ZYNXHEALTH®
PART OF THE HEARST HEALTH NETWORK

Improving Length of Stay for Patients Admitted with Acute Renal Failure

Beebe Healthcare Case Study

Summary of Beebe Health's Measurable Outcomes Following the RCI Project

- Results of imaging studies focusing on the renal system (US, CT, MRI):
  - **13% improvement** in time from admission to ordering ultrasounds.
  - **14% improvement** in time from order to available results for US and MRIs, impacting overall time for ultrasounds, CTs, and MRIs.
  - **8%% improvement** in time from order to provider verification for MRIs.
- Post-implementation, length of stay for acute renal failure patients dropped significantly from **4.22 to 3.59 days**, aligning with predicted averages.
- Estimated **cost savings of $2,141 per patient** admitted with acute renal failure, totaling an **annualized cost saving of $635,877** based on post-implementation admissions.

Introduction

Beebe Healthcare serves the community of Sussex County, Delaware, with a medical center and several outpatient locations throughout the county. The medical center, located in Lewes, is a 210-licensed-bed, not-for-profit community hospital in a beautiful seaside location. Based on comparative data, the Quality Department recognized that they had an opportunity to improve their length of stay (LOS) for patients admitted to the hospital with a diagnosis of acute renal failure (ARF). Recognizing that working directly with performance improvement experts would help ensure success, the Beebe Healthcare Quality Department chose to partner with the Zynx Health Performance Improvement Team.

Stated Objective

Acute care hospitals routinely assess their LOS data, both overall and for individual diagnoses .Based on credible comparative data, the Beebe Quality Department identified the opportunity to reduce the LOS for patients hospitalized with ARF. Optimizing the

Beebe Healthcare

Location: Lewes, Delaware
Facility type: Short-term acute care
No. patient beds: 210
Annual discharges: 10,687

beebehealthcare.org

LOS is important — not only for monetary reasons. Patients with unnecessarily long hospital stays experience higher rates of hospital-acquired infections and other medical problems. Additionally, longer-than-necessary hospital stays can affect access to care for others.

The Project Begins

The Beebe Healthcare Quality Team and the Zynx Performance Improvement Team held a preliminary meeting to clearly define the opportunity and determine the next steps. Based on instructions from the Zynx Team, baseline data were collected. The Zynx Team performed a detailed analysis of the data to define the focus of the project. Based on the analysis, it was clear that the chief contributors to the longer-than-average LOS were due to: 1. longer-than-optimal times from admission to the ordering of diagnostic studies and 2. the time until results were reviewed by the ordering provider.

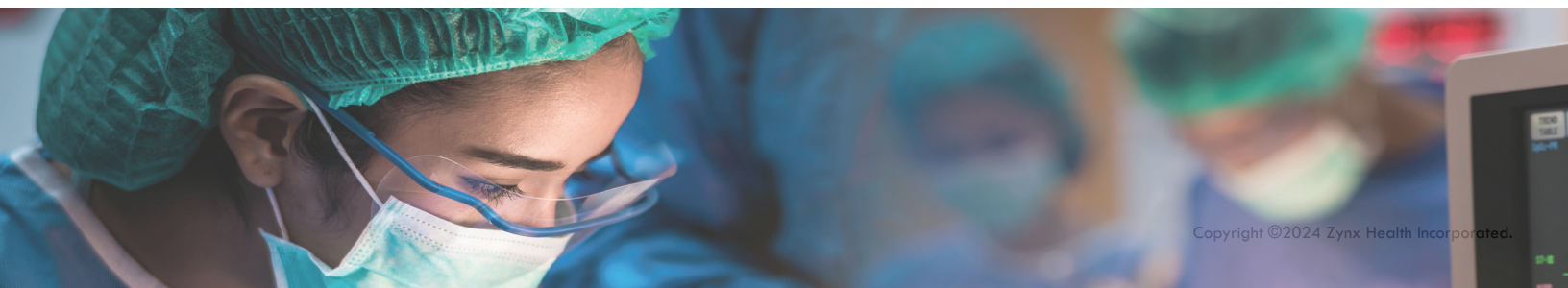
Based on this analysis, the Zynx Performance Improvement Team conducted several fact-finding interviews with individuals at Beebe Healthcare who could provide further detail about the processes that might contribute to the suboptimal diagnostic imaging ordering and resulting times. With this information, the Zynx Performance Improvement Team was ready to arrange a launch meeting with the Beebe Healthcare Quality Team to guide them in establishing a rapid cycle improvement (RCI) project tailored to their unique circumstances.

Project Launch Meeting

During a two-hour launch meeting with Beebe Healthcare's Quality Team, the Zynx Health Performance Improvement Team presented its findings and recommendations for an RCI project. The presentation included an in-depth analysis of their current circumstances and proposed several recommendations tailored to Beebe Healthcare's unique needs. The launch meeting agenda included:

1. Education about the RCI process.
2. Developing Specific, Measurable, Achievable, Relevant, and Time-based (SMART) goal statements.
3. The recommendation of effective strategies to address these goals with associated metrics to be monitored.
4. A summary of industry-standard guidelines for the optimal day-to-day management of uncomplicated patients admitted for ARF.
5. Several possible tactics to employ that could directly result in performance improvement toward their goals.
6. A proprietary spreadsheet specifically designed for data entry that would track and compare baseline data against the data obtained during the RCI project period.

During the meeting, a healthy discussion of the recommended strategies and tactics to address the LOS for patients admitted with ARF occurred. The Beebe Healthcare Team included a lead hospitalist whose input was valuable. Participation by all team members was excellent. This discussion resulted in several important insights into Beebe Healthcare's current processes and how best to address them. At the end of the meeting, the Beebe Healthcare Quality Team was charged with determining: 1. which tactics they would utilize and 2. establishing a formal start date. Weekly touchpoint meetings were to be scheduled to enable designated Project Team members to review data and project progress and identify the next steps. The Zynx Health Performance Improvement Team was also available to meet ad hoc with the Beebe Team should questions arise that required an immediate response.



The Rapid Cycle Improvement Project in Action

The Beebe Healthcare Quality Team decided to utilize several tactics that were discussed during the launch meeting along with others. The tactics selected were:

- Acute Renal Failure Admission Order Set revision:
  - Zynx Health's Knowledge Analyzer was used to verify whether the Beebe order set contained all current evidence-based practices.
  - A submodule was added to their admission order set to have it support the optimal management of patients with ARF at the time of admission.
  - Vital urine studies such as urine electrolytes were ordered by default to reduce the time to obtain such studies and subsequent results.
- Provider Education:
  - Specific to the LOS opportunity.
  - Guidelines for the optimal management of patients admitted with uncomplicated ARF.
  - The importance of using the evidence-based, disease-specific module on admission.

After deploying these tactics, periodic meetings were held both internally and with the Zynx Performance Improvement Team to monitor the project's progress and provide feedback where necessary. Dr. Kristie Zangari, the lead hospitalist on the Beebe Project Team, strongly supported the project, as did the hospitalist group.

Results

This project consisted of two main objectives:

1. Reduce the average time from admission to placing orders for studies to evaluate the renal system.
2. Reduce the time from resulting of an ordered test to provider verification.

The results for imaging studies limited to those evaluating the renal system (US, CT, and MRI) revealed:

1. The time from admission to ordering ultrasounds (which were the majority of studies) improved by 13%.
2. The time from order to available results improved for the two modalities most commonly ordered — US and MRIs both improved by 14%. This positively impacted the overall time from order to available results for ultrasounds, CTs, and MRIs
3. The time from order to provider verification for MRIs had an associated 8%• improvement.

In addition, ARF order sets were defaulted to order vital urine tests (e.g., urine electrolytes) which positively impacted the turnaround time for these tests.

Importantly, during the 4-month post-implementation period, **the LOS for patients admitted with ARF dropped significantly from 4.22 to 3.59 days**. The baseline LOS was statistically significantly higher than what would have been predicted for patients admitted with ARF. The LOS in the post-implementation period was now in line with the predicted average LOS.

Data from the **American Hospital Association** on the average cost of a day in the hospital in the state of Delaware* was used to estimate the cost savings associated with this project. This project demonstrated an average reduction in LOS of 0.63 days for this patient population. **This results in an estimated cost savings of $2,141 for each patient admitted with ARF.** Based on the number of admissions during the post-implementation period, **this represents an estimated annualized cost saving of $635,877.**

*Because we do not have industry-standard data to convert charges to cost savings accurately, we chose to use a reputable source's estimate of the cost per day in accordance with the 1999-2022 AHA Annual Survey.

Limitations

The work on this project was spread out over four months due to organizational priorities and scheduling conflicts. The actual time spent working on the project equated to approximately six weeks. The relatively short implementation timeline limited the number of tactics that could be deployed. Therefore, the team focused on the tactics that would provide the biggest impact in such a short period of time. To further improve LOS, the organization may need to explore the deployment of additional tactics recommended and discussed during the Zynx Health and Beebe Healthcare partnership.

Baseline data encompassed four months; therefore, it was determined that the post-implementation data time frame would be the same. Further monitoring is needed to fully understand the impact of the implemented tactics on ARF LOS at Beebe Healthcare.

Because the team focused on a subset of all available data, the impact may not have been fully recognized.

The Value of Collaborating with the Zynx

Although most organizations understand the inherent value of providing care based on the latest evidence, many are unsure how to improve performance. This is where performance improvement science is vital. Working with the Zynx Health Performance Improvement Team effectively enables a hospital or clinic to combine evidence-based practices with performance improvement science,• a powerful combination, as this case study demonstrates.

The Beebe Health Quality Team found great value in its collaboration with the Zynx Performance Improvement Team. The improvements made by the Beebe Healthcare team exemplify how intelligent design and thoughtful execution can result in real gains that can directly affect the lives of their patients as well as improve the hospital's bottom line.

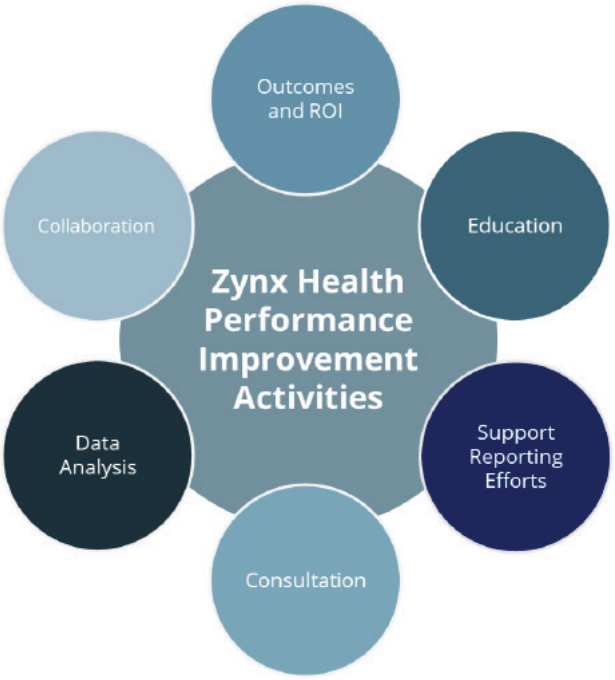
Beebe Healthcare' Success Can Be Yours

The Performance Improvement Team at Zynx Health can help your organization achieve measurable clinical and operational improvements.

Our services include:

- Rapid Cycle Improvement Engagements (6-8 weeks)
- Medium- and Long-Term Engagements (3-12 months)
- Education on how to use data analytics in healthcare
- Performance of Data Analytic Services
- Focus on Error Reduction and Patient Safety

Contact Us at **+1.888.333.9969**, or visit **zynxhealth.com** to learn more.



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