

Core Case Study: Return on Investment (ROI)

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Core or Menu Item: Return on Investment – ROI

Executive Summary

Lakeland HealthCare started on the journey towards enterprise Epic EHR implementation at the beginning of fiscal year 2011 and implemented enterprise wide by the end of February 2012. With a five year project budget of \$60 million, in the first three years of the project we've been able to document \$24.4 million in savings compared to \$37 million spent in the same timeframe related to the implementation of the EHR. In addition we have formed a team to focus on tracking and optimizing ROI related to the implementation of the EHR and expect to continue to see an increase in ROI as we continue through the last two years of the project and beyond.

Background Knowledge

Lakeland HealthCare is a not-for-profit, community-owned system of care serving a tri-county region in southwest Michigan. Lakeland HealthCare has three hospitals, approximately 30 ambulatory clinics and in addition includes long-term care, home care and hospice services. Lakeland has 443 licensed beds and more than 4200 employees making it the largest employer in Berrien County. The Lakeland mission is "To enhance health and serve our community" and our vision is "To positively transform healthcare and the health choices of those we serve and employ."

All three Lakeland hospitals and all Lakeland owned ambulatory clinics are on the same instance of the Epic enterprise EHR currently utilizing all Epic clinical and revenue cycle applications with the exception of Lab, Homecare and Oncology. In addition, Lakeland has partnered with many of our community physician practices to extend our instance of the EHR to the community. To date we have approximately 20 community practices live on the Lakeland instance of the EHR and are scheduled to bring at least four additional community practices live by the end of calendar year 2014.

Lakeland's enterprise approach to the EHR implementation, that includes partnership with community physician practices, is in direct support of the Lakeland mission by providing a strong continuum of care for our patients in southwest Michigan.

Local Problem being addressed and Intended Improvement

In 2010 with the Affordable Care Act and Meaningful Use guidelines on our heels, Lakeland started the journey towards implementing an electronic health record, transitioning the

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majority of our care areas from a paper chart system to a fully integrated electronic chart. In late 2010 Epic was chosen as our vendor of choice and the rigorous timeline to implement Epic in all of our Lakeland owned physician practices by October 2011 and in all of our hospitals by early 2012 began. It was the belief and desire of our organization to adopt a “speed to value” approach to the implementation of the EHR. We believe strongly that both employing our best staff from within the organization to participate in the implementation project and to implement the EHR better and faster than anyone else had done previously would increase the return on investment (ROI) Lakeland would realize.

We approached the implementation of the EHR as a means to provide more quick and efficient access to information to both patients and providers and to make medical information more accessible in more places. Key success factors for the EHR implementation consist of four components:

1. Improve quality, safety, efficiency and reduce health disparities
2. Engage patients and families in their health care
3. Improve care coordination
4. Improve population and public health

By keeping these priorities at the heart of the project, each clinician, patient and caregiver would be able to ensure that the patient is getting the best care possible with the most up to date information available.

Design and Implementation

Lakeland’s approach to the EHR implementation was to create a team of Lakeland’s best and brightest with both operational knowledge and technical skill to come together to work on the EHR implementation team (ConnectCare). We felt that recruiting from within would help facilitate operational engagement for the duration of the project and also help ensure the intellectual capital created during the implementation would stay within our organization. Lakeland started the implementation project with a strong team building retreat to build the foundation of the project. This was an enterprise EHR implementation meaning that we would be consolidating the care of our patients from multiple disparate systems into one clinical and revenue cycle EHR (Epic). We would implement the full suite of clinical and revenue cycle applications with the exception of Lab (interface with Sunquest), Homecare (scheduled for go live late 2014) and Oncology (scheduled for go live mid 2015). It was decided that we would have a pilot ambulatory go-live with two of our physician practices approximately 10 months post project kick-off (August 2011). The rest of our ambulatory physician practices would go live in a “big bang” two months later (October 2011). All of our hospitals would go live in a final “big bang” four months later (February 2012).

At the start of the Epic EHR implementation project we recognized the desire to create, track and communicate a positive ROI for the implementation and also set a hard goal to achieve HIMSS Stage 7 EMRAM adoption as quickly as possible (achieved fall 2013). Shortly after

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bringing all Lakeland physician practices and hospitals live with the EHR we partnered with a consultant to assist with the following:

- Target key EHR benefit focus areas
- Quantify a set of expected EHR benefits
- Develop a governance structure to support accountability and benefit realization

As part of the governance structure we formed a team called RaDAR (Rapid Data Assessment and Response) to review and normalize the data and track and report ROI for the EHR and more importantly assist the organization with performance improvement activities that would further enhance ROI for the EHR. The RaDAR team would include members of our ConnectCare team, operational partners and executive sponsors and we would report to the Lakeland Board of Directors quarterly. Each KPI identified to be tracked would have a member of the ConnectCare team assigned to facilitate the tracking of that KPI. They worked closely with operational partner(s) who were individuals with a vested interest in the KPI and had the influence and authority to facilitate change in the organization to improve performance in the specific KPI. The executive sponsor is typically the Vice President related to the organizational partner.

How was Health IT Utilized?

Upon implementation, the EHR became the centerpiece for all clinical and revenue cycle workflows. Physician, nursing, and allied health documentation was converted to the EHR, creating one chart for the patient and improving care coordination. Providers began placing orders through CPOE at go-live reducing transcription errors and the utilization of transcription was nearly eliminated at go-live due to electronic provider documentation directly into the patient chart. Medication safety was enhanced through barcoded administration, and charges were captured on the clinical side and processed on the revenue side in one integrated system. CHF readmission rates were reduced with the implementation of a CHF navigator and work list, improvements to medication reconciliation, implementation of an ED white board with a 30 day readmit flag and both a predictive risk scoring (LACE) and vital sign alert scoring (VSA). Converting all major workflows to the EHR and doing so at all sites is what enabled us to achieve a positive ROI.

Once live, we used the EHR and other analytic tools to review our metrics and calculate the benefits we'd achieved and the return on our investment.

The implementation of the electronic health record at Lakeland HealthCare was the largest investment Lakeland had ever undertaken. By keeping the project aligned with Lakeland's strategic goals, focusing on the benefits, mitigating risks and engaging the entire organization along the way, we have been able to maximize the ROI both quantitatively and qualitatively.

Value Derived/Outcomes

At the onset of the RaDAR team the plan was to measure a specific set of key performance indicators (KPI's) over the course of five years. Those key metrics included:

- Improving Employee Productivity

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- Reduce Medication Ordering and Transcription ADEs (Adverse Drug Events)
- Reduce Average Cost of Care
- Reduce Nursing Overtime Costs
- Reduce Documentation Forms
- Reduce Transcription Expenses
- Reduce Denials
- Increase Revenue Opportunity
- Reduce A/R Days

Some of the identified KPIs have been realized quickly and additional benefit opportunities are occasionally identified and added to the RaDAR team KPI menu. In addition to the KPIs identified up front, Meaningful Use incentive payments and both Epic Good Install and Good Maintenance rebates contribute to Lakeland’s ROI as well as sunset application savings, space utilization with the conversion of chart storage space to clinical space and the reduction in length of stay as a result of sepsis improvements.

Hard ROI Cost Benefit through FY 2014

Benefit Source	Cost Savings
Meaningful Use (Stage 1, year 1-2)	\$12,334,204
Improved Employee Productivity	\$2,998,002
Reduce Average Cost of Care	\$1,671,947
Reduced Transcription Expense	\$1,613,618
Sunset Application Savings	\$1,586,851
Epic Good Maintenance Incentive	\$636,317
Reduced Forms Cost	\$539,218
Epic Good Install Rebate	\$337,906
Space Utilization	\$286,000
Reduce Denials	\$272,551
Sepsis Reduction in LOS	\$268,364
Increase Revenue Opportunity (Physician Coding)	\$262,687
Reduce Nursing Overtime Costs	\$105,586
Reduce A/R Days	\$35,000
Total	\$22,948,251

In addition to the Hard ROI detailed above, there are several areas where Soft ROI has been realized, both in quality and financial ROI.

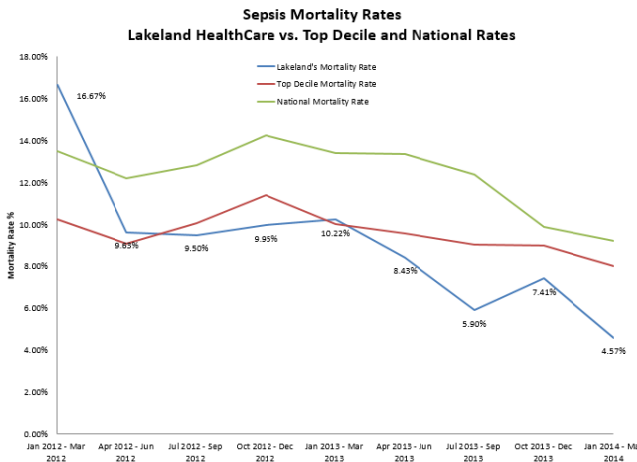
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Soft ROI Cost Benefit through FY 2014

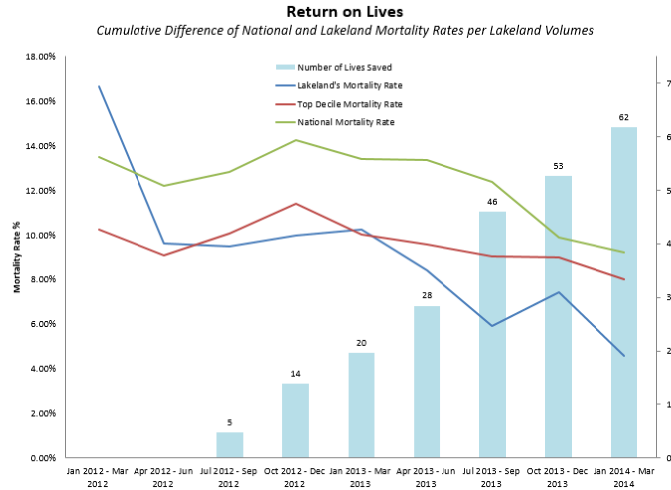
Benefit Source	Cost Savings
Reduce Medication ADEs	\$890,529
Reduce Pressure Ulcers	\$561,340
Radiation Safety Program	\$72,424
Total	\$1,524,293

Sepsis - With the implementation of evidence-based BPA triggers and order sets specifically related to Sepsis, we have been able to improve mortality rates from a peak of nearly 17% at go-live in 2012 to better than top decile at about 4.5% in March 2014. More importantly this equates to approximately 62 lives saved in the same time period. In addition, we were able to reduce the average length of stay by 0.8 days in fiscal year 2014 for an internal cost savings of \$268,364.

LAKELAND HOSPITALS - Sepsis Cost & ALOS Analysis				
MSDRG	MS DRG_Desc	Cost/Enctr	Encounters	ALOS
FY2012 Discharges				
870	SEPTICEMIA OR SEVERE SEPSIS W MV96+ HOURS	\$39,500	12	12.2
871	SEPTICEMIA OR SEVERE SEPSIS W/O MV 96+ HOURS W MCC	\$13,392	397	5.8
872	SEPTICEMIA OR SEVERE SEPSIS W/O MV 96+ HOURS W/O M	\$7,270	154	5.0
FY2013 Discharges				
870	SEPTICEMIA OR SEVERE SEPSIS W MV96+ HOURS	\$41,849	17	14.5
871	SEPTICEMIA OR SEVERE SEPSIS W/O MV 96+ HOURS W MCC	\$13,982	475	5.7
872	SEPTICEMIA OR SEVERE SEPSIS W/O MV 96+ HOURS W/O M	\$6,145	162	4.2
FY2014 Discharges				
870	SEPTICEMIA OR SEVERE SEPSIS W MV96+ HOURS	\$42,663	24	12.7
871	SEPTICEMIA OR SEVERE SEPSIS W/O MV 96+ HOURS W MCC	\$13,090	506	4.3
872	SEPTICEMIA OR SEVERE SEPSIS W/O MV 96+ HOURS W/O M	\$5,650	213	3.7
Cost Variance Estimate/Encounter		(\$361)		
Cost Reduction (FY2014 Basis)		(\$268,364)		



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Radiation Safety Program – Health care costs are reduced when providers cancel CT studies or choose alternative imaging exams when appropriate. To date a total of 48 CT scans have been cancelled or changed reducing the cost of care by \$72,424 (approximately \$1,508 per CT cancelled/changed).

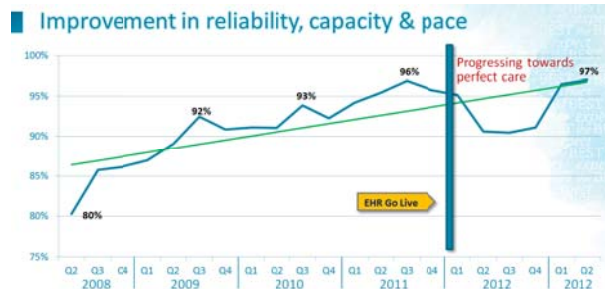
CHF Readmissions - A focus on reducing CHF readmissions resulted in a CHF readmission rate reduction of nearly 4% between 2011 (24.7% CHF readmission rate) and 2013 (20.8% CHF readmission rate).

CHF Readmission Rates



Core Measures - Prior to the EHR implementation we saw a slow but steady increase in our core measures moving from 92% in 2009 to 96% in 2011. We saw a drastic dip in core measures during the implementation of the EHR, dropping to nearly 90% in 2012 but very quickly recovered to 97% by 2013. Tools available in the EHR like concurrent reporting, electronic order sets, decision support, documentation contraindications and best practice alerts directly contributed to our ability to improve core measures by 7% in one year, an improvement that based on previous performance would have taken two to three years without an electronic health record.

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Lessons Learned

There have been many lessons learned throughout the course of our Epic EHR implementation and implementation of the RaDAR team. A key lesson is related to buy in, engagement and executive support. We found that having executive support in the RaDAR team and the true understanding that it would take engagement from all facets of the organization to be successful in tracking ROI and facilitate change to enhance ROI was critical. Having a quarterly report due to the board of directors that included engagement from both ConnectCare and operational partners was key to maintaining momentum in facilitating process improvement.

We learned that choosing KPIs up front was challenging - some of the KPIs and target benefits that were originally chosen ended up being very difficult to track or were not the right KPIs to begin with. Even though choosing KPIs to track ROI up front is challenging it is best to start thinking about how to track ROI as early as possible to ensure you have as much data available as possible. True collaboration is essential for success.

Financial Considerations

Lakeland HealthCare originally budgeted approximately \$60 million in capital and operational costs from fiscal year 2011 through fiscal year 2015. Through fiscal year 2013, only \$37 million of that projected budget had been spent. While we continue to spend towards our \$60 million budget in fiscal years 2014 and 2015, specifically to complete our Homecare and Oncology implementations, we expect that total spend will be under budget for the entire project. We attribute this savings compared to budget to our commitment to hiring internal staff to implement and support the EHR and to our “speed to value” approach to the Epic EHR implementation. Creating aggressive timelines with a fast big bang approach allowed us to more quickly move from the implementation to the optimization phase, which subsequently results in a faster benefit realization to the large investment inherent in EHR implementation. We have been able to realize approximately \$24.4 million in savings attributed both to KPIs measured, Meaningful Use incentive payments and Epic Good Install and Good Maintenance rebates.

When implementing an EHR it is also important to consider an initial decline in productivity and increase in cost in many areas before improvement and benefit realization is seen.