COVID-19 Capacity Planning Tool Provides Advanced Analytics and Improved Operational Effectiveness

Carle has embraced data science by **implementing and integrating a COVID-19 capacity planning tool** into daily operations in **less than two months**.

The organization is **using advanced analytics** for its **capacity planning efforts** and to support its leadership team in **making timely decisions**, improving the effectiveness of **COVID-19 planning and response**.

PRODUCTS

- Health Catalyst® Data Operating System (DOS™)

EXECUTIVE SUMMARY

COVID-19 is causing many hospitals and health systems to face resource and capacity restrictions, making the accurate estimation of COVID-19 requirements crucial. Carle Health needed the ability to anticipate the impact COVID-19 would have on its organization and community. After analyzing national COVID-19 capacity planning resources, Carle chose a model that was customized for its organization. Carle leveraged its analytics platform, using local data and infection rates to forecast the impact of COVID-19 locally. The organization now has critical insight into when surges will occur and can determine if it has enough available resources.

COVID-19 CHALLENGES CAPACITY PLANNING AND RESPONSE

Accurately forecasting COVID-19 demand is critical for hospitals and health systems, many of which face extraordinary resource and capacity constraints.[1] Carle recognized its need to accurately estimate the impact COVID-19 would have on its organization and the surrounding community.

> The Health Catalyst partnership and COVID-19 capacity planning tool are powerful, and we've already identified how we can use data science and advanced analytics to improve other health issues.
>
> **Robert Healy, MD, Chief Quality Officer**

EFFECTIVE COVID-19 PREPARATION REQUIRES DETAILED AND DIVERSE DATA

Carle needed a way to anticipate and meet the demand for facility, supply, and human resources required to care for patients with COVID-19 in their community. National and even county-level COVID-19 capacity planning resources are not adequate to determine how to balance load and shift services at an individual hospital and unit level.

ANALYTICS CRITICAL FOR COVID-19 CAPACITY PLANNING

Carle leveraged the Health Catalyst® Data Operating System (DOS™) platform and a robust suite of analytics applications, including a capacity planning tool that uses Healthcare.AI™, to forecast census and related bed, staffing, and supply needs at the level of patient acuity. Carle uses dynamic regional infection spread and market share data and augments these assets with the internal clinical, operational, length of stay, staff, and supply data to anticipate COVID-19 activity.

Carle now has critical insight into when patient surges will occur and can efficiently identify if those surges will exhaust its available resources, or when they have capacity for non-emergent cases, improving the organization's ability to plan and act. Leaders use the forecasting data to inform decisions and adjust operations as needed to accommodate increasing demand.

ABOUT CARLE HEALTH

Carle Health combines clinical care, health insurance, research, and academics in a way that solves real-world problems today. The Carle Foundation is a vertically integrated health system with more than 9,500 employees in its hospitals, physician groups, health plan, and associated healthcare businesses, including the Carle Illinois College of Medicine, the world's first engineering-based medical school.

> The COVID-19 capacity planning tool has helped to accelerate analytics adoption across our organization, and set the stage for us to accelerate clinical improvement and financial improvement, and further enhance our analytics capabilities.
>
> **Phillip Rowell, M.J., VP Clinical and Business Intelligence**

RESULTS

By using DOS, the capacity planning tool, and Healthcare.AI, Carle has achieved the following results:

- Carle has embraced data science by **implementing and integrating the capacity planning tool** into daily operations **in less than two months**.
- The organization is **using advanced analytics** for its **capacity planning efforts** and to support its leadership team in **making timely decisions**, improving the effectiveness of **COVID-19 planning and response**.
- For example, Carle was **able to identify an upcoming surge in infections** and demand for inpatient beds five days before the surge occurred. Leadership was **prepared to respond to the upcoming increase in demand, activate contingency staffing plans, and adjust its staffing model** to ensure it made the best use of its nursing staff's skills and abilities while also providing safe patient care. Leaders used the forecasted increase in demand to engage Carle's supply chain, reaching out to suppliers to obtain adequate supplies in time.
- **Carle continues to refine and improve the capacity planning tool**. As confidence grew in the five-day model, Carle has moved to a seven-day model, giving more lead time.

WHAT'S NEXT

Carle will continue to monitor COVID-19 forecasts and leverage its robust data and analytics to continually enhance the capacity planning tool, making certain it is well prepared to meet the needs of its patients and communities.

REFERENCES

1. Department of Evidence and Intelligence for Action in Health. (2020). *Why predictive modeling is critical in the fight against COVID-19. Fact Sheet N.8.* Retrieved from https://iris.paho.org/handle/10665.2/52276

ABOUT HEALTH CATALYST

Health Catalyst is a leading provider of data and analytics technology and services to healthcare organizations, committed to being the catalyst for massive, measurable, data-informed healthcare improvement. Our customers leverage our cloud-based data platform—powered by data from more than 100 million patient records, and encompassing trillions of facts—as well as our analytics software and professional services expertise to make data-informed decisions and realize measurable clinical, financial, and operational improvements. We envision a future in which all healthcare decisions are data informed.

Learn more at **www.healthcatalyst.com**, and follow us on **Twitter**, **LinkedIn**, and **Facebook**.