

CASE STUDY



Borgess Medical Center Healthcare Institution

Kalamazoo, Michigan

The scenario: A medical center learns of higher-than-predicted mortality rates for non-surgical heart cases.

The goal: Consistently produce better-than-average mortality rates.

The action: Use CareScience solutions and consulting services to validate findings, identify responsible diagnostic subgroups and determine causation.

The result: Mortality rate decreases 20 percent below baseline over 24-month period.

Borgess Medical Center The Organization

Borgess Medical Center, a nationally-recognized institution in Kalamazoo, Michigan, is a 426-bed regional acute care hospital serving the southwest regions of the state. Among its many areas of excellence, Borgess is respected as a worldwide leader in interventional cardiology. In fact, Borgess performs more than 650 procedures annually.

Every year, as a public service, the Michigan Hospital Association (MHA) publishes length of stay and mortality rates on selected groups of patients by hospital. The reports include risk-adjusted mortality statistics, which help to avoid rebuttals by hospitals and doctors based upon the argument that “our patients are sicker.” Understandably, Borgess was alarmed to discover through the MHA report that its facility appeared to have much higher-than-predicted mortality rates for non-surgical heart cases for three consecutive years. An explanation was critical to the 2,400 cardiac intervention patients that rely on Borgess each year.

For two years, Borgess tried to bring their non-surgical heart case statistics back in line with expectations and to regain competitiveness in the region, but labor-intensive chart reviews limited its analysis. The data had yet to reveal any obvious points of intervention or improvement strategies, and the higher-than-predicted mortality rates persisted. The Board of Directors called for a more aggressive plan of action.

Insight Beyond Isolated Data Points

Effective analysis of the non-surgical heart case statistics required that Borgess gain a deep understanding of the clinical processes driving the organization’s care delivery practices, including those that were ultimately translating into poor outcomes.

To unlock the data that was key to discovering its clinical process shortcomings, Borgess turned to CareScience Quality Manager and consulting services. CareScience experts set forth to develop a formal clinical process improvement plan and to provide the domain knowledge and analysis of the underlying data that the



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hospital would need to maintain ongoing quality initiatives in other clinical areas.

As the first order of business, Borgess quality improvement staff and CareScience consultants used CareScience Quality Manager's risk assessment methodology to independently validate MHA's findings of higher-than-predicted mortality rates. Further

"We needed significant results, quickly. CareScience Quality Manager provided us with greatly improved access to the key clinical practice patterns that were driving poor outcomes."

Cindy Harvey, R.N.
M.S.N. Director of Quality
Borgess Medical Center

analysis and access to a continuum of data narrowed the root of the problem from the broad category of "non-surgical heart cases" to a specific sub-population that was contributing disproportionately to the higher-than-predicted mortality rate. Of 15 potential diagnostic related groupings (DRGs), three were identified with the greatest deviation from the predicted mortality rates. These three groups represented medically managed acute myocardial infarction (AMI) patients.

A comparative analysis of treatment patterns among Medicare patients showed that at nine competing hospitals, the percentage of all acute myocardial infarction (AMI) patients who were medically managed was 61 percent. By contrast, Borgess had the lowest

proportion at only 33 percent.

Through a systematic investigation of the hospital's clinical processes for this AMI sub-population, Borgess identified a list of factors that seemed to be contributing to the higher-than-predicted mortality rates:

- A non-cardiologist was designated as the attending physician at the time of death or discharge for 25 percent of the medically managed AMI patients.
- Four percent of medically managed AMI cases were admitted to the neurology intensive care unit (ICU) rather than the cardiac ICU. The mortality rate for this subgroup was 58 percent, or 11 percent of the total deaths.
- Thrombolytic therapy, dissolving blood clots with medications, was administered to only one percent of medically managed AMI patients.
- Compared to the other institutions, Borgess had the highest rate of AMI patients in the "Medical Treatment" group that were transferred from another acute care hospital.
- Beta-blockers, drugs typically effective in slowing the heart rate and lowering blood pressure, were administered to only 58 percent of patients.
- It took more than the standard 10 minutes after arrival for 44 percent of patients to obtain an electrocardiogram (EKG), a basic measure of heart activity.
- It took more than the standard one hour after arrival for 80 percent of patients to





reach the cardiac catheterization laboratory where most critical therapeutic services are performed.

A Targeted Plan of Action

With a clearer understanding, Borgess was able to define a course of action to improve clinical performance. The institution addressed its clinical procedures related to the findings and developed a plan that emphasized education and training.

Where AMI continuing medical education was previously offered only to cardiologists, process improvement initiatives revealed that primary care physicians, doctors with low volumes of AMI patients, neurology ICU staff and other specialists should receive the same training. In addition, Borgess immediately expanded its AMI clinical pathways training to include clinicians in all specialties.

Immediate Improvements

Within three months of Borgess' implementation of the improvement strategies, the mortality rate for medically managed AMI patients was cut in half—from 19 percent to eight percent.

The first three months of implementation also saw improvements in many clinical processes.

- AMI admissions directly managed by cardiologists increased from 74 to 84 percent.
- No AMI patients were admitted to the neurology ICU.

- The frequency of beta-blocker administration improved from 58 to 82 percent.
- Only 14 percent of patients waited more than 10 minutes from arrival before receiving an EKG.
- Only 31 percent of patients waited more than one hour from arrival to reach the cardiac catheterization lab.

"Working with CareScience, we were able to reverse a difficult clinical and strategic issue that earned praise from our Board of Trustees and resulted in a wonderful clinical outcome for our community."

Sanford Tolchin, M.D.
Chief Medical Officer
Borgess Medical Center

Lasting Results

Clinical outcomes continued to improve substantially in the year that followed. The deviation from predicted mortality showed normal variation and the actual mortality rate consistently stayed 20 percent below baseline.

Borgess also used its new-found knowledge to implement process improvement community-wide. To refine Borgess' protocol for thrombolytic therapy, the care management team met with hospitals in the community that regularly transferred patients to Borgess. Because patients were rarely transferred in under an hour, the coalition of hospitals developed and agreed upon a



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protocol for administering thrombolytics before transfer. The group even established an ongoing feedback process to promote best-practice compliance and continued to meet bi-annually to evaluate its efforts to improve the care of the community.

Currently, Borgess continues its improvement efforts through ongoing feedback to clinicians and the board on mortality rates

and best practice compliance. The lessons learned from the CareScience team approach continues to offer broader benefits to the Borgess community. From leadership training to data mining skills, Borgess' in-house clinicians, managers and analysts developed the knowledge they need to repeat process improvements in other therapeutic areas.

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