

UCHealth: Achieving Efficient Bed Capacity Management, Systemwide (April 2022)

Overview

UCHealth is an Integrated Healthcare Delivery System serving Colorado, southern Wyoming, and areas of Nebraska. The network, which uses the Epic electronic health record (EHR), consists of 12 hospitals with a total of 1,997 inpatient hospital beds and performs over 141,000 admissions and observation visits per year.

Problem

UCHealth was using analytic tools created by internal teams to manage its inpatient throughput. These tools required labor-intensive manual preparation on a daily basis and still did not provide managers and frontline workers with the timely and accurate information needed to make important decisions about patient placement and patient flow. As a result, the daily process of managing capacity was chaotic.

While the organization had access to an extensive amount of data none of their analytics provided real-time information or accurate predictions of what would happen in the future. UCHealth needed a solution that would eliminate guesswork and anecdotal information from the decision-making process. A data-driven approach involving predictive and prescriptive analytics would help personnel both plan for tomorrow and manage immediate needs for today. UCHealth was also looking for a single source of truth for capacity management that could be shared in real-time across departments, clinical disciplines, and the health system as a whole.

With the onset of a worldwide pandemic in 2020, the concerns around increasing length of stay became one of many that was top of mind for hospitals, including the UCHealth network. As the effects of COVID-19 led to an increased number of patients, UCHealth continued to evaluate how to keep length of stay at least consistent.



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Solution

Prior to the onset of COVID-19, UCHealth had already partnered with LeanTaaS to implement iQueue for Inpatient Beds. iQueue provides real-time data plus predictive and prescriptive analytics that enable operational teams to move away from reactive capacity planning and toward proactive problem-solving. The solution also improves patient flow by reducing wait times at key steps along the patient journey and mitigates the chaos historically inherent in managing bed capacity.

University of Colorado Hospital was the first UCHealth hospital to go “live” on [iQueue for Inpatient Beds](#) in February 2020 – just as the pandemic was beginning. Through implementing iQueue, UCHealth is able to predict future admissions and discharges, balance beds across the network, hospital, and unit, and make strategic, data-based decisions to ensure the right patient was placed in the right bed at the right time.

Leadership knew implementing technology alone would not quell the imminent problem of increasing length of stay. Ensuring key principles, processes and resources were in place would also be critical to the success of decreasing length of stay and overall patient throughput. In order to ensure success and adoption of iQueue for Inpatient Beds, UCHealth implemented new processes and structures along with the technology to ensure success.

To right size unit capacity, UCHealth implemented a “sister unit” strategy. Each provider service identified a primary and secondary unit where their patients should be placed, resulting in a formal matrix of services and units to guide patient placement decisions. iQueue continues to utilize this information to track on and off service placement,

“Hospital executives need to have easy access to historical and real-time data to inform a proactive and objective approach to patient throughput. Operational leaders need to have a good understanding of patient demand and organizational bed capacity by level-of-care and specialty service. Frontline clinical teams need tools that provide situational awareness and drive standard work to decrease the cognitive load and chaos they navigate day-to-day. iQueue for Inpatient Beds checks all of these boxes. It has been an instrumental tool to facilitate smooth patient flow and hardwire daily operations across UHealth.”

Jamie Nordhagen,
MS, RN, NEA-BC, Senior Director of Patient Flow and Capacity Management, UHealth.

suggesting transfers to on-service when applicable as well as providing predictions regarding which units will see admissions and discharges over the next 24-hours. This allows the UHealth team to plan for the patients they currently have as well as provide the number of patients they should plan to admit and discharge.

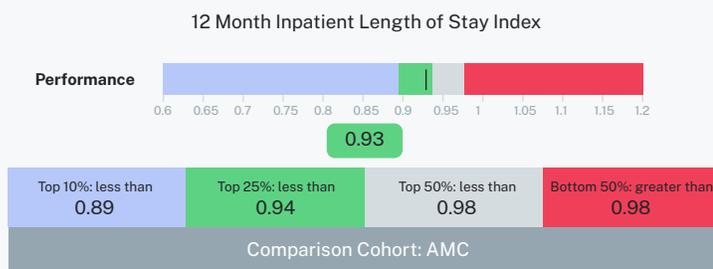
The sister unit strategy has also proven to be successful in helping manage operating room (OR) utilization and efficiency as well as decrease bottlenecks in the post-anesthesia care units (PACUs). UHealth created specific surge plans and standard operating procedures for various surgical populations and utilizes iQueue to identify where any mismatches may occur. Based on these plans and information, the staff is able to appropriately determine in which units patients should be placed.

Results

iQueue has been live at UHealth’s 698-bed tertiary academic medical center, University of Colorado Hospital, since February 2020, and expanded across the system to 11 additional hospitals in October 2020. UCH uses iQueue for Inpatient Beds to run daily bed meetings, perform hourly administrative management, and drive capacity protocol standardization. Patient flow metrics have noticeably

improved. The iQueue for Inpatient Beds tool continues to drive alignment across the UHealth network to facilitate patient flow and throughput.

Since implementing iQueue for Inpatient Beds, University of Colorado Hospital has noted a steady decrease in their overall Vizient length of stay index, most recently placing them in the top 25% of the Academic Medical Center cohort (see below).



Source: Vizient



Source: Vizient

Patient flow metrics and the system’s confidence in critical decision making have noticeably improved at University of Colorado Hospital while the daily chaos associated with a previously manual and labor intensive process has significantly decreased.

▼ **65%**
Decrease in time to complete ICU Transfers

▼ **10%**
Decrease in time to admit from the Emergency Department (despite 18%+ increase in Covid-19 census)

▼ **16%**
Decrease in overall time to admit (despite 18% + increase in COVID-19 census)

90%
Confidence in critical capacity decision (compared to only 50%)

*improvements noted between May 2021 and December 2021