

Implantable Device Matrix

an OSF Innovation Case Study

THE OPPORTUNITY

Millions of people across the country live with some type of medical device in their bodies to treat chronic conditions like heart disease, diabetes and epilepsy. The problem is that most people don't know their implant's instructions for use, and that can be harmful if they ever have to undergo surgery. As a result, operations and other procedures are routinely canceled or delayed if an unknown implant is discovered in order to protect the patient and device.

THE SOLUTION

This was an ongoing issue at OSF HealthCare Saint Francis Medical Center until two nurses came up with an idea. They created a paper-based medical device table where surgical teams can quickly pull any implant information they need during a surgery. In hopes of scaling and commercializing their concept, they submitted their prototype to the OSF Innovation Studio, a group dedicated to bringing Mission Partner ideas to fruition.



THE IMPACT

In a year and a half, the OSF Innovation Studio helped the small team refine their concept into a web-based application that allows for a more robust and editable database. Surgical teams within OSF Saint Francis are now using the app on a regular basis. The inventors are now working with the OSF Innovation Studio on the opportunity to file a provisional patent on their idea. And plans are underway for commercialization.

"Our front line clinicians have so many good ideas out there. We are a testament that with the right coaching and resources, you can turn your idea into a viable product that can benefit not just our patients but those around the country."

- JILL TEUBEL, MSN, RN, CLINICAL NURSE EDUCATOR FOR THE SURGERY PRE-ADMISSION CENTER AT OSF SAINT FRANCIS

OSF INNOVATION

Launched in 2016, OSF Innovation is the overall umbrella initiative for the planning, structure, goals and services OSF HealthCare uses to innovate for the improvement and transformation of health care.

OSF HEALTHCARE

OSF HealthCare is an integrated health system owned and operated by The Sisters of the Third Order of St. Francis, headquartered in Peoria, Illinois. OSF HealthCare employs nearly 24,000 Mission Partners in 150 locations, including 15 hospitals throughout Illinois and Michigan. The OSF HealthCare physician network employs more than 1,500 primary care, specialists and advanced practice providers.

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IMPROVING SAFETY FOR THOSE WITH MEDICAL IMPLANTS

Over the years, implantable devices have become important tools to treat people with chronic conditions like heart disease, diabetes and epilepsy. In fact, millions of people across the country live with some type of medical device in their bodies. While these implants are used on a regular basis, there are some issues for concern.

Implants with electrical components are at risk of harming both the patient and device when used with electrocautery during a surgery case. Surgeries are routinely canceled or delayed if an unknown implant is discovered. That's because every medical device comes with its own set of instructions for use, and clinicians need that knowledge to protect both the implant and person undergoing a procedure.

In 2015, Mary Marvin and Jill Teubel, two nurses with OSF HealthCare Saint Francis Medical Center, came up with an idea that allows surgical teams to quickly pull any implant information they need during a surgery. Since then, they have worked with the OSF Innovation Studio to refine their concept into a new digital platform.

FROM PAPER LIST TO WEB-BASED APP

Mary and Jill, both with the OSF Saint Francis Surgery Department, initially reached out to every company with an implantable medical device, and pulled 50 to 100 pages of instructions for more than 60 implants.

They then developed a word document that was placed in every operating room that included surgery protocols for every device as well as contact information for company representatives. It also included guidelines for how to prepare patients with certain implants for surgery — all in a table format.

“We had one place for this information that was easily accessible to our surgery teams, but every time we had an update we had to pull all of the copies from OR rooms and replace them with new ones,” said Mary, APRN. “As the medical device industry continues to boom, our document quickly grew from two to 38 pages of content.”

In 2019, Mary and Jill decided they needed to do something more with the device table to make it more manageable and scalable. As a result, they prototyped a digital version of the document that ended up being 88 pages. They then submitted and pitched their idea to the OSF Innovation Studio, a group dedicated to bringing Mission Partner ideas to fruition.

“We learned that Jill and Mary’s concept has gained traction among surgical clinicians at various nursing conferences across the nation, and that there really isn’t anything like this on the market,” said

Nathan Pritzker, a strategic program manager for the OSF Innovation Studio. “That gives it great potential for commercialization.”

Over 18 months, Jill and Mary worked with the OSF Innovation Studio to build and test several designs. The innovation team also connected the inventors to a local company to build a final web-based application called the Implantable Device Matrix.

“The OSF Innovation Studio helped us build what we envisioned. When you pull up the app, you sign in and it’s just two clicks,” said Jill, MSN, RN, clinical nurse educator for the Surgery Pre-Admission Center at OSF Saint Francis. “You click the device you want, you click on the affiliated company and then all of the information is right at your fingertips. You no longer have to scroll through 88 pages to find what you need.”

The surgery department within OSF Saint Francis is now using the Implantable Device Matrix app on a regular basis. Over nine months, surgical advanced practice nurses and surgery pre-admission center nurses were able to make the necessary arrangements for 17 pacemakers and 12 automatic implantable cardioverter defibrillators (AICDs) ahead of time for hospital patients undergoing surgery.

During that same time period, surgical advanced practice nurses and surgery pre-admission center nurses were able to address the needs for 129 pacemakers and seven AICD before patients underwent outpatient operations. The ability to prepare for certain implantable devices ahead of surgery means fewer delays and cancellations, better patient satisfaction and improved workforce commitment for anesthesia providers, surgeons and surgery staff.

WHAT’S NEXT?

The OSF Innovation Studio is helping Jill and Mary with the opportunity to file a provisional patent on their idea. And plans continue to move forward to commercialize the application.

“We are blown away at how the OSF Innovation Studio has helped us get our device table to a web app format,” said Mary. “Jill and I are very patient oriented and passionate about patient safety. If our device table gets sold to other hospitals, it’s a huge win for us knowing they can use this to safely perform procedures on patients with certain implantable devices. At the same time, we are helping to keep hospital resources viable.”

Both Jill and Mary encourage other Mission Partners to follow in their footsteps.

“Our front line clinicians have so many good ideas out there,” said Jill. “We are a testimonial that with the right coaching and resources, you can turn your idea into a viable product that can benefit not just our patients but those around the country.”

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