The Impact of Clinical Surveillance on Efficiency, Safety and Cost Savings in Health-System Pharmacy

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— *Robert Begliomini,*
Administrator of Pharmacy Services,
Lehigh Valley Health Network

EXECUTIVE SUMMARY

Problem: Even with the great team of clinical pharmacists who perform a variety of clinical activities at Lehigh Valley Health Network, the number of targeted initiatives they could manage was very low because so much time had to be focused on sifting through paper reports for issues to tackle.

Solution: The hospital system implemented Sentri7,® a clinical data surveillance application.

Results: The pharmacy team estimates a six-fold increase in the amount of targeted initiatives they could tackle each day. The hospital easily impressed The Joint Commission with their new safety initiatives during two hospital inspections and logged nearly $250,000 in hard cost savings in the first six months.

Conclusion: The integration of Sentri7 into Lehigh Valley Health Network's clinical pharmacy programs has had a strong positive impact on hospital efficiency, safety and the bottom line.
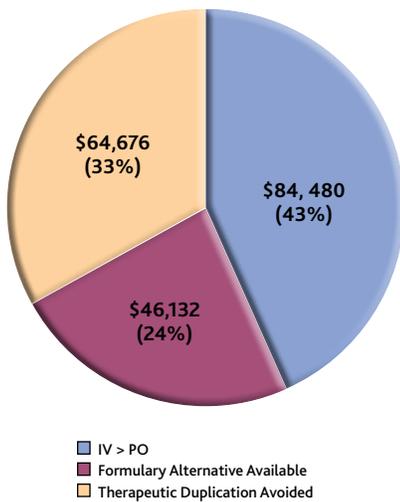
BACKGROUND

Lehigh Valley Health Network includes three hospital facilities - two in Allentown and one in Bethlehem, Pa. totaling nearly 1,000 beds, and eight health centers caring for communities in four counties. Lehigh Valley Health Network has been recognized by US News & World Report for 14 consecutive years as one of America's Best Hospitals and is a national Magnet hospital for excellence in nursing.

LEHIGH VALLEY HEALTH NETWORK

Robert Begliomini is the Administrator of Pharmacy Services at Lehigh Valley and Jason Laskosky is one of seven Clinical Pharmacy Specialists for the health network. Lehigh Valley also has 65 Clinical Staff Pharmacists providing unit-based clinical activities throughout the health network.

Lehigh Valley Health Network: Cost Saved ($)
3/1/2009 – 7/31/2009

- ■ IV > PO
- ■ Formulary Alternative Available
- ■ Therapeutic Duplication Avoided

$84, 480 (43%)

$46,132 (24%)

$64,676 (33%)

PRE-SENTRI7 AND QUANTIFI® IMPLEMENTATION

Originally, Lehigh Valley was searching for a documentation system that would be an improvement over their current pharmacy information system. They were documenting approximately 120,000 interventions per year, but the pharmacy system offered no assistance in identifying and prioritizing opportunities for intervention and had very limited reporting capabilities.

"Putting a price tag on the interventions was really impossible," Begliomini says. "We could get a raw number of the type of intervention, but with very little detail."

The pharmacy system would print out three reams of paper every morning, and on those papers were targeted agents requiring daily clinical monitoring. However, the reports were limited as they could only identify target medications per given patient. There was no opportunity to apply further qualifiers such as diagnosis, laboratory values, or other drugs. The clinical staff pharmacists would divide these stacks by service area and try to sort through them in spare time between rounds and order verification.

"It was a lot of wasted pharmacist time," says Laskosky. "We felt that we were limited with respect to the amount of things we could review because we spent so much time sifting through junk. And there were days we couldn't even get through them as well."

Lehigh Valley's primary problem was that they had a great team of clinical pharmacists hired to do clinical duties who wasted a great deal of time sifting for issues to tackle. Because so much time had to be focused on sorting out the data, the number of targeted initiatives was very low.

SENTRI7 AND QUANTIFI INTEGRATION AND INSTALLATION

Lehigh Valley considered building their own surveillance system, but chose to implement Sentri7 due to its web-based nature and the ability to pull data out of their pharmacy, laboratory and patient demographic systems. The software can write intelligent rules against these data and present only those patients who match the qualifications. This eliminates manual sorting by clinical pharmacists and allows them to spend more time actually intervening and making recommendations on patients each day.

Lehigh Valley also implemented documentation software (Quantifi by Pharmacy OneSource®, Bellevue, WA) to add a dollar amount to the work the pharmacists were carrying out. With reports from Quantifi, Lehigh Valley can easily show the impact of their clinical pharmacists on the health network's bottom line.

RESULTS

IMPROVED EFFICIENCY

Lehigh Valley Health Network is currently going through the process of Lean and Six Sigma training to improve efficiency and reduce waste in the healthcare system. Sentri7 eliminated the waste of time from the staff looking through paper and added huge performance gains to the system in the following areas:
- Medication safety monitoring
- Antimicrobial stewardship and infection control
- Drug or formulary protocol compliance
- Renal evaluations against creatinine clearance and/or GFR

"Our staff has always done great work, but Sentri7 has exponentially increased it because they don't have to waste time looking for things," Laskosky says. "Whereas before they may have been looking at 20 targeted items, now they're looking at 70. Even if they can only do half of what Sentri7 identifies, they're still doing twice as much as before."

Pharmacists are spending the same amount of time looking at clinical issues each day, but the quality and breadth of interventions have increased significantly. Also, previously only the first shift pharmacists were engaged in clinical surveillance, but due to Sentri7's real-time on-demand capabilities, all shifts can now be involved in clinical initiatives.

The Lehigh Valley pharmacy department can show that they are doing more with the same resources and that "more" is important. It further justifies their clinical programs and staffing levels, which remain lean under the 10th percentile when compared against their peers.

EXPANDED SAFETY INITIATIVES

Lehigh Valley has implemented more than 70 clinical rules in Sentri7. Those at the top of the to-do list each day for clinical pharmacists have important safety and quality benefits.

Some examples include:
- Patients on anticoagulants whose hemoglobin has decreased by 30% in 24 hours
- Monitor patients for rapidly changing renal function
- Identify patients by diagnosis who may benefit from additional therapy (monitoring core measures)
- Usage of reversal drugs for medication safety team to identify trends
- Run Beers criteria against elderly population's medication profiles

"These types of things we never would have been able to do with our old system," says Laskosky.

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The Lehigh Valley Health Network had two Joint Commission surveys and two Department of Health inspections in the summer of 2009. At the medication management roundtable the surveyor asked what they had done recently to improve care in terms of medication management. Begliomini presented their work with Sentri7 and the surveyor was "overwhelmed" in the terms of the safety it brings to the hospitals.

"The Joint Commission surveyor was amazed. They felt this was a level of medication safety they had not seen before," Begliomini says.

Lehigh Valley also uses Sentri7 to assist their care management team with reimbursement from CMS Core Measure performance. They identify heart failure patients without an ACE or ARB and print off an attached pre-form letter with referenced recommendations for the prescribing physician. They also use Sentri7 to identify ICU patients with CAP for antibiotic selection in line with the quality measures.

INCREASED COST SAVINGS

Since going live with Sentri7 and Quantifi in March of 2009, Lehigh Valley Heath Network documented nearly $250,000 in hard cost savings in the first six months. Hard costs are direct costs related to drug spending and services. Soft costs, related to adverse event avoidance, accounted for another half million dollars in savings.

Breakdown of hard cost savings in first six months:
- IV-to-PO Conversion: $102,000
- Therapeutic Duplication: $79,000
- Formulary Alternatives: $57,000

"We justified the expense of the software in the first three months of use in hard cost savings alone," Begliomini says. "When I can show these cost savings, plus the safety and quality benefits, Sentri7 really sells itself."

CONCLUSION

The integration of Sentri7 into Lehigh Valley Health Network's clinical pharmacy programs has had a strong positive impact on hospital efficiency, safety and the bottom line.

Begliomini says: "Sentri7 and Quantifi have definitely raised the level of care that our pharmacy department provides, and has revolutionized the way we practice pharmacy here. It's truly helping our patients and our staff."

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