Shields Health Solutions

How Shields Revolutionized Hospital Speciality Pharmacy with Software

When a patient is diagnosed with a chronic disease, it can be surprisingly challenging to start and stick with a treatment plan. Many patients face a complex and lengthy journey in obtaining the specialty medications needed for treatment. The patient’s care team does their best to provide education about treatment, but physicians rarely know what happens after their patients leave the hospital. They don’t know if a patient’s medication will be covered by insurance, when the patient will receive their medication from the mail-order pharmacy, or if the patient will take the medication as prescribed. Sometimes it’s only after a patient is readmitted to the hospital that a physician discovers the patient was not adhering to their treatment plan.

In 2012, Shields Health Solutions set out to remove these gaps in patient care as an integrator and accelerator for hospital-based, specialty pharmacy programs. Shields partners with health systems and academic medical centers, helping them rapidly start a specialty pharmacy or quickly expand the health system’s own specialty pharmacy programs so they can serve more patients. About half of all health systems don’t have any specialty pharmacy programs while many others have limited specialty pharmacy services. Shields’ high-touch model enables seamless patient care to be connected between a hospital’s clinics (Cancer, HIV, MS, and other disease states) and its specialty pharmacy. This clinic-pharmacy connection drives improved medication adherence and better patient outcomes.

Shields’ approach is making a big difference for patients facing serious illnesses. “Although only a really small subset of [specialty pharmacy] patients are going to be seen at a hospital, they actually make up roughly 35% of the total dollars spent on healthcare today. Being able to proactively treat these patients cuts costs while improving patient outcomes. This is important for patients, obviously, but also for hospitals, insurance providers (payers), and drug manufacturers,” noted Dan Stevenson, Vice President of Business Analytics and Insights at Shields.

On average, hospitals that partner with Shields see a 92% average medication adherence rate compared to the industry average of 50–65%. Improved adherence translates to better patient outcomes and cost savings because patients avoid emergency care and rehospitalization. Patients at Shields’ health system partner sites also experience speedier time to therapy, receiving medications 40% faster compared to mail-order specialty pharmacies.
Simplifying the Specialty Care Experience at Scale

Six years after launching, Shields recognized an opportunity to leverage cloud-based software to streamline and automate specialty pharmacy administrative tasks. Its existing software focused on delivering analytical insights to pharmacy liaisons in order to identify high-need patients for outreach. Beyond that, a significant amount of work was done manually. “There is so much administrative work that’s being done by these hospitals to be able to get these patients on service,” said Stevenson.

Automating operations and standardizing its software solution enables Shields to grow its national footprint. This also allows hospitals to scale specialty pharmacy services and meet patient demand. “Over 60% of patients are choosing to fill prescriptions with the hospital specialty pharmacy, whereas when we start with a new hospital partner, often that number is below 3%,” said Brandon Zaharoff, Director of Business Optimization at Shields.

“The move to cloud delivery of software services... allows us as a software provider to scale a lot of the great solutions that we’ve built across a vast number of hospitals in a very efficient manner.”

Brandon Zaharoff, Director of Business Optimization, Shields

Choosing Pivotal for Transformation

As Shields was looking for a partner to help it transform its life-saving software, it sought to use modern development practices and quickly get a minimum viable product (MVP) to market. Shields wanted to strengthen its in-house software development capabilities and make building software a core competency. Some of Shields’ application requirements included HIPAA compliance and complex data capabilities. The new application also needed to be interoperable with the numerous software systems used to manage pharmacy operations, electronic medical records, and more.

Shields partnered with Pivotal Labs to learn how to build out its custom software platform, TelemetryRX. Shields developed and deployed TelemetryRX on Pivotal Application Service (PAS), the application abstraction layer of Pivotal Cloud Foundry (PCF), to support a cloud-native approach to software design.

“We were very diligent about selecting a partner that we thought was going to put us in a position to succeed,” said Stevenson.
Learning User-Centered Design from Pivotal Labs

After helping Shields grow its internal development team, Pivotal Labs practitioners sat side by side with Shields' new developers to teach modern software practices, such as pair programming, test-driven development (TDD), user-centered design, and lean product management.

“We came into Pivotal with the typical mindset of, ‘Here is this 57-page deck of features, let’s build them,’ but through the adoption of lean product management, we decided to throw that deck out and start with our users and our clients, testing our riskiest assumptions and ensuring the product retained its simple beauty without succumbing to the allure of complexity that many healthcare software companies fall into,” said Zaharoff.

Reflecting on the unique experience of Pivotal Labs, Zaharoff said, “The parallel tracks of building and enablement allowed us to achieve both our primary goals of launching impactful software that drives real user value and becoming a care-driven, SaaS-centric company ourselves.”

“One thing we loved about working with Pivotal Labs is you really immerse yourself in this software developing utopia,” Zaharoff recalled. “You have a lot of creatives as well as problem-solving individuals around you...we’ve successfully transplanted that environment back to our headquarters as we’ve transitioned our software development efforts back in house,” he said.
Learning User-Centered Design from Pivotal Labs (Continued)

Partnering with Pivotal allowed Shields to transfer its industry expertise into a new, software-based business. “We took an idea and a proof of concept then built up a team and ultimately a business line around it,” said Zaharoff.

After a very short time, Shields’ development team had an MVP to show business stakeholders. The fast pace of development has continued well past Shields’ engagement with Pivotal, with the completion of nine subsequent major releases. The TelemetryRX team launches new features into production on a weekly basis and now even twice per day for features they’d like to test and iterate on swiftly. Shields is also committed to user-centered design. “We’re really putting that specialty care team user front and center and thinking about, how is our software making their life easier?” Zaharoff said.

Speed, Security, and Compliance with PCF

When choosing a platform to develop and deploy TelemetryRX, Shields chose PCF. Not only does PCF enable Shields’ developers to be more productive, but it offers deployment flexibility, as well as built-in tools and a partner ecosystem that simplify developing for HIPAA compliance.

PCF gives Shields the flexibility to run TelemetryRX on any cloud, public or private. Shields uses Amazon Web Services (AWS) as its cloud provider. The PCF service broker for AWS makes it easy for Shields’ developers to connect to AWS Relational Database Service (RDS). Shields also utilizes PCF service brokers for third-party security services.

“One of the reasons we chose Pivotal Cloud Foundry as our platform is that it has a lot of features that make it easy to hook into best-in-class third-party services, like Sumo Logic...or like Okta for multi-factor authentication,” Zaharoff said. “It’s really easy for our software development team to build in the security and privacy best practices that are critical when operating in highly secure healthcare environments.”

Working with Pivotal helped Shields adopt best practices for cloud-native data and application security. “Seeing what the apex of data security looks like within a software application, and cloud environments more broadly, has been very helpful for our team,” Zaharoff noted.

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Brandon Zaharoff, Director of Business Optimization, Shields
Delivering High-Quality Care at Scale

Since launching the MVP of TelemetryRX, Shields has seen an 83% improvement in user efficiency. The amount of time that pharmacy staff has to interact with patients has roughly quadrupled thanks to automations. Hospital specialty pharmacies are now able to serve more patients and Shields has measured a 46% average increase in patient enrollment rates.

For every 100 patients that enroll in a Shields Specialty Pharmacy program, 92 of them will stick to their medication regimen as opposed to ~65 patients if filling their medications with an outside pharmacy. The ~30 additional patients who remain adherent eliminates an estimated 10 hospitalizations and likely prevents one death.

TelemetryRX is also helping Shields’ hospital partners grow their revenue to the tune of hundreds of thousands of dollars per clinic per month. These outstanding business outcomes, coupled with a 92% average medication adherence rate, are beneficial for both patients and healthcare providers.

Looking ahead, Stevenson described how the team at Shields continues to iterate and work toward a goal of building a full, end-to-end specialty care solution. “[It’s] going to allow hospitals to operate a specialty pharmacy program based on the best practices that we’ve learned, in an easy-to-use interface.” He added, “We’re very excited about what we’re building.”

“Absolutely,” said Zaharoff, “it’s really about the vision that keeps everyone excited and engaged...driving a meaningful impact on patients' lives across all of our health system partners.”