Mark Moseley, MD, President of USF Tampa General Physicians and Board-Certified Emergency Medicine (personal communication, September 15, 2023).

Additionally, a factor in complete clinical documentation was that only physicians could regulatorily & clinically document diagnoses or contributing factors; others on the care team (i.e., nurses, nutritionists, respiratory therapists, etc.) were not permitted to provide clinical documentation. For example, in the Neonatal Intensive Care Unit (NICU), if a baby was malnourished, that may contribute

to the child's condition on admission and to the child's treatment. However, as this was not usually the main diagnosis, the attending physician would not include that in the clinical documentation. The physicians were focused on the main issue at hand (i.e., respiratory distress, cardiac arrest, etc.) and overlooked the inclusion of that piece of information in the clinical documentation. If they had, however, that may have been an important part of the coding process from a billing, collection, and quality measure perspective.

If technology were available that would allow clinicians to include those notes in the medical history or overview that would serve that up to the physicians effortlessly, the physicians could include that information in their clinical documentation. Additionally, if there was an AI tool available to scan the clinicians' notes and flag this valuable information as part of the record, but not a part of the physician's clinical documentation, the billing and coding could be appropriately revised to accurately reflect the actual comprehensive clinical facts. This not only led to proper revenue capture but also led to proper quality assessments. For example, if a patient transfer from another hospital was undocumented and upon transfer was assessed and deemed not likely to survive; TGH took the hit on its mortality quality measure (Laura Haubner, MD, TGH Chief Quality Officer and Board-Certified Neonatologist, personal communication, Aug 2023).

Physicians Were Desperate for a Solution to Return to Joy

Physicians were not trained to be clinical documentation experts, according to Moseley. They were trained to diagnose and treat. Most of what physicians learned about documentation was learned through osmosis, by being in the business every day. Coding was complex and unless you used it every day, he said, it was not likely one would know the difference between various codes. Physicians were learning from doing. In his opinion, it was a terrible waste of the physician's skillset. He felt the physician's job was to document well to tell the story of the patient care within the chart to understand the thought processes and care provided. He said the last 10 years in medicine just added more work to the clinicians' jobs. He said his physician colleagues were open to AI and technology – they were desperate for a solution to return joy to them.

Other clinical documentation issues stemmed from a clunky, time-intensive electronic health record input process. For TGH's clinical team members, including nurses, physicians, and advanced practice providers, most of their time in daily work was spent interacting with the Epic EHR (Electronic Health Records) system. Given the tremendous amount of time the team members and providers spent in Epic EHR, there was a significant connection between their experience with Epic EHR and their overall job satisfaction.

Beyond satisfaction, there was plenty of data to support the strong connection between EHR experience and burnout in the medical literature. In fact, a recent study by Melnick et al. (2020) demonstrated a statistically significant dose-response correlation between EHR usability and physician burnout. Additionally, three of the seven key drivers of burnout were directly impacted by the EHR experience: workload/job demands, work-life integration, and efficiency/resources. Burnout was not only a risk to the team members themselves but had been shown to directly increase rates of medical errors with a 1-point increase in burnout correlated to a 3-10% increase in medical errors. Burnout was also a significant driver of both team member and physician/provider turnover with a cost of up to $1.2 million per physician and $46,100 per nurse.

Tampa General's medical staff was comprised of employed physicians through its Tampa General Medical Group (TGMG) division, USF Health Morsani College of Medicine Physician Group, and

private practice physicians. All physicians must apply for privileges at the hospital to see their inpatients or to perform surgeries. There is no financial component to this – it's a matter of providing documentation and conducting a background check to ensure they are in good standing and are credentialed to practice in the state of Florida.

The TGMG physicians are all employed by the hospital, and salaries are based upon 'Fair Market Value', which is a process by which their roles, responsibilities, and specialties are audited and compared to the Tampa market (which can be vastly different from Orlando or Miami, for example). This work is done by a third party, such as MGMA or Sullivan Cotter. This must be done for every physician contract to ensure Tampa General is paying a fair amount and not exceeding the market, which could put the non-profit hospital's tax-exempt status at risk.

USF Health physicians are employed through USF Health Morsani College of Medicine. However, financial support is often provided by Tampa General, either in the form of a faculty support agreement (which would be some portion or the entire portion of the salary, again based on Fair Market Value); income guarantee agreement which could include a portion of the salary for a set time until the physician recoups enough revenue to cover the salary; or a recruitment assistance agreement where the hospital would pay for the recruitment of the physician. There are various regulatory rules around each of these models. Private practice physicians are physicians in the community who run their practices as businesses, and there is no financial arrangement between them and the hospital.

There are also medical directorships and leadership roles that may be filled by TGMG, USF Health, or private practice physicians that are reimbursed for fulfilling certain leadership roles and responsibilities, such as a medical director of a service line, such as Heart and Vascular Institute, where the physician has specific duties to help build and lead the program along with their administrator counterparts.

On the nursing and clinician side, those are positions paid for by the hospital to provide services within the hospital or any of its outpatient centers. These may be full-time, part-time, or short-term contracts. Those are paid in the same manner as the physicians, where each position is scoped and the salaries are developed based on market data, except the contract labor, which is paid at a premium but does not include any benefits.

The point was that the clinical documentation process was ripe for errors due to the complexity of the process from a time and technological perspective. Having an AI tool, such as Palantir AIP, may not have alleviated the time spent in the EHR documenting, but it could pick up where physicians failed to accurately document. Having this tool as a safety net could provide the clinicians with a sense of relief knowing multiple tools are employed to capture diagnoses accurately and appropriately for billing.

TGH also had a significant alarm fatigue issue with the overuse of the Best Practice Advisory (BPA) functionality in Epic EHR causing unnecessary disruptions in our clinical team members' daily work. The combined result of all the metrics was a daily work experience for thousands of TGH nurses, physicians, and other clinical providers full of inefficiency, non-value-added work, and hours of outside-of-shift documentation burden. In fact, 94% of TGH's ambulatory providers spent time outside of a typical 7 a.m.-5:30 p.m. time documenting in Epic EHR, with over 20% spending >1 hour of 'pajama time' a day and 4% spending over 2 hours a day (Nishit Patel, MD, TGH Chief Medical Information Officer, and Board-Certified Dermatologist; Aug 2023).

With the promise of what AI could do to support the business of healthcare, several potential downsides need to be addressed. In an article shared by the New York Times, there is a concept of AI hallucination where AI begins to make things up (Nytimes.com, 2023). The article stated, "When ChatGPT was recently asked how James Joyce and Vladimir Lenin first met — an encounter that has never been confirmed — this is how it responded:

> *"James Joyce and Vladimir Lenin met in Zurich, Switzerland in 1916. Both men were living in exile in Zurich during World War I. Joyce was a writer and Lenin was a revolutionary. They met at the Cafe Odéon, a popular gathering place for artists and intellectuals in Zurich."*

Because generative AI does not decide what is true and what is not, and AI may fabricate information, the technology's reliability comes into question and causes more skepticism around AI. Also, the issue of bias could occur. Palantir addressed these issues by leveraging multiple large language models (LLM) instead of just one to reduce the chance of hallucination or bias. It may be likely that one LLM produces a hallucinated answer. But 10 LLMs used at the same time producing the same hallucinated answer is less likely.

The Decision

"To not use AI in healthcare would be a crime". -Mark Moseley

According to Mark Moseley, physicians are skeptical by nature – they are a conservative group. The promise of AI in healthcare is real – it is far from '*A Space Odyssey*.' From his perspective, it is about risk tolerance. Coding is arcane and difficult. From a workforce perspective, it is difficult to find people who know this field, it is difficult to spend the time and money to stay up to date, and humans miss things. We must be careful and insulate the organization against AI hallucinations and mistakes, ensuring the reliability is extremely high. But we cannot be Luddites and must use this tool.

Options

Anthony was left with a crucial decision to make. Was Palantir's AIP the best tool to help the coders more accurately code and capture revenue they may have been leaving on the table? Additionally, could it help ensure TGH's quality indicators were accurately captured? And even if so, is it worth the risk of improper coding, adding more work to the coder's jobs, and AI 'hallucinating' or creating bias? He had to decide. Should he:

- *Do nothing:* One option was to do nothing new and continue to work on coding using human coders and the 3M technology that serves up recommendations to the coders. This would satisfy some of the reservations Escobio had about incorrect coding and the implications that it would bring, including paybacks and potential downgrades in quality ratings, as well as scrutiny by the Office of Inspector General (OIG).

- *Continue to pilot Palantir AIP:* Another option was to move forward with Palantir AIP in the pilot model by expanding into different areas of the hospital, in small incremental ways to determine if there was a potential to implement the program across the organization. Continue partnership with Milagro which is continuing to yield a massive ROI while implementing Palantir AIP. Milagro is a low-cost high-yield technology that will continue to deliver while the innovation of Palantir will outpace Milagro in the coming years.

- *Fully implement Palantir AIP:* Another option was to use the pilot as an indication that AIP could be implemented fully right away across the organization. This would take a methodical approach with a strong change management process in place, along with strong AI governance around the technology. This would be a great option if TGH had a higher risk tolerance.

- *Implement another technology:* A third option was to continue to move forward with other technologies other than Palantir AIP. The team could continue to use Milagro for surgical encounters and look for other innovative solutions for the rest of the patient encounters to supplement the coding team and the 3M solution. This would be an option if there were concerns specific to the Palantir AIP tool, but the premise of using AI to augment the coding process.

- *Create a governance committee to help make the decision:* A final option would be to pull a group of executives together with various perspectives, including the subject matter expert, and review the problem and potential technology solution. This would allow all viewpoints to be shared, the pros and cons of the technology would be explored, and any personal bias for or against the solution would not be a factor.

The committee would have clear insight into all aspects of the issue and potential solutions, and it would not be incumbent on one person to make the difficult decision.

References

AAPC. (n.d.). *What is clinical documentation?* https://www.aapc.com/resources/what-is-clinical documentation.

Melnick, E. R., Dyrbye, L. N., Sinsky, C. A., Trockel, M., West, C. P., Nedelec, L., Tutty, M. A., & Shanafelt, T. (2020). The association between perceived electronic health record usability and professional burnout among US physicians. *Mayo Clinic Proceedings*, *95*(3), 476-487. https://doi.org/10.1016/j.mayocp.2019.09.024

Nytimes.com. (2023, May 1). The New York Times - Breaking News, US News, World News and Videos. https://www.nytimes.com/2023/05/01/business/ai-chatbots-hallucination.html

Tampa General Hospital. (2021). *Tampa general hospital foundation inc form 990*.

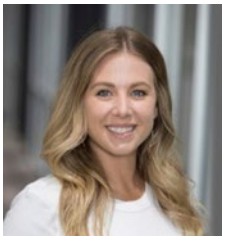
TGH fact sheet. (n.d.). Best Hospital in Tampa | Tampa General Hospital. https://www.tgh.org/about-tgh/tgh-fact-sheet

Acknowledgements

This case is based on interviews with executives and physician executives at Tampa General Hospital, including: John Couris, President and CEO; Anthony Escobio, TGH Vice President of Revenue Cycle; Rachel Feinman, TGH VP of Innovation; Laura Haubner, MD, TGH Chief Quality Officer and Board Certified Neonatologist; Etter Hoang, TGH Senior Director of Data Analytics; Mark Moseley, MD, President of USF Tampa General Physicians and Board Certified Emergency Medicine; Nishit Patel, MD, TGH Chief Medical Information Officer and Board Certified Dermatologist.

Biography

Stacey Brandt is the executive vice president and chief strategy and marketing officer at Tampa General Hospital, a nationally renowned non-profit academic medical center. Brandt is responsible for overseeing the development and execution of the organization's strategy and market growth initiatives, market planning, marketing and advertising, media relations, corporate communications, physician relations, business development, service line strategies and growth, external affairs, and project and resource management.



Jessica Cox is the Director of Growth, Integration & Operations at Sight360. Jessica is a member of the executive leadership team, a private equity organization, responsible for the strategic operations of 19 Vision Care locations (Ophthalmology, Optometry, Optical Retail) ensuring they are running at elevated levels of efficiency for the complete patient lifecycle.
Directly managing Credentialing, Centralized Referrals, and Contact Center Departments.

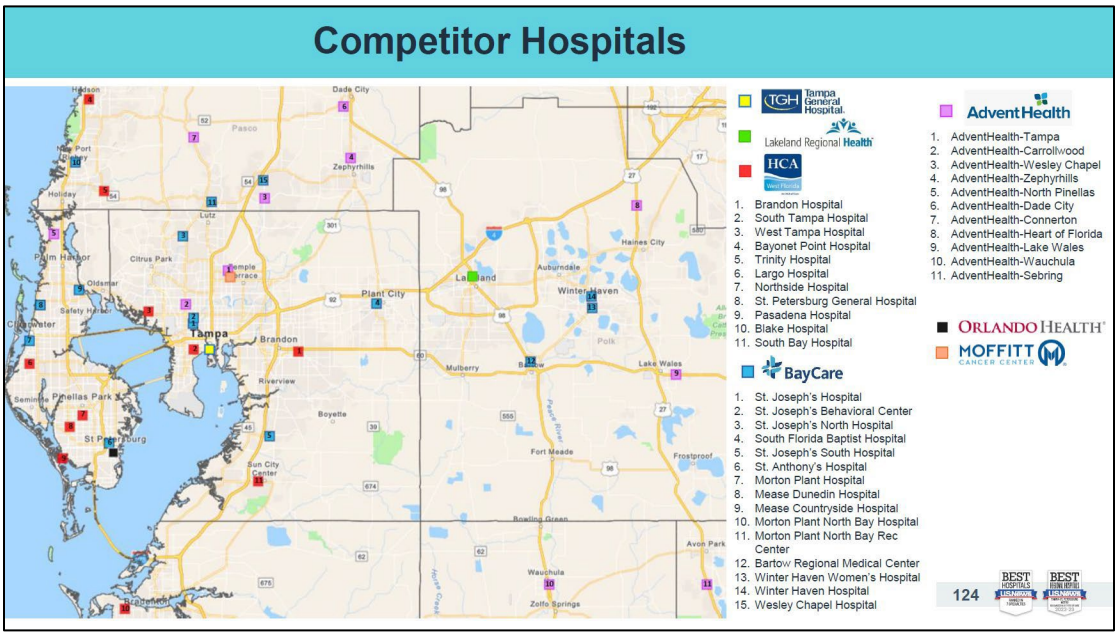
Jason Robb is a Senior Account Executive at Placer.ai where he specializes in helping organizations implement Artificial Intelligence, Data, and Analytics into their 'go to market' strategy. Jason is a former Green Beret with 12 years of military service, specializing in Communications and Intelligence. He has a Bachelor of Science degree in Economics from the University of South Florida..

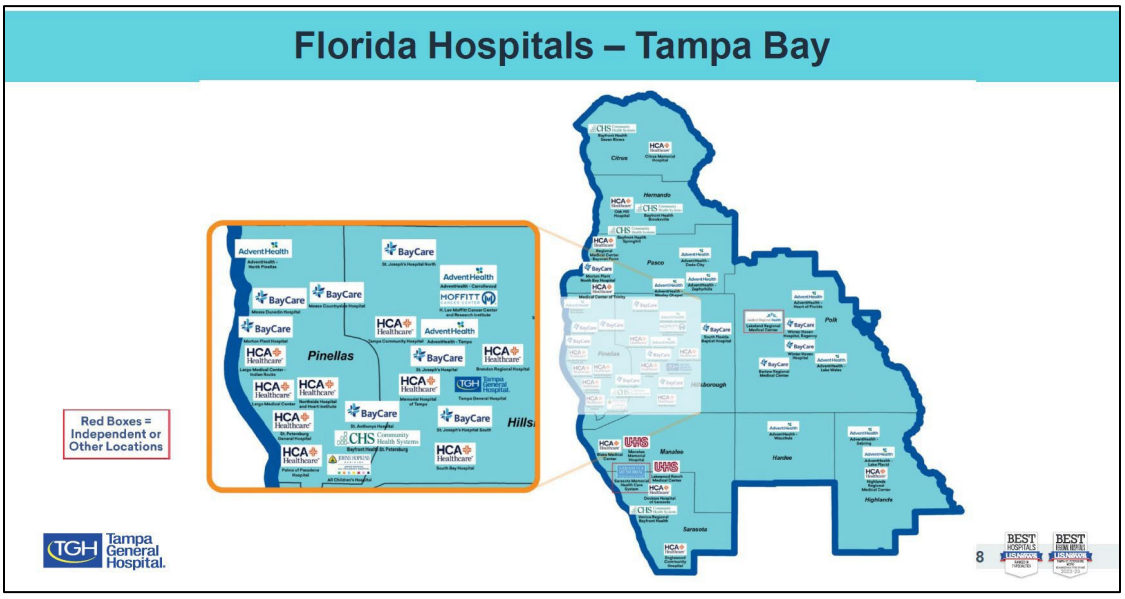
Kraig Kalby is the Chief Executive Officer at Kalby Consulting Group LLC. KCG LLC focuses on providing interim integrator services, leadership and management coaching, and talent recruiting to small businesses and start-up companies. Kraig has a Bachelor of Science degree in Organizational Leadership and a Master of Science in Strategic Leadership from the University of Charleston West Virginia.

Exhibit 1: TGH Footprint

Source: Tampa General Hospital, 2023, *Market Assessment*.

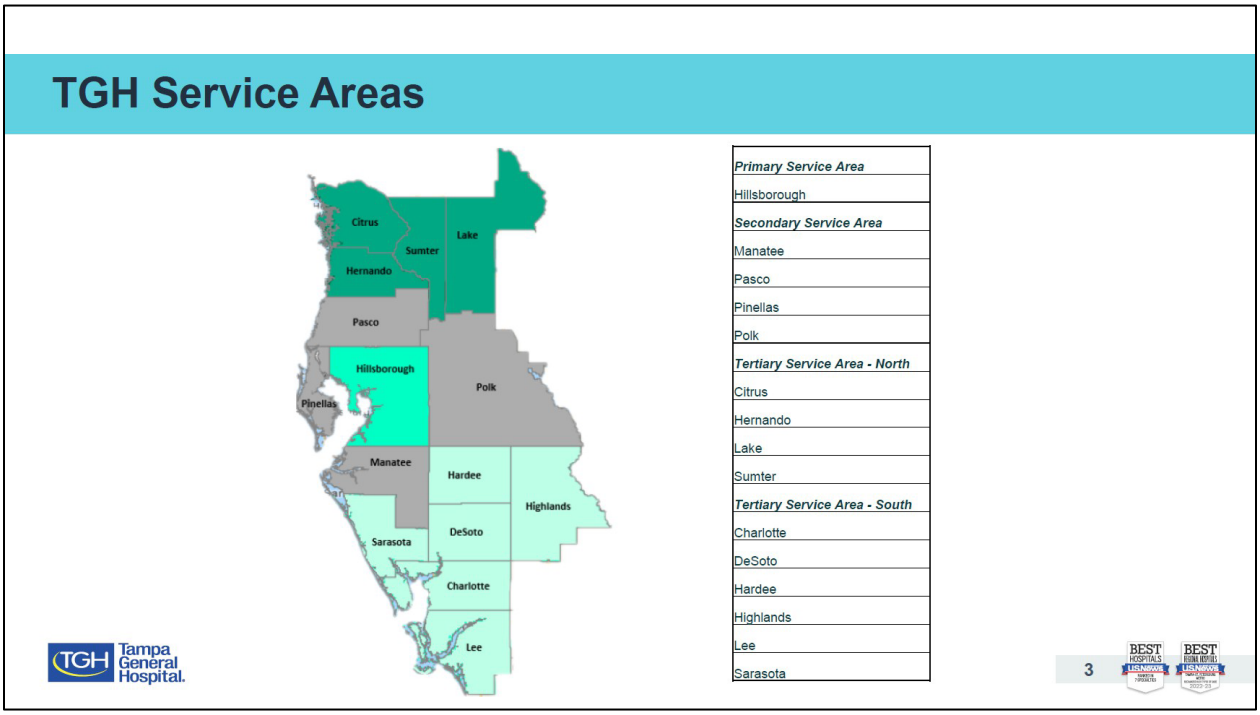
Exhibit 2: TGH Competitor Hospitals





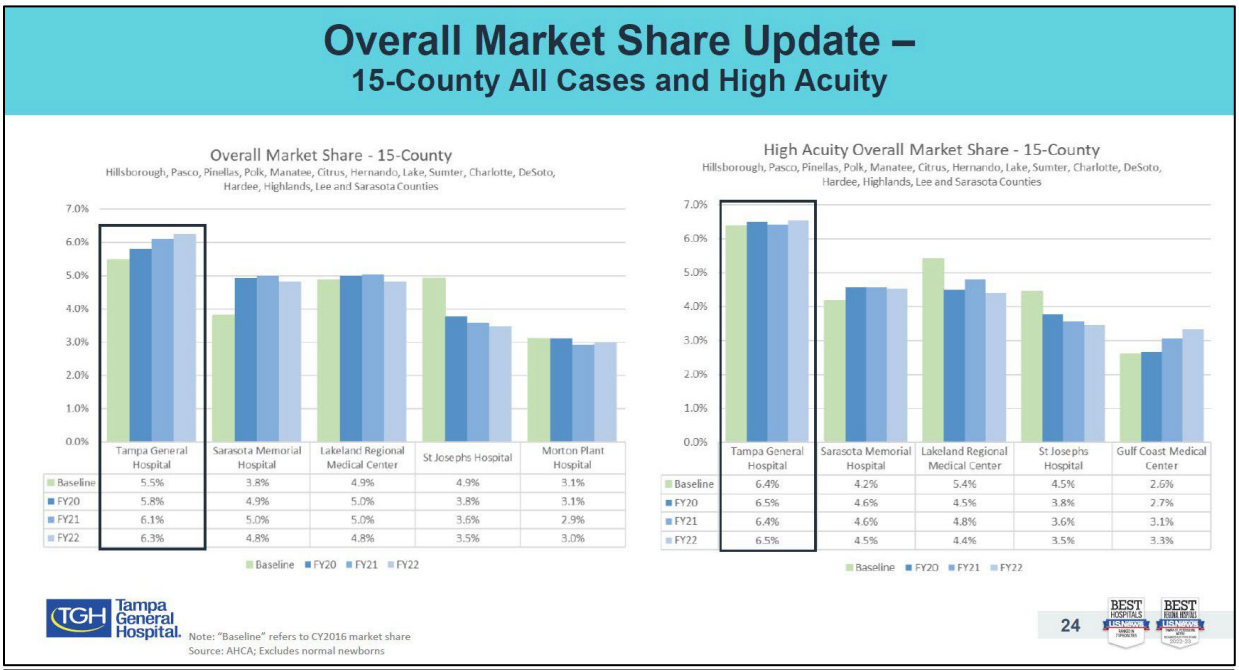
Source: Tampa General Hospital, 2023, *Market Assessment*

Exhibit 3: TGH Service Areas



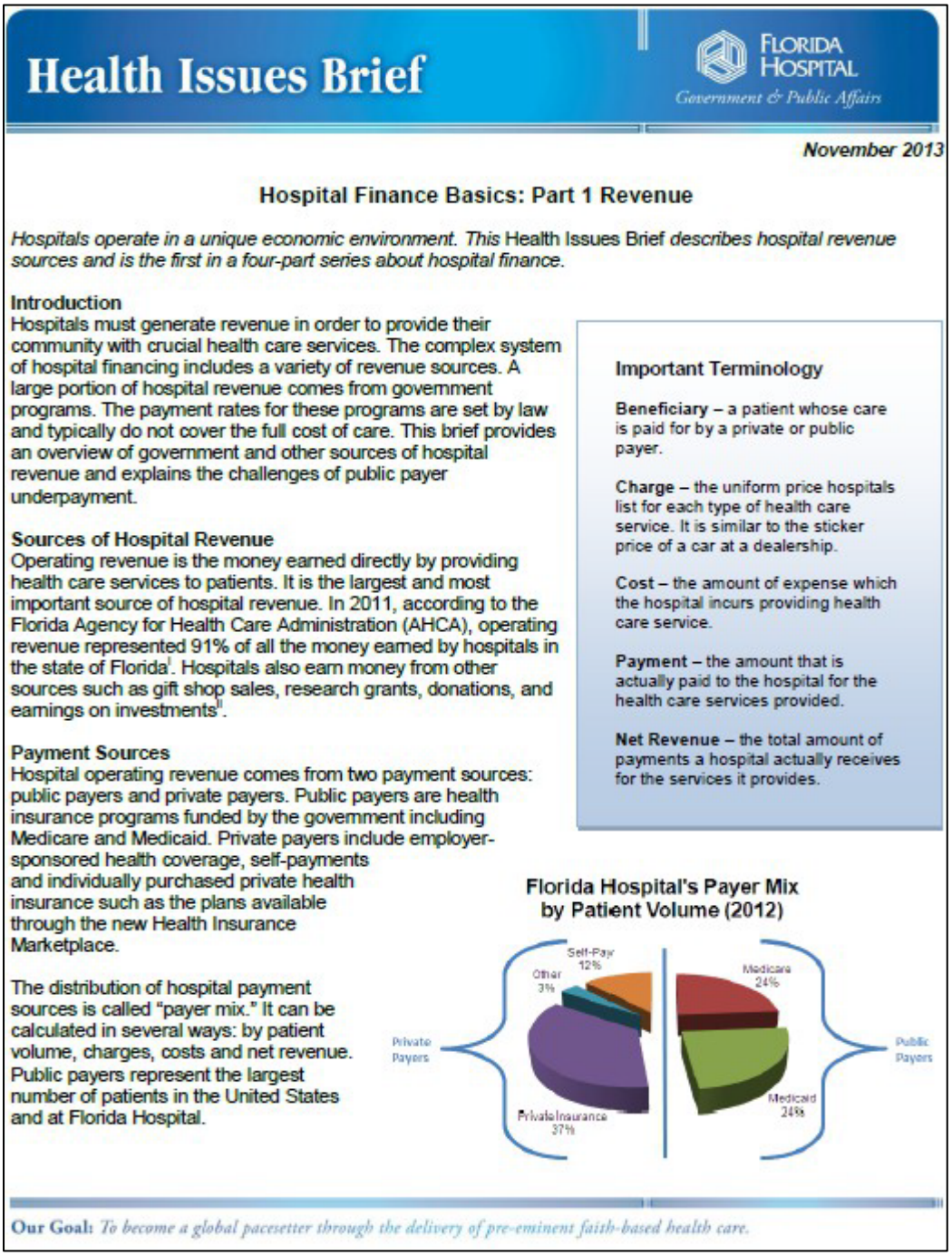
Source: Tampa General Hospital, 2023, *Market Assessment*

Exhibit 4: TGH Market Share



Source: Tampa General Hospital, 2023, *Market Assessment*

Exhibit 5: Hospital Finance Basics



Health Issues Brief

Florida Hospital
Government & Public Affairs

November 2013

Hospital Finance Basics: Part 1 Revenue

Hospitals operate in a unique economic environment. This Health Issues Brief *describes hospital revenue sources and is the first in a four-part series about hospital finance.*

Introduction
Hospitals must generate revenue in order to provide their community with crucial health care services. The complex system of hospital financing includes a variety of revenue sources. A large portion of hospital revenue comes from government programs. The payment rates for these programs are set by law and typically do not cover the full cost of care. This brief provides an overview of government and other sources of hospital revenue and explains the challenges of public payer underpayment.

Sources of Hospital Revenue
Operating revenue is the money earned directly by providing health care services to patients. It is the largest and most important source of hospital revenue. In 2011, according to the Florida Agency for Health Care Administration (AHCA), operating revenue represented 91% of all the money earned by hospitals in the state of Florida[i]. Hospitals also earn money from other sources such as gift shop sales, research grants, donations, and earnings on investments[ii].

Payment Sources
Hospital operating revenue comes from two payment sources: public payers and private payers. Public payers are health insurance programs funded by the government including Medicare and Medicaid. Private payers include employer-sponsored health coverage, self-payments and individually purchased private health insurance such as the plans available through the new Health Insurance Marketplace.

The distribution of hospital payment sources is called "payer mix." It can be calculated in several ways: by patient volume, charges, costs and net revenue. Public payers represent the largest number of patients in the United States and at Florida Hospital.

Important Terminology

Beneficiary – a patient whose care is paid for by a private or public payer.

Charge – the uniform price hospitals list for each type of health care service. It is similar to the sticker price of a car at a dealership.

Cost – the amount of expense which the hospital incurs providing health care service.

Payment – the amount that is actually paid to the hospital for the health care services provided.

Net Revenue – the total amount of payments a hospital actually receives for the services it provides.

Florida Hospital's Payer Mix by Patient Volume (2012)

Our Goal: *To become a global pacesetter through the delivery of pre-eminent faith-based health care.*

Source: Florida Hospital Government & Public Affairs, Nov. 2013, *Health issues brief*

Public Payers
Medicare is paid by the federal government with taxes collected from employees and employers. It provides health coverage to individuals over the age of 65 as well as people with some specific disabilities. In 2011, Medicare covered 48.7 million people[iii].

Medicaid is paid by both the federal and state government from taxes. Medicaid provides health coverage for eligible low-income individuals and families. It also covers people afflicted by certain chronic conditions or disabilities. It is estimated that 70.4 million people were enrolled in Medicaid for a least one month in 2011[iv].

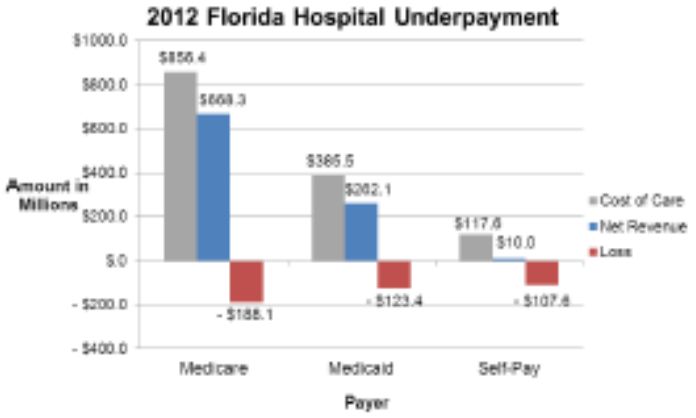
Private Payers
Health Maintenance Organizations (HMOs), Preferred Provider Organizations (PPOs), Point of Service (POS) plans, and indemnity insurance are examples of private health care coverage. Beneficiaries of private health plans may be responsible for paying a part of their health care charges depending on the details of their plan. This is called cost-sharing and includes co-pay, co-insurance, and deductible payments.

Payment Rates
Private health insurance groups typically negotiate discounted payment rates with hospitals. Conversely, Medicare and Medicaid hospital payment rates are non-negotiable. They are set by laws and administrative rules. Medicare pays hospitals a lump sum payment for each patient. The payment amount is determined by the patient's Diagnostic Related Group (DRG) for the patient's medical condition. Medicaid payment processes vary by state. In Florida, Medicaid typically pays hospitals using predetermined DRG rates similar to Medicare.

Uncompensated Care
Uncompensated care includes charity discounts, bad debt, and underpayment from public payers such as Medicare and Medicaid.

Government Losses
The non-negotiable payment rates of Medicare and Medicaid typically do not cover the actual costs of patient treatment. The shortfall between cost and reimbursement is called underpayment and is the main form of uncompensated care. The American Hospital Association reported that in 2010 aggregate Medicare payments to hospitals covered only 92% of the costs of treating Medicare beneficiaries[v]. It also found that total Medicaid hospital reimbursement covered only 93% of costs[v].

In 2012, Medicare payments to Florida Hospital covered only 78% of the total cost of caring for Medicare beneficiaries[vi]. In the same year, Medicaid payments covered just 68% of the total cost of treating Medicaid patients at Florida Hospital[vi].



Source: Florida Hospital Government & Public Affairs, Nov. 2013, *Health issues brief*

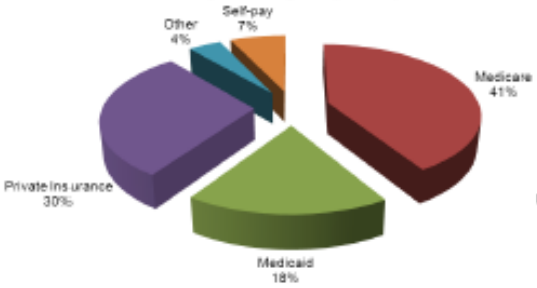
Bad Debt
Bad debt refers to payments that a hospital reasonably expects to receive but does not. The biggest contributors to bad debt are co-pays, deductibles and co-insurance unpaid by privately insured patients as well as uninsured patients who were financially capable of paying some of their charges but chose not to. In 2012, bad debt totaled $93 million at Florida Hospital[vi].

Charity Discounts
Charity care includes services provided for free or at a discount depending on a patient's financial need. Florida Hospital's Financial Assistance Program provides charity discounts to patients with annual household incomes of less than 400% of the Federal Poverty Level (currently $94,200 for a family of four). Calculated at cost, Florida Hospital provided $127 million of charity care in 2012[vii].

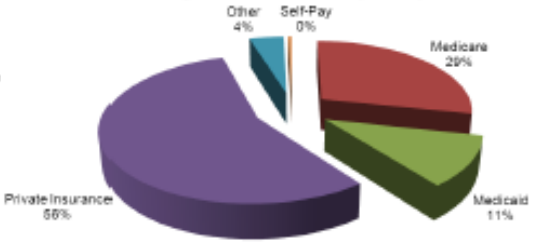
Cost-Shifting
In order to maintain a sustainable financial status, hospitals negotiate payment rates from private insurance groups. The margins on these payments subsidize hospital losses from public payer underpayment, bad debt and charity care. This is known as cost-shifting, and can result in higher premiums for privately insured individuals.

In 2012, beneficiaries of Medicare and Medicaid received nearly 60% of the clinical services provided by Florida Hospital (as measured by charges)[vi]. However, payments from these government programs represented just 40% of Florida Hospital's total net revenue[vi]. In comparison, private payers received 30% of the care provided by Florida Hospital and represented 56% of its total net revenue[vi].

Florida Hospital's Payer Mix by Charges (2012)



Florida Hospital's Payer Mix by Net Revenue (2012)



Key Takeaway
The most important source of hospital funding is the money earned by providing health care services. However, hospitals such as Florida Hospital have no ability to negotiate the payments from the public payers – Medicare and Medicaid – that pay for the majority of the clinical services provided. This poses a tremendous financial challenge for hospitals because these payments do not cover costs. In order to overcome these shortfalls, hospitals negotiate higher rates from private insurance groups. For this reason, continuing cuts to Medicare and Medicaid payments create an unsustainable business environment and put undue financial pressure on private payers. Hospitals are working to solve this problem. Payment methodology changes and improved delivery system alignment may provide some relief over the next few years.

Part two of this series will examine hospital costs and explain why delivering hospital care is an expensive, labor intensive, and narrow margin business.

---

[i] "2011 Hospital Financial Data," Florida Agency for Health Care Administration, Financial Analysis Office, 2012
[ii] "A Community Leader's Guide to Hospital Finance," Sarah Lane, et al. The Access Project, 2001
[iii] "2012 Annual Report of the Boards of Trustees of the Federal Hospital Insurance and Federal Supplementary Medical Insurance Trust Funds," The Boards of Trustees for Medicare, 2012
[iv] "2012 Actuarial Report on the Financial Outlook for Medicaid," Truffer, Klemm, Wolfe, Rennie, and Shuff, Centers for Medicare & Medicare Services, 2012
[v] "American Hospital Association Underpayment By Medicare and Medicaid Fact Sheet," American Hospital Association, 2012
[vi] Florida Hospital, Finance Department, 2012
[vii] Florida Hospital, Accounting Department, 2012

For more information, please contact
rich.morrison@flhosp.org (407) 303-1607 or
john.hood@flhosp.org (407) 303-5552

Our Goal: *To become a global pacesetter through the delivery of pre-eminent faith-based health care.*

Source: Florida Hospital Government & Public Affairs, Nov. 2013, *Health issues brief*

Exhibit 6: TGH Financials

TAMPA GENERAL

FINANCIAL INFORMATION

Operating Revenues (in millions)

Per Audit for respective years and MD&A for bonds

	2020	2021	2022
Total Operating Revenues	$1,590.8	$1,840.6	$2,150.5
Operating Margin % of Total Operating Revenues	3.7%	4.4%	0.2%

Community Benefits / Unreimbursed Costs (in millions)

Per Form 990 - Most recent years available

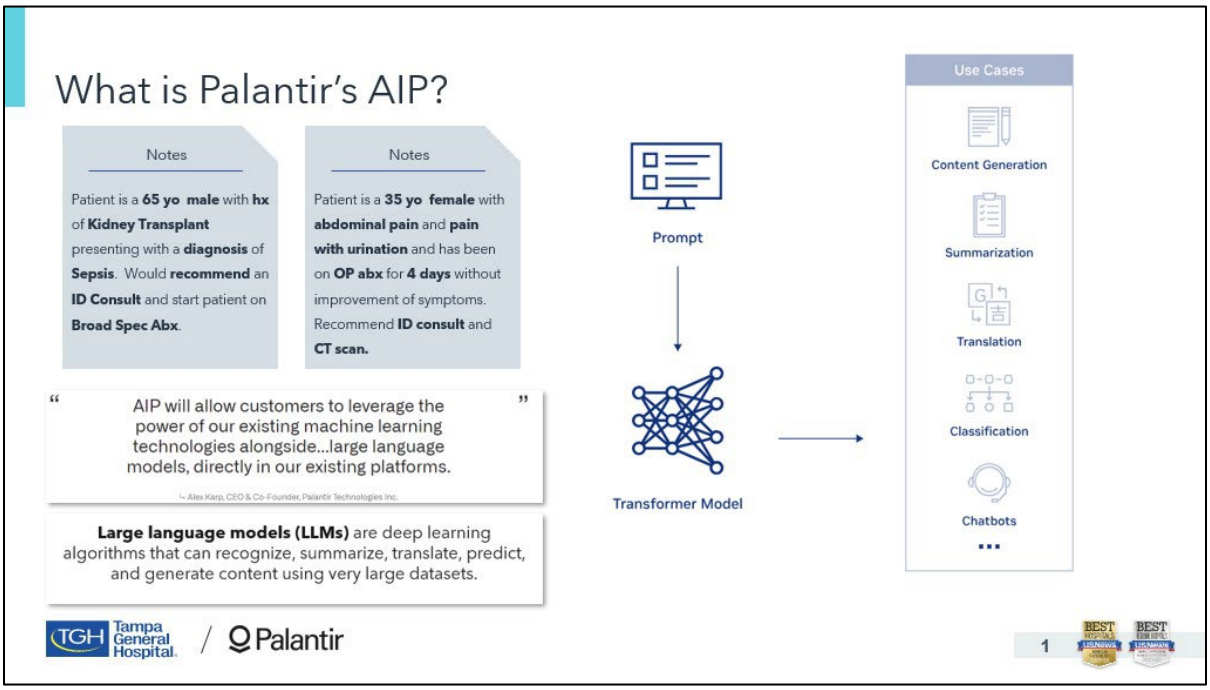
	2020	2021	2022
Financial assistance at cost (Charity Care)	$54.5	$59.1	$51.2
Unreimbursed Medicaid Patient Care Costs	59.6	93.8	140.2
Unreimbursed Means-Tested Government Program Care Costs	17.4	22.7	22.3
Community benefit programs and services	51.1	48.9	26.6
Total Community Benefits	**182.5**	**224.5**	**240.3**
Unreimbursed Medicare Patient Care Costs	23.7	17.4	23.9
TOTAL (Community Benefits and Unreimbursed Medicare Patient Care Costs)	**206.2**	**241.9**	**264.2**

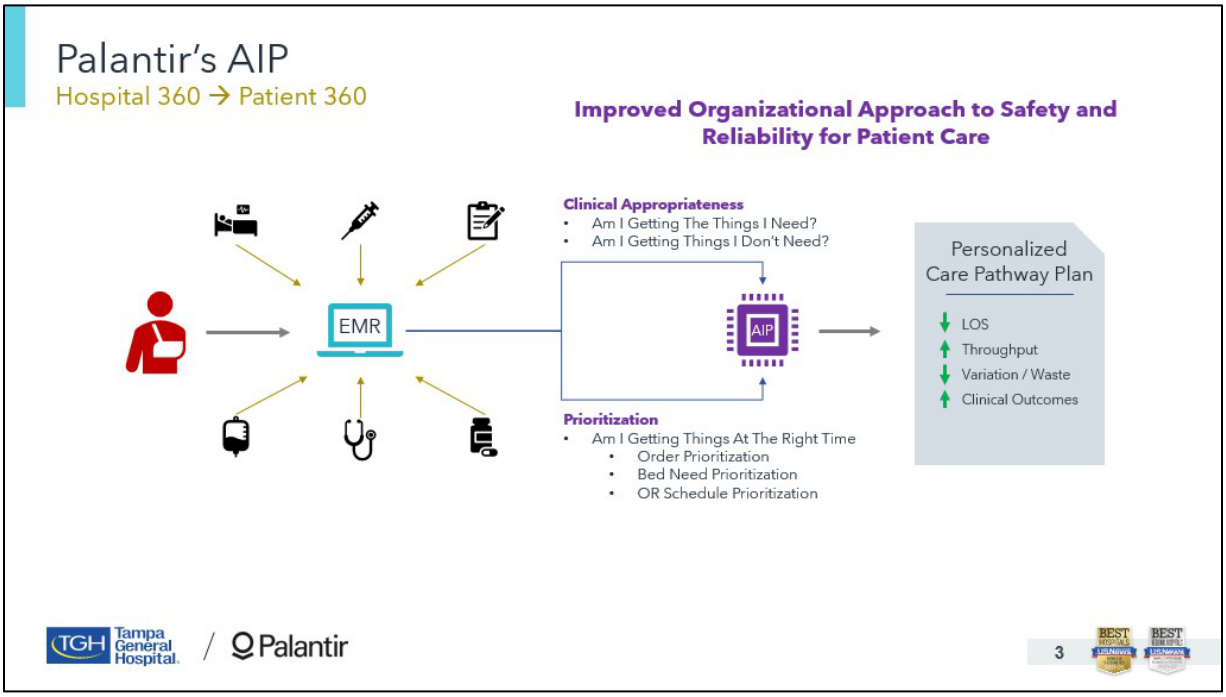
BY THE NUMBERS

	2020 (Fiscal Year End 9/30/20)	2021 (Fiscal Year End 9/30/21)	2022 (Fiscal Year End 9/30/22)
Inpatient Discharges (including newborns)	50,828	54,799	56,404
Outpatient Visits	493,002	552,665	652,269
Deliveries	6,355	6,526	7,207
Surgeries	29,694	31,253	32,460
Emergency & Trauma Center Visits			
Adult	97,715	106,701	108,662
Pediatric	17,289	17,703	21,541
Transplants (adult & pediatric)	579	588	552
Licensed Beds			
Adult medical/surgical	751	817	843
TGH Children's Hospital	138	137	138
Global Emerging Diseases Institute	59	28	0
Rehabilitation Center	59	59	59
Total Beds	1,007	1,041	1,040
Surgical Suites	54	54	54
Average Daily Census	751	874	907
Medical Staff (with privileges)	1,351	1,767	1,918
Total Full-time Team Members	8,047	8,207	8,135

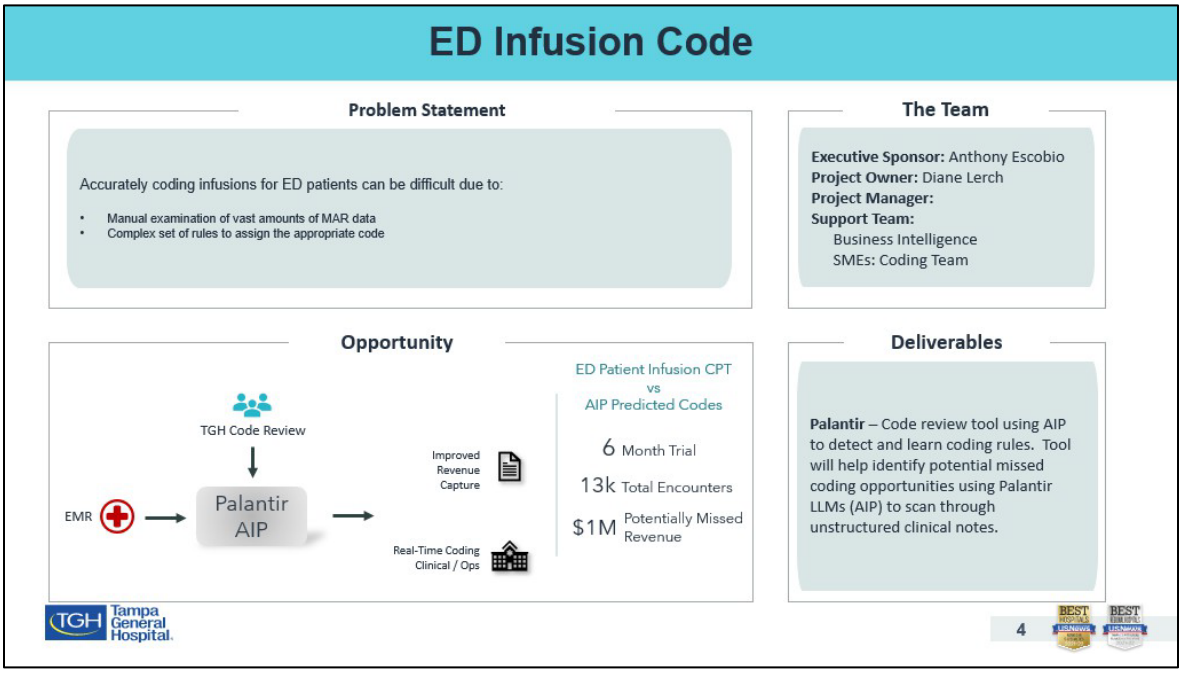
Source: Tampa General Hospital, 2023, *Strategic Outlook*

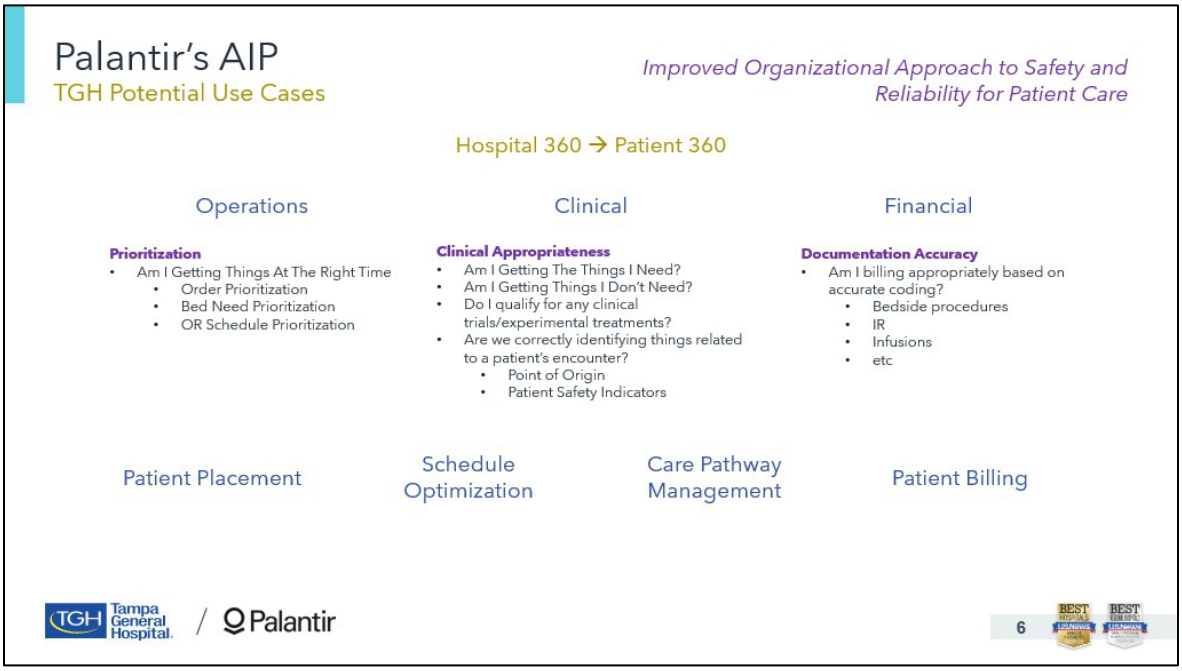
Exhibit 7: About Palantir AIP



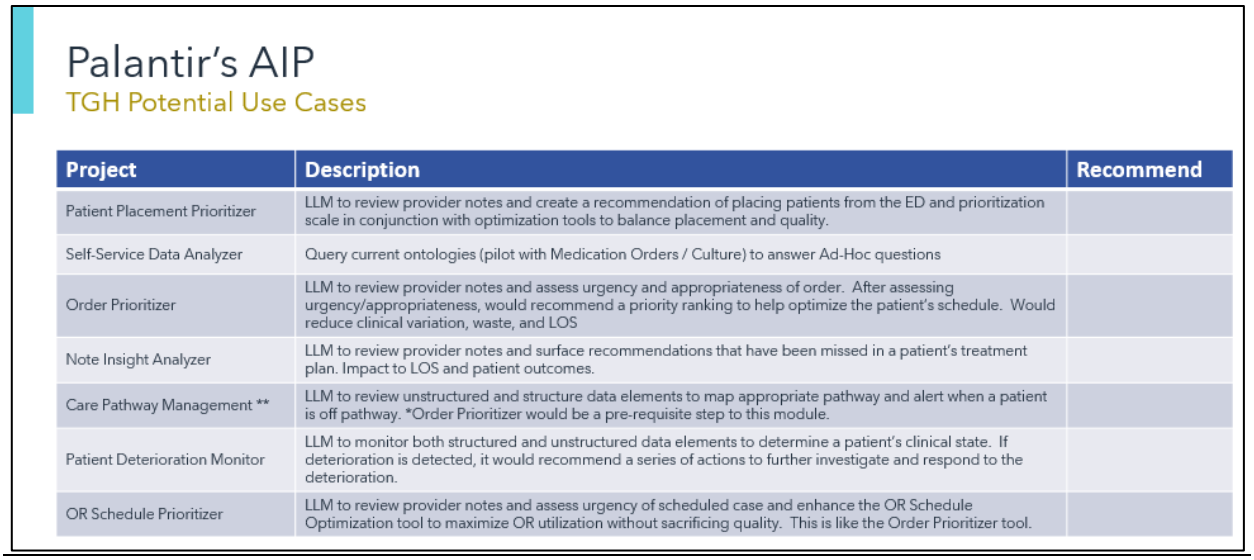


Source: Hoang, Etter (2023) *What is Palantir's AIP* – presentation, Tampa General Hospital.





Source: Hoang, Etter (2023) *What is Palantir's AIP* – presentation, Tampa General Hospital.



Palantir's AIP

TGH Potential Use Cases

Project	Description	Recommend
Patient Placement Prioritizer	LLM to review provider notes and create a recommendation of placing patients from the ED and prioritization scale in conjunction with optimization tools to balance placement and quality.	
Self-Service Data Analyzer	Query current ontologies (pilot with Medication Orders / Culture) to answer Ad-Hoc questions	
Order Prioritizer	LLM to review provider notes and assess urgency and appropriateness of order. After assessing urgency/appropriateness, would recommend a priority ranking to help optimize the patient's schedule. Would reduce clinical variation, waste, and LOS	
Note Insight Analyzer	LLM to review provider notes and surface recommendations that have been missed in a patient's treatment plan. Impact to LOS and patient outcomes.	
Care Pathway Management **	LLM to review unstructured and structure data elements to map appropriate pathway and alert when a patient is off pathway. *Order Prioritizer would be a pre-requisite step to this module.	
Patient Deterioration Monitor	LLM to monitor both structured and unstructured data elements to determine a patient's clinical state. If deterioration is detected, it would recommend a series of actions to further investigate and respond to the deterioration.	
OR Schedule Prioritizer	LLM to review provider notes and assess urgency of scheduled case and enhance the OR Schedule Optimization tool to maximize OR utilization without sacrificing quality. This is like the Order Prioritizer tool.	

Source: Hoang, Etter (2023) *What is Palantir's AIP* – presentation, Tampa General Hospital.