

Case Study:
MAIN LINE HEALTH

Using Business Intelligence
for Better Insulin Therapy Management

Quick Facts:

Organization: Main Line Health

Industry: Healthcare

Location: Bryn Mawr, PA

Customer since: 2011

Employees: 2,200 medical staff; 10,200 employees

Facilities: 4 acute care hospitals; 1,200 beds

EMR: Siemens Soarian

Solution: Diver Platform®

Website: mainlinehealth.org

One out of every twelve Americans is afflicted with diabetes. Controlling inpatient diabetes is important to avoid complications and achieve efficient care. Insulin therapy for diabetes patients has changed over time, from the “old” sliding scale to newer basal-bolus regimens.

Main Line Health uses the Computerized Physician Order Entry (CPOE) system of their Siemens Soarian® EMR to guide physicians away from sliding scales insulin and towards basal-bolus regimens. While CPOE makes it harder to order sliding scales therapies, physicians nonetheless were using CPOE to “build” sliding scales and circumvent decision support interventions.

What Main Line Health needed was clinical intelligence to analyze the extent to which physicians were using sub-optimal insulin regimens. Physician leadership also wanted to demonstrate the impact insulin regimens had on patient outcomes and identify ways to coach physicians toward better diabetes management.

Challenge:

- ❑ CPOE guidelines for insulin therapy selections were being circumvented.

Solution:

- ❑ Endocrinology Dashboards that analyze insulin regimen ordering trends and demonstrate impact of insulin regimens on patient outcomes and care efficiency.

Results:

- ❑ Better glucose management with basalbolus insulin regimens.
- ❑ Shorter length of stay for patients on basalbolus regimens.
- ❑ Identify physicians who could benefit from education and training.

LEVERAGING THE DIVER PLATFORM FOR CLINICAL ANALYTICS

Harm Scherpbier, MD, Vice President and Chief Medical Information Officer at Main Line Health, decided to use Diver Platform (Diver) from Dimensional Insight® to create an Endocrinology Analytics (EA) business intelligence dashboard to analyze physician insulin therapy ordering patterns and to correlate the choice of insulin regimen with patients’ glucose outcomes.

Main Line Health was already using Diver for their patient safety “Huddleboards.” Huddleboard dashboards automate the collection, integration, and visualization of key safety and operational metrics into interactive dashboards and reports for each of Main Line Health’s acute care hospitals. The Huddleboards help hospital management monitor current census and readmissions information, OR cases, observation patients’ LOS, bed utilization and staffing.

COMPLEXITIES OF CLINICAL DATA

The EA team represented a collaboration of endocrinology physicians, patient educators, IT Analytics and the Hospitalist Service for all Main Line Health facilities. One challenge the team immediately faced was preparing and analyzing the clinical data to create actionable insights. Clinical data is complex and requires sophisticated algorithms and

business rules to pre-process the data. Groupings and filters are needed extensively to evaluate multiple patients’ insulin orders and classify whether the physician ordered a sliding scale or any form of basal-bolus insulin therapy. Timing algorithms are used to determine the initial insulin treatment time-window and also pre- and post-glucose levels. Attribution algorithms are necessary to determine which physician is responsible for ordering and management of the patient.

Using Diver and its powerful data integration, business rules and modeling capabilities, the IT Analytics team was able to overcome this hurdle. Jamie Mitchell, Senior Applications Specialist noted, “Once we had access to our data sources, we were able to pull in and aggregate the data, create our business rules and calculations to transform the data, and build the data models that feed the EA dashboards.”

Insulin Therapy Regimens:

Sliding scale:

Easy to order, easy to manage—
but reactive and often ineffective.

Basal-bolus:

Combinations of long-acting
basal insulin plus meal-time and
correction doses.

COMMUNICATING INSIGHTS

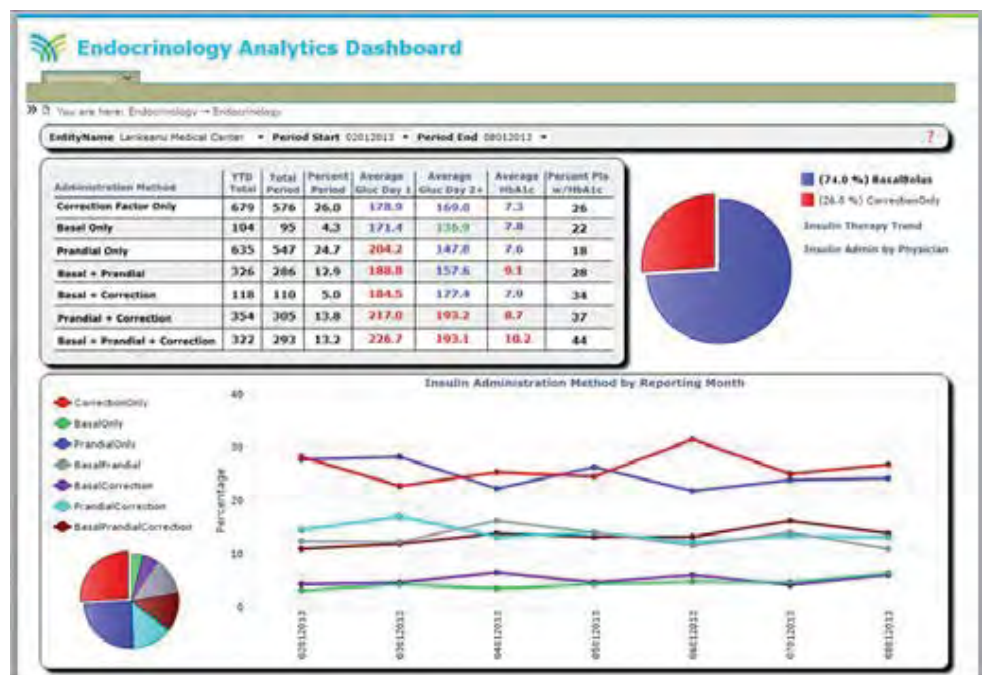
The interactive EA dashboards present
physician leadership with:

- ❑ Physician insulin regimen ordering patterns—identifies physicians who continue to order sliding scale insulin regimens vs. basal-bolus regimens. Views are presented for each of Main Line Health’s facilities with drill-down to the physician levels and trends over time.
- ❑ Impact of insulin regimen on glucose trends—analyzes which regimens have the strongest positive impact on glucose levels, and demonstrates to physicians that the regimen choice has an immediate and measurable impact on patient care.
- ❑ Length of stay—demonstrates the impact of the insulin regimen not only on quality but care efficiency.
- ❑ Drill-down to ordering or attending physician—enables diabetes educators to personalize physician training and give direct, physician-specific feedback and coaching.
- ❑ Ordering behaviors trends—shows the impact of physician education campaigns.

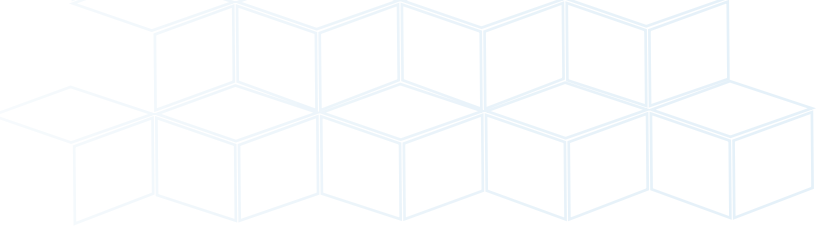
DEMONSTRABLE BENEFITS

The EA dashboard demonstrates the benefits of newer, basal-bolus over “sliding scales” insulin regimens. Physicians reviewing results can quickly see that for the majority of cases, a basal-bolus insulin regimen results in better glucose management.

The dashboard also shows that patients with a basal-bolus insulin regimen have an equal or shorter median length of stay, providing insights into improving both clinical and efficiency measures. The EA dashboard highlights large variances in physician ordering patterns to easily identify physicians who could benefit from in-service training.



Endocrinology Analytics Dashboard



About Dimensional Insight

Dimensional Insight® is a leading provider of analytics, data management, and performance management solutions, offering a complete portfolio of capabilities ranging from data integration and modeling to sophisticated reporting, analytics, and dashboards. The company is an eight-time Best in KLAS winner in healthcare business intelligence and analytics, most recently ranking #1 in 2021. Founded in 1989, Dimensional Insight has thousands of customer organizations worldwide. Dimensional Insight consistently ranks as a top performing analytics organization by customers and industry analysts in its core market segments including healthcare, manufacturing, and beverage alcohol. For more information, please visit <https://www.dimins.com/>.



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