



Data Integration & Quality Assurance Programs Reduce Complications & Mortality Rates



Hillcrest Medical Center

“By putting quality care checkpoints in place, we have significantly lowered complications and mortality rates.”

Lana Crafts, R.N., M.S.
Outcomes Management Supervisor
Hillcrest Medical Center

Hillcrest Medical Center Highlights

Lowered Mortality Rates: Hillcrest reduced their Overall Cardiovascular Surgery mortality by 65% and Coronary Bypass Surgery by 67%.

Pre-risk assessment protocols: The lowered complications and mortality rates can be directly attributed to the concentrated focus on the pre-risk assessment protocols, which enables physicians and nurses to identify high-risk patients and take steps to reduce their risk before surgery.

Continuing Staff Education: Hillcrest uses Apollo data and reports together with protocols to educate staff and incoming physicians of quality improvement initiatives.

Physician Credentialing: Hillcrest utilizes Apollo to quickly compile the necessary data for applications for physician credentialing.

Center of Excellence: Hillcrest used their Apollo database to complete a 27-page application to become a “Center of Excellence” with United Healthcare.

For more than 85 years, Hillcrest Medical Center has been a healthcare leader in Oklahoma. So when their mortality rates for coronary bypass surgery and open-heart surgery rose above those of the national average, they had to take decisive action. Their first step was to gather data—to find out exactly where problems were arising. Hillcrest participated in the STS registry and they knew they had a large percentage of high-risk patients, which the registry identified **after** the fact. But the heart center physicians and leadership wanted to know the risks **before** surgery, in order to take steps to reduce any modifiable risk factors.

Outcomes Management Supervisor Lana Crafts, R.N., M.S. and Database Specialist, Karen Davidson, used Hillcrest's Apollo Advance database to track the heart center's risks, complications, and mortality rates, and reported that information to administrators and cardiovascular committees. According to Lana, “We started reviewing co-morbidities prior to surgery so that we could improve outcomes—like “tuning up” the patients before surgery. We were using the Parsonnet scoring system, (Parsonnet's Risk Stratification System: <http://www.heart.ns.ac.yu/stratific.htm>), one of the few pre-risk

assessment tools used for mortality prediction. We developed a high-risk algorithm (see appendix) for those patients going to surgery who fell into the high-risk category (score of >20). Following the algorithm ensures that patients' conditions are optimized before they go into surgery. We try to change any of the modifiable risk factors. For example, a patient with a history of smoking would receive a pulmonary function test or a pulmonary consult to make sure their lungs are in optimal condition. We may also evaluate their renal function to determine if that is a problem. It depends upon the assessment of the patient. We track all of the high-risk surgery patients and check to see that all of the appropriate steps on the algorithm were followed. We examine all of the high-risk areas and make sure everything is optimal before that patient goes to surgery. In addition, being able to share this data with the entire healthcare team—heightening awareness of the specific risks possible in elective cases—has improved the quality of care along the continuum because using the data has enabled everyone to make more informed decisions.”

According to Lana, “We have been able to prospectively identify high-risk patients earlier to provide more time to minimize their risk, and also to make everyone aware of the risks in elective cases. Putting these quality care checkpoints in place has resulted in significant decreases in both complication and mortality rates. Cardiovascular surgery mortality dropped 65% and coronary bypass surgery mortality dropped 67%.”

Evidenced-Based Medicine Drives Quality Assurance Programs

“We had a time when we did not have a group of anesthesiologists focused specifically on CV Surgery. We felt this was an opportunity for improvement in our open heart surgery program. We tracked extubation times and other data points, and presented the results to the hospital and cardiology leadership. As a result, we are now using a dedicated group of 6 anesthesiologists. In addition, they developed and implemented a standard anesthesia protocol. We continue to track our data, and can demonstrate that we have decreased average vent times, have fewer pulmonary complications, and higher quality care with the dedicated team,” says Lana.

Since overall complications and mortality dropped with increased monitoring of risk factors, Hillcrest has been able to turn their attention to more specific, yet crucial data points to make targeted changes. According to Karen, “We now look for complications that stand out—overall complications have dropped dramatically, but if we see a specific area that has not, we can take steps to correct that. For example: we have a high percentage of patients with diabetes, and we have been able to show that our glucose levels were not within the recommended range. We collaborated with the Cardiology Endocrinologist and the Diabetes Management Team to create an insulin drip protocol as well as a sliding scale protocol. We patterned our protocols after the Portland Protocol (2002, Starr Wood Research—Continuous Intravenous Insulin Infusion—

DRIVE QA PROGRAMS

10 Steps

1. Collect and gather data
2. Present data to CV Service Line Team, committees, and administration
3. Institute protocols that make the largest impact first
4. Drill down to find complications that stand out or are resisting improvement
5. Work with staff to ensure cultural changes
6. Report results to CV Service Line Team, committees, and administration
7. Make any necessary adjustments
8. Conduct ongoing staff education integrating the latest data, protocols, and results
9. Educate new physicians and staff
10. Celebrate your success!

<http://www.starrwood.com/research/insulin.html>; Annals of Thoracic Surgery, 1997; 63:356-61). We customized Apollo by adding fields to track blood glucoses done pre-op, post-op, 1st day, 2nd day, etc. We are currently in the process of extracting data to determine if we have made improvements and decreased complications by having these protocols in place.”

Reports Promote Staff Education & Assist Administrators with Planning

Lana and Karen produce a variety of reports tailored to the needs of administrators, staff, and physicians. Administrators receive a weekly report of all CV surgery patients. The reports include the patient's EF, their Parsonnet score, their physician, and their insurance source. Karen also tracks high-value inventory items, such as pacemakers, ICDs, and drug-eluting stents. This additional step is a checkpoint to ensure that these items are properly billed.

“Time and time again, we have proven the usefulness of Apollo,” said Karen. “For example, we are able to report, on demand, patient and procedure volumes with comparisons to previous years. We have also been able to provide valid data to our CV Research Department and CHF Clinic. Now that the physicians have gained confidence in the integrity of the database and the reliability of the system, credibility for Apollo has been established and accepted.” Dr. Wayne N. Leimbach, Medical Director of Cardiac Cath Lab, states, “The Apollo system is invaluable to our cardiology program.” Dr. Leimbach avidly supports the Apollo database.

Lana and Karen have facilitated staff education programs by displaying posters with Apollo data pertinent to CQI initiatives. After the posters are rotated through all of the cardiovascular service line areas, rewards are given to the areas with the greatest participation. Putting the Apollo data together with the CQI initiatives helps the staff envision the entire continuum of care.

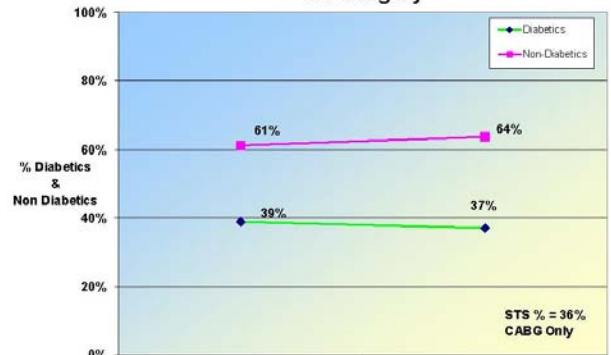
More Accurate Documentation

Lana has presented Apollo to new cardiologists at Hillcrest, “We display input views of the database, with all of the actual data elements and their format. For the purpose of clarification, we discussed some of the definitions and parameters. For example, the parameter for family history of coronary artery disease (CAD)

WEEKLY REPORTS

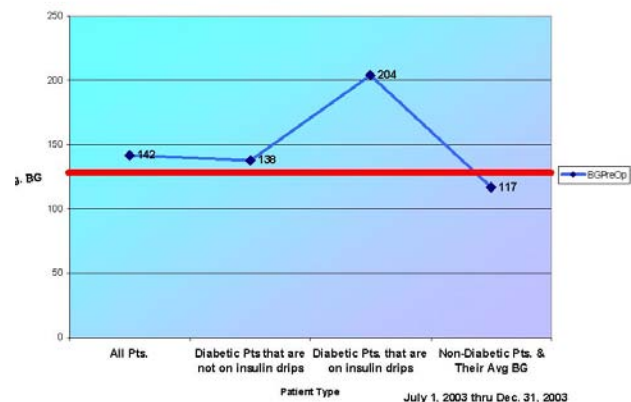
- Implant Device Report
- Cath Laboratory Weekly Report Usage Report (two reports: per case & per item)
- Stent Usage Report—includes type and payer (weekly and monthly)
- Weekly Surgery List
- Weekly Payers/Surgery List
- Weekly volume and mortality comparisons

% Diabetics Vs. Non-Diabetics CV Surgery



Graph of Diabetics in CV Surgery

Average BG Pre-Op



Graph of BG Pre-op

great applications

BUILDING CARDIOLOGY CENTERS OF EXCELLENCE

means CAD exists in family members less than 55. We want them to know what we are collecting, so they can help us better document procedures. Another example is the NYHA classification, which describes specific symptomatology. We asked the physicians to help us improve documentation of symptomatology or even put the classification in themselves to assist us with that portion of data collection.”

Apollo Used for ACC & STS Registries & Physician Credentialing

Hillcrest uses Apollo to participate in the ACC and STS registries. They collect data through interfaces with their McKesson and Mennen Systems, as well as through manual data entry. Data entry is primarily done by Theresa Hawkins, RN. The consistency and reliability of her data entry is vital for success. Lana and Karen run queries to check data, find missing fields, and validate the information before the data harvest. According to Karen, “Apollo makes it easy to participate in the national data registries.”

Apollo has helped physicians with their credentialing paperwork. Lana has been able to use Apollo to provide the number of procedures done by a specific physician to meet credentialing criteria.

Center of Excellence

According to Lana, “We also used Apollo when we recently applied to become a ‘Center of Excellence’ with United Healthcare Insurance. United Healthcare is a provider for large companies in our area such as American Airlines, Home Depot, and SBC. We were able to extract almost all of the data from Apollo for the 27-page application. Our hospital was accepted as a Center of Excellence, and will be a preferred choice for patients that are covered with United Healthcare Insurance.”

About LUMEDX: With over 500 heart center clients worldwide, LUMEDX is the market leader in fully integrated cardiovascular information systems and the No. 1 independent integrator of cardiology information solutions. LUMEDX offers the most proven, comprehensive package of clinical information tools, cardiovascular products, and services to help medical institutions enhance quality of patient care, reduce costs, streamline workflow, increase patient volume, and grow revenue.



Staff Education Poster—Apollo Reports Drive QA Initiatives



LUMEDX SOLUTIONS AT HILLCREST

This Great Applications article describes how Hillcrest has implemented LUMEDX's integrated software solutions. The software solutions they utilize are:

Software

- Apollo Advance
- Catheterization Module
- Cardiac Surgery Module
- SF36 Module
- Mennen H9000-WS Interface
- HL7 Registration/Admissions Interface
- Standard HL7 TCP/IP Communication Client