



## Less Fishing, More Fixing: The Effect of Data Surveillance on Clinical Workflow

*“With Senti7® you stop fishing and you start fixing. Instead of fishing for things, it’s already caught.”*

— Robert Adamson,  
Corporate Vice President  
of Clinical Pharmacy Services,  
Saint Barnabas Health Care System

### EXECUTIVE SUMMARY

**Problem:** The Saint Barnabas Health System pharmacists were spread very thin and needed better tools to both improve productivity and more effectively identify opportunities for medication optimization.

**Solution:** The hospital system implemented Senti7®, a clinical data surveillance application.

**Results:** Senti7 allowed for expanded safety initiatives, increased cost savings and provided needed justification of staff.

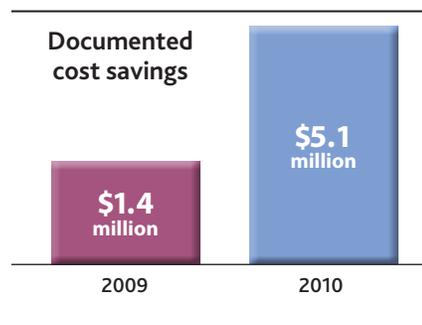
**Conclusion:** The integration of Senti7 into Saint Barnabas’ clinical pharmacy services has helped their staff become more efficient by dramatically reducing the time spent seeking opportunities to improve care and enabling them to spend more time improving it.

### BACKGROUND

The Saint Barnabas Health Care System is the largest health system in New Jersey. It has seven campuses: six acute care hospitals and one specialty hospital dedicated to behavioral health issues. The system employs approximately 135 pharmacists to cover more than 3,500 beds. Each facility has clinical specialists, clinical coordinators and clinical staff pharmacists. Robert Adamson is Corporate Vice President of Clinical Pharmacy Services for Saint Barnabas Health Care System.

## CASE STUDY

### SAINT BARNABAS HEALTH CARE SYSTEM



#### PROBLEM

Historically, Saint Barnabas pharmacists would receive a once-daily report from the laboratory department that included abnormal values. This data reflected a 12- to 14-hour delay from the time the actual sample or specimen was taken. This limited data and the notable reporting delay greatly diminished the pharmacists' ability to identify opportunities for care improvement in a thorough and timely manner.

"We were getting these reports that were only as good as the minute that they were printed. The instant that they were printed and handed out, they were already outdated," said Adamson.

Also, the method for reviewing this historical data involved scrolling through numerous screens. Adamson said it was similar to having 25 windows open on the computer and having to go through each one to determine a trend. Just exploring one trend could take a pharmacist 15 to 20 minutes. For a pharmacist that's responsible for 50 patients, there was not enough time in the day to do it.

"It's virtually impossible for us to use manual surveillance to care for our patients; we really did need an electronic solution," said Adamson.

The organization had decided it needed better capabilities for data mining. They began looking at antimicrobial stewardship solutions, but found the majority had no real solution interface with the pharmacy. The Saint Barnabas system also had multiple pharmacy information systems in use, including Eclipsys, McKesson, Cerner and Siemens. They needed a solution that could interface with all these vendors.

#### RESULTS

##### EXPANDED SAFETY INITIATIVES

Since "going live" with Senti7, Saint Barnabas has implemented 65 specific clinical rules targeting patient outcomes. The rules have been organized within the Senti7 dashboard to indicate varying levels of priority to help the pharmacists manage their daily workload to maximize value. The rules at the top of the to-do list each day for clinical pharmacists have the highest importance from a safety and quality benefits perspective.

Some examples include:

- Monitoring use of all high-risk medications as identified by The Joint Commission and the Saint Barnabas staff (i.e. insulin, potassium chloride, narcotic analgesics)
- Anticoagulation therapy monitoring as required by The Joint Commission National Patient Safety Goals
- Fall prevention using the Beers criteria
- Antibiotic stewardship (i.e. "drug-bug mismatches")
- Medications requiring renal dose adjustments (both up and down-dosing corrections)
- Automatic formulary substitutions and therapeutic interchanges
- IV-to-oral conversions

Saint Barnabas makes good use of the Senti7 lab value trending capabilities in their rule construction. For example, "Display patients that had an increase in potassium serum levels of 30 percent in one day." These patients may not have abnormal values, but they may be heading in the wrong direction. Pharmacists can now intervene early, preventing a possible adverse outcome. Prior to Senti7, these types of issues would have needed to progress to a gross abnormality before it would appear on a report.

"We've gone from a reactive clinical group to a proactive clinical group. It's been dramatic," said Adamson.

Saint Barnabas also currently uses Senti7 to address all medication-related Core Measures, such as use of aspirin in AMI and ACE inhibitors for heart failure. These rules are being used by the pharmacy department and also by the quality department for case management. Since implementation of Senti7, the hospital system has had fewer "missed opportunities" for improving care.

Adamson says, "It doesn't sound like a lot, but because we're doing so well at it, if you're 99 percent compliant and you're comparing yourself to other health systems that are 98 percent compliant... for us to jump up in the rankings, it is the difference between catching two more patients per month. So when we say we caught four more extra cases per month, that might jump us up in the rankings in the state by 11 places."

Prior to an electronic surveillance program it was very difficult for Saint Barnabas' staff to screen patients for their cultures with sensitivities and their current therapies. Therefore, only about 35% of patients were being screened. Now approximately 92% of patients are checked automatically. "We feel we have made great strides with our antibiotic stewardship program as this is one of the foundations of it," said Adamson.

## **INCREASED COST SAVINGS**

Saint Barnabas has targeted high-cost drugs for surveillance with Senti7. Rules tie specific lab parameters to erythropoiesis stimulating agents and granulocyte stimulating factors, such as erythropoietin and filgrastim, respectively. For example, Senti7 alerts pharmacists when a patient receiving darbepoetin has a hemoglobin value that is 12 or greater. Saint Barnabas has a policy and procedure that allow pharmacists to immediately discontinue or hold the therapy to assure safe outcomes. Cost savings related to the drug use avoidance can be up to \$400 per dose, while the value of preventing a thromboembolic event is much higher!

The filgrastim rule in Senti7 alerts pharmacists when the patient has reached a white blood cell (WBC) count of 5000 or an absolute neutrophil count (ANC) of 750, allowing for appropriate discontinuation. Cost savings average \$200 to \$300 per dose with this intervention.

Adamson says Senti7 has dramatically increased the number of activities that pharmacists do at Saint Barnabas, and has increased the number of dollars saved. In 2009, the system documented savings of \$1.4 million... and 2010 more than tripled this amount with savings of more than \$5.1 million.



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## JUSTIFICATION OF STAFF

Saint Barnabas has used data from Senti7 and Quantifi® to help provide supporting documentation to justify addition of emergency department pharmacist positions, as well as to maintain support for other positions. By documenting all pharmacist activities, an administrator can use the traditional metric of “doses dispensed” and reclassify doses as just one of the many activities a pharmacist does on a day-to-day basis.

“We’ve unfortunately had to be right-sized several times with the economic downturn and issues related to Medicare reimbursement, and the number of patients coming to hospitals is going down nationally,” said Adamson. “We had to adjust for that, and luckily pharmacy was relatively untouched. And I know it’s because we were able to show what our pharmacists do and the value associated with our work.”

## CONCLUSION

The integration of Senti7 into Saint Barnabas’ clinical pharmacy services has helped their staff become more efficient by dramatically reducing the time spent seeking opportunities to improve care and enabling them to spend more time improving it.

Adamson says: “In the past we used to just fish for data and opportunities. With Senti7 you stop fishing and you start fixing. Instead of fishing for things, it’s already caught. Now you just have to put them in the right buckets. We went from fishing to fixing. The two or three hours it would take for us to create the opportunity list is gone. It has been replaced with three hours of time fixing the care issues that we never would have gotten to in the past.”



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