



Optimizing Infusion Center Operations At





500+

720,000+

11,500+ CHAIRS UNDER MANAGEMENT



Schedule smarter through optimized templates

Set yourself up for a smooth flow with templates engineered to minimize delays by level-loading the day

Manage the day **before it unfolds**

Use utilization projections by time of day to help anticipate bottlenecks and steer add-ons

Understand your **resource utilization** in seconds

Built-in reporting and allocation models make it easy to track utilization patterns and opportunities





Optimized Infusion Scheduling Template

Stanford HEALTH CARE

Problem

The Stanford Cancer Center is one of 71 elite NCI designated Comprehensive Cancer Centers in the entire country. Stanford advances the understanding and treatment of cancer through a multidisciplinary, integrated and collaborative community of physicians and scientists. It performs over 65,000 infusions annually across 3 centers and is growing steadily. The Center was experiencing the following operational challenges:



- Triangular usage profile that resulted in excess capacity in the mornings and evenings and peaks at mid-day
- Long patient wait times during the middle of the day
- High overtime costs
- Resources not being used optimally

Solution

Stanford partnered with LeanTaaS to jointly develop **iQueue for Infusion Centers** and deployed it at one of its 60 chair centers to create optimized infusion scheduling templates. iQueue for Infusion Centers uses data science and machine learning to create optimized scheduling templates in order to continuously maximize patient flow and chair usage.



Utilization curve before



Utilization curve after

RESULTS

31%

Median wait times



LOWER Emergency call back overtime pay 17%

LOWER Total Cost per unit of service

* 25%

Percentile points in nursing satisfaction

☐ NewYork-Presbyterian

Problem

NewYork-Presbyterian is home to two of the nation's leading cancer centers – the **NCI-designated** Herbert Irving Comprehensive Cancer Center of NYP/Columbia University Medical Center and the NYP/Weill Cornell Ronald P. Stanton Clinical Cancer Program and the Weill Cornell Medicine Sandra and Edward Meyer Cancer Center.



As a leading cancer center, NYP treats some **7,500 adult and pediatric** patients newly diagnosed with cancer each year.

- Consistently operating at capacity
- A peaky utilization profile leading to extended wait times in the middle of the day

Solution

Leadership at NYP deployed iQueue for Infusion Centers at one of its centers with 49 chairs to create optimized infusion scheduling templates. iQueue for Infusion Centers uses data science and machine learning to create optimized scheduling templates in order to continuously maximize patient flow and chair usage.



Utilization curve **before**



Utilization curve after

RESULTS

55%

LOWER Waiting times at peak hours



LOWER Average waiting time HIGHER Patient volumes

UCSF

Problem

The UCSF Helen Diller Family Comprehensive Cancer Center is one of 71 elite **NCI-designated Cancer Centers** in the United States, and is one of only two centers in the Bay Area to receive the prestigious designation of "comprehensive" from the National Cancer Institute.

In the past year, the Center experienced a **21% growth** rate in treatment volumes and were experiencing the following operational challenges:

- Consistently operating over capacity
- A peaky utilization profile leading to extended wait times in the middle of the day
- Strained resources, resulting in decreasing staff and patient satisfaction

Solution

Leadership at the Helen Diller Family Comprehensive Cancer Center deployed **iQueue for Infusion Centers** at one of its centers with 12 chairs and 3 beds to create optimized infusion scheduling templates. After realizing significant results, iQueue for Infusion Centers was deployed at **4 additional centers** that collectively added 82 more chairs.



Utilization curve before

Frequent "mid-day" peaks and slow mornings and evenings

Frequent overflow in waiting rooms-long patient waiting times

iQueue for Infusion Centers uses data science and machine learning to create optimized scheduling templates in order to continuously maximize patient flow and chair usage.



Utilization curve after

Even workload throughout the day allows for more predictable schedules Unlock capacity to help deal with unexpected delays and add-ons

RESULTS

31%

LOWER Waiting times at peak hours

26%

LOWER Average waiting time 42%

LOWER Average hours over capacity

B% LOWER Overall average daily peak

uchealth

Problem

The University of Colorado Cancer Center in Denver is one of 71 elite **NCI designated Comprehensive Cancer Centers** in the entire country and the only one in Colorado.

Known worldwide for developing and setting new standards in the treatment of many types of cancer, it has 175 chairs spread across 10 centers and sees double-digit growth in treatment volumes every year. The Center was experiencing the following operational challenges:

- Consistently operating at capacity
- Frequent "mid-day" peaks and slow mornings and evenings
- Frequent overflow in waiting rooms-long patient
 waiting times
- Sometimes patients would wait hours for chairs to become available

Solution

Leadership at UCHealth deployed iQueue for Infusion Centers at one of its centers with 28 chairs and 6 private rooms to create optimized infusion scheduling templates. After realizing significant results, iQueue for Infusion Centers was deployed at 6 additional centers that collectively added 104 more chairs.





Utilization curve **before**



Utilization curve after

RESULTS



LOWER Waiting times at peak hours



LOWER Average waiting time 14%

HIGHER Patient volumes LOWER Overtime hours

Wake Forest® Baptist Health

Problem

The Comprehensive Cancer Center of Wake Forest Baptist Health in Win-ston-Salem, North Carolina has been one of 71 elite **NCI designated Cancer Centers** for over 40 years.

Acknowledged as one of the nation's leaders in the fight against cancer, the Comprehensive Cancer Center has 35 infusion chairs & 8 private rooms and has seen **6% growth** rate in treatment volumes for the past 3 years



- Consistently operating at capacity
- Peak periods of high utilization for treatment chairs between 10am and 2pm
- Strained resources, resulting in decreasing staff and patient satisfaction

Solution

Leadership at the Cancer Center center deployed **iQueue for Infusion Centers** at one of its centers with 35 chairs and 8 beds to create optimized infusion scheduling templates. iQueue for Infusion Centers uses data science and machine learning to create optimized scheduling templates in order to continuously maximize patient flow and chair usage.



Utilization curve before

- Frequent "mid-day" peaks and slow mornings and evenings
- Frequent overflow in waiting rooms-long patient waiting times



Utilization curve after

- Even workload throughout the day allows for more predictable schedules
- Unlock capacity to help deal with unexpected delays and add-ons

RESULTS

25%

LOWER Waiting times at peak hours



LOWER Days over capacity 74%

LOWER Days where hours of operation needed to be extended



Problem

Huntsman Cancer Institute (HCI) is part of the University of Utah Health Care system. HCI is a **National Cancer Institute** (NCI)-Designated Comprehensive Cancer Center, which means it meets the highest standards for cancer care and research and receives support for its scientific endeavors.

HCI is also a member of the National Comprehensive Cancer Network (NCCN), a not-for-profit alliance of the world's leading cancer centers. The Center was experiencing much



busier days due to an increase in volume, and was experiencing the following operational challenges:

- Increasing volume was making it hard to find slots for longer treatments
- Exceeding capacity in peak hours and peak days was impacting patient wait times
- Exceeding capacity in peak hours was affecting nurse satisfaction

Solution

HCI deployed **iQueue for Infusion Centers** at its 36-chair center to create optimized infusion scheduling templates.

iQueue for Infusion Centers uses data science and machine learning to create optimized scheduling templates in order to continuously maximize patient flow and chair usage.



Utilization curve **before**



Utilization curve after

RESULTS

16%

DECREASE IN Average wait times on peak day

26%

DECREASE IN Average wait time during peak hours

Odays

ABOVE Capacity since implementation

Memorial Sloan Kettering Cancer Center

Problem

Memorial Sloan Kettering Cancer Center — the world's oldest and largest private cancer center — has devoted more than 130 years to exceptional patient care, innovative research, and outstanding educational programs. Today, MSKCC is one of 71 National Cancer Institute – designated Comprehensive Cancer Centers.

Improving patient wait times for infusion is of paramount importance for MSK. Over the course of the past 10 years, MSK has engaged with various consulting firms and process improvement experts – as well as their internal



team of industrial engineers and analysts – in an attempt to design interactive tools that would help them better predict and plan for the extreme variability in operational workflows of their high volume infusion units which are distributed in New York City and the surrounding suburban areas. Most of these efforts yielded small and unsustainable improvement without offering MSK what it needed most: a predictive tool or simulation model that could be used for planning volume, visit distribution and resource utilization for their infusion units.

Solution

MSKCC leaders tested iQueue for Infusion Centers at its 13-chair Gynecologic Oncology Infusion unit in midtown Manhattan with the goal of optimizing their templates, providing daily management guidance about what to expect



Utilization curve **before**

each day, understanding what went wrong and – most importantly – using schedule alert tools that help staff react to changing conditions.



Utilization curve after

RESULTS

BECREASE IN Overall average wait times

26%

DECREASE IN Average wait times during peak hours 32%

DECREASE IN Average wait times on peak days **^ 22%**

INCREASE IN Average volumes on slowest day of the week

🐺 Penn Medicine

Problem

Ranked as Pennsylvania's #1 health system, Penn Medicine is a world-renowned academic medical center in Philadelphia that combines education, research, and clinical care to provide the best possible patient care.

Penn Medicine's Abramson Cancer Center Infusion Suite at the Perelman Center for Advanced Medicine sees over 50,000 infusion visits each year and was experiencing the following operational challenges:

Solution

Leadership at the cancer center initially deployed **iQueue for Infusion Centers** on its 4th floor unit with 21 chairs to optimize their scheduling templates, provide daily management guidance about what to expect each day, and to understand why days did not go as planned.



Utilization curve before

The center achieved outstanding results at this pilot location as shown below, and as a result, leadership extended the use of **iQueue for Infusion Centers** to many of its other floors and locations, bringing the total number of chairs managed through the solution to 181.



Utilization curve after

RESULTS





INCREASE IN Patient hours **′ 22**%

DECREASE IN Average wait times **13%** DECREASE IN Average wait time during peak hours



- History of patient and staff dissatisfaction with long wait times
- Nurses feeling rushed and pressured to perform essential functions such as documentation and education because of uneven schedules and the way patients arrive throughout the day
- Extended wait times, especially in the middle of the day

N HEALTH

Overview

Novant Health is a non-profit integrated healthcare network with 15 hospitals and more than 350 physician practices offering advanced medical treatments across multiple states. Utilizing purposeful innovation is core to Novant Health's strategy for delivering an exceptional healthcare experience for patients.



Problem

Like most health systems, Novant Health's branches struggled to align an unpredictable pattern of demand for appointments with a limited supply of physicians, staff, equipment, and infusion centers. The center was experiencing the following operational challenges:

- A daily "mid-day" crunch of high patient volume and lack of available resources
- Patient dissatisfaction due to high wait times and nurses overworked from patient bottlenecks

Solution

iQueue for Infusion Centers was piloted at Novant Health's Presbyterian Medical Center in Charlotte, NC, helping to solve the mid-day spike in appointments and reduce patient wait times. The infusion center waiting room was intentionally designed to be small and iQueue streamlines how quickly a patient is seen. Patients are now scheduled at a steadier pace throughout the day, creating less wait time and improving patient flow. The infusion center can now see additional patients throughout the day, and nurse burnout is now less likely.



Utilization curve **before**

Utilization curve after

RESULTS



40%

DECREASE IN Average wait time during peak hours **18**%

FEWER Patients waiting > 15 minutes **17%** LOWER Average daily peak



The Fred & Pamela Buffett Cancer Center opened in July 2017. This state-of-the-art facility consists of the Suzanne and Walter Scott Research Tower, where researchers have received more than \$185 million in grant funding; the C.L. Werner Cancer Hospital, an 108-bed inpatient treatment center and a multidisciplinary outpatient center which includes clinics, radiation oncology, surgery, radiology, a 24/7 treatment center and lab. Located in Omaha, Nebraska, it is the only NCI-designated cancer center in the state and treats more than 60,000 patients each year.



Problem

- Nurses missing breaks/lunch
- Too heavy of a patient load in the morning/midday
- Need to accommodate add-ons/unlinked and linked appointments
- Need to increase capacity without adding FTEs
- Want to increase patient access
- Too much overbooking

Solution

Leadership at the cancer center deployed iQueue for Infusion Centers to optimize their infusion workload throughout the day, provide visibility into the overall scheduling decisions, and understand why days did not go as planned. As a result of the iQueue for Infusion Centers implementation, Nebraska Medicine achieved an increase in average completed volumes while utilizing existing resources, a decrease in infusion wait times and an overall positive impact on nursing workflows.

RESULTS:

- WAIT TIMES, Infusion Center at Village Pointe Cancer Center
- Wait time decreased by 28% while volumes remained flat
- Average wait time only ~8 minutes
- ▼ WAIT TIMES, Infusion Center at Fred & Pamela Buffett Cancer Center
- Wait times decreased by 20% while volume grew
- Average wait time only ~7 minutes
- VOLUME GROWTH, Infusion Center at Fred & Pamela Buffett Cancer Center
 Successfully increased patient volume without adding chairs, by more efficiently utilizing existing chair resources
- Scheduled patient volume growth: 12%
- Completed patient volume growth: 8%

"We've seen tremendous success and kept our wait times under 10 minutes while increasing patient volumes by using iQueue for Infusion Centers, including the executive summary feature."



Becky Duchman, MSN, MA, RN, NEA-BC, Director Ambulatory Infusion/Treatment Services, Heartland Oncology Clinic & Infusion, Kearney, Nebraska, Cancer Resource Centers

CHAIR UTILIZATION - INFUSION CENTER AT FRED & PAMELA BUFFETT CANCER CENTER



WAIT TIMES - INFUSION CENTER AT VILLAGE POINTE CANCER CENTER



WAIT TIMES - INFUSION CENTER AT FRED & PAMELA BUFFETT CANCER CENTER





More breakthroughs. More victories.®

Overview

Texas Oncology was founded in 1986 and is one of the country's largest community-based cancer care practices. Texas Oncology's mission is to provide high-quality cancer care with leading-edge technology and advanced treatment and therapy options in local communities across Texas and southeastern Oklahoma. Care is delivered by more than 500 physicians at 210 locations across Texas and Oklahoma, and Texas Oncology has played a role in more than 100 FDA-approved cancerfighting drugs.



Problem

- Need to increase capacity for new patients without expanding physical footprint of clinics
- Uneven utilization of infusion chairs, leading to longer patient wait times and nurses missing breaks/lunches during peak hours
- Need to maximize both physical and staffing resources during the COVID-19 pandemic
- Need a solution that was easily scalable for the statewide network of clinics of various sizes

Solution

Texas Oncology deployed iQueue for Infusion Centers to increase their capacity without expanding the physical footprint of their clinics, increase their chair utilization during afternoon hours that were historically less busy, and provide visibility into the overall scheduling decisions. As a result of the iQueue for Infusion Centers implementation in the first 14 clinics to go live, Texas Oncology achieved an increase in average scheduled appointment volume while utilizing existing resources, more level-loaded chair utilization during peak hours, and increased chair utilization during those key afternoon hours.

RESULTS:

Results for the first 14 clinics to go live on iQueue:

12 OUT OF 14

Locations had an increase in average scheduled appointments

9 OUT OF 14

Locations had an increase in average daily scheduled patient hours 11 OUT OF 14

(79%) Locations had a more level-loaded chair utilization through peak hours "It's quite miraculous to me that we had this increase in patient volume at a time when we were having to go through all of the COVID restrictions."



Tammy Sayers, Chief of Operations, Texas Oncology

RESULTS:

Texas Oncology–Amarillo Cancer Center

Increased average daily scheduled appointment volume by ~20%

 Smoother "ramp-up" in the a.m. to support RN & pharmacy capacity and more fully utilized afternoon hours





RESULTS: Texas Oncology–Odessa West Texas Cancer Center



Increased average daily scheduled patient hours by ~17% Increased median chair utilization in the afternoon

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Scheduled Median

Chair Utilization

Scheduled Median

Chair Utilization



RESULTS:

Texas Oncology–Baylor Charles A. Sammons Cancer Center, Medical Oncology Increased average daily scheduled patient hours by ~25%
Increased chair utilization in the afternoon, achieving the location's main goal of growing volume





1/25 -7/30 | 26 weeks | Excluding Weekends



Oregon Health and Sciences University's Knight Cancer Institute is one of 71 elite NCI designated Comprehensive Cancer Centers in the country and the only designation in Oregon. OHSU is a public research university in Oregon entirely dedicated to health sciences with a main campus, including two hospitals, in Portland, Oregon. OHSU has implemented iQueue for Infusion Centers across 6 sites and over 100 chairs-the 7th site will implement later this year.



Problem

- Satisfying patient demands, especially during peak hours
- High patient wait times leading to patient dissatisfaction
- Ineffective chair utilization, not optimizing capacity of center
- Nurses frustrated by short, rushed lunches while maintaining heavy workloads

Solution

OHSU chose to deploy iQueue for Infusion Centers to help nurses and staff smooth daily infusion schedules and workflows, and to decrease wait times for patients. Using iQueue, OHSU reduced the occurrence of chairs running out, decreased drug wait times, and also closed on time more frequently, reducing overtime hours. OHSU also flattened their midday peak as seen



Utilization curve before

in the main Tualatin location below, allowing nurses to take lunches more frequently than before.

At the Gresham campus in particular, schedulers were able to optimize future weekly schedules through schedule grooming, resulting in more balanced workloads. All CHO campuses, post-iQueue implementation, were able to accept a larger volume of patients.



Utilization curve after

RESULTS



DECREASE IN Percent of days over max capacity



▼ 31% DECREASE IN

Running past scheduled close



DECREASE IN Drug wait times "iQueue helped the schedulers so much that the charge nurses thought the phones were broken!"

Tyler Van Brunt, Assistant Nursing Director



The Hartford HealthCare Cancer Institute provides access to care at seven hospitals, nine medical oncology practices and 13 infusion centers in communities throughout Connecticut. Hartford HealthCare diagnoses and/or treats nearly 8,000 new cancer cases each year.

Solution

Over the span of 18 months, iQueue was implemented at HHC's 180 infusion center beds. As a result of iQueue for Infusion Centers, HHC achieved an increase in average completed volume while utilizing existing resources, a decrease in both drug and infusion wait times, and an overall positive impact on nursing workflows.



Problem

- Appointments were not appropriately load-leveled throughout the day, especially during the midday peak hours
- Coordinating infusion visits with clinics were challenging to schedule
- Add-on patients are difficult to schedule
- At times there were long patient wait times in infusion centers
- Nurse workload not balanced

"I don't think I've done an overbook so far. This has had a very positive impact on our infusion centers, our staff and our patients."

Sydney Wasterman, Hartford HealthCare Cancer Institute Lead Scheduler, 1 week into the iQueue implementation

RESULTS:

DECREASE IN Average wait time

10% INCREASE IN Average daily completed volumes

14% DECREASE IN Average scheduling lead days





POST-iQUEUE





The Hopkins Kimmel Comprehensive Cancer Center is an NCI-Designated Comprehensive Cancer Center and is comprised of 195 chairs across 5 centers. It performs ~48,000 treatments annually across locations throughout the Baltimore and Washington, DC metro areas. The centers were experiencing the following operational challenges:

Problem

- Long patient wait times during the middle of the day, 63 minutes on average at Center #1
- Running out of chairs 37% of days at Center #2
- Closing late by 2 hours or more 69% of days at Center #3
- Multiple Centers spent entire days creating nurse assignments

Solution

Leadership at Hopkins initially deployed iQueue at three sites to address the issues. Based on the success, iQueue was deployed to the remaining sites across the health system with similar success. The team was able to improve the patient experience by decreasing drug and wait times. In addition, they were able to reduce the number of days running past close-which happened more often than not.

RESULTS OVER 4 YEARS

Sidney Kimme

Comprehensiv

Cancer Center

42%

INCREASE IN Average daily completed volumes at Center #3

22%

DECREASE IN

Days running past close at Center #3

30%

DECREASE IN Average drug wait time at Center #1

SSMHealth.

Overview

SSM Health is a Catholic, not-for-profit health system serving the comprehensive health needs of communities across the Midwest through a robust and fully integrated health care delivery system. With care delivery sites in Illinois, Missouri, Oklahoma and Wisconsin, SSM Health includes 23 hospitals, more than 290 physician offices and other outpatient and virtual care services, and 12 postacute facilities. It is one of the largest employers in every community it serves. In 2021, our community oncology sites served approximately 3,000 patients with over 38,700 visits in St. Louis alone.



Problem

- Unpredictable patient volumes due to waves of COVID
- Major construction that constrained daily operations
- Extremely busy morning rushes followed by slow afternoons
- Imbalanced nurse workloads and nurses missing their breaks
- Major pharmacy bottlenecks

Solution

iQueue for Infusion Centers was implemented at four SSM cancer centers during a difficult 2 years of COVID-19 surges, and as a result they saw significant improvement in their operational agility, patient volumes, wait times, afternoon appointment utilization and overall nurse satisfaction. SSM had to close several chairs at their Kisker clinic due to a construction project, and successfully shifted appointments to a nearby site using iQueue templates to maintain patient care.

RESULTS – LAKE ST. LOUIS

18%

INCREASE IN Patient volume without adding chairs

REDUCTION IN Drug wait time



REDUCTION IN Infusion wait time

30%

INCREASE IN Afternoon median chair utilization



Maintaining appointment availability across the community oncology sites despite closing several chairs for construction and social distancing



VANDERBILT VINIVERSITY

MEDICAL CENTER

Overview

Vanderbilt-Ingram Cancer Center is 1 of 71 NCI-designated Comprehensive Cancer Center and the only adult center designation in Tennessee amongst many other accreditations. VICC is dispersed between 11 cancer locations in the middle TN region consisting of 126 total infusion chairs and serviced by 180 physician providers with a comprehensive representation of hematology and oncology subspecialities.



Problem

- High patient wait times
- Nurses frequently missing lunches
- Desire to increase capacity but unable to do so pre-iQueue
- Unable to balance capacity between
 oncology and non-oncology infusions

Solution

Prior to implementation, Vanderbilt-Ingram Cancer Center had a desire and need to increase capacity with the inability to do so on their own. With the implementation of iQueue for Infusion Centers, they were able to unlock additional capacity utilizing the same number of chairs. Scheduling leaders are able to strategically steer add-ons to levelload the day and leadership analyze data in the tools to see how the month will unfold in order to balance capacity.

RESULTS:

Results at Largest Center:

30% DECREASE IN Chair wait time

8%



DECREASE IN Drug wait times "It's a very impressive amount of growth, and amount of volume we've added at this one infusion center, thanks to having the iQueue system in place."



Cody Stansel, Administrative Director – Nursing, Vanderbilt-Ingram Cancer Center

INCREASE IN Volumes utilizing the same number of chairs

What Your Colleagues Are Saying



"iQueue uses data science and machine learning to create optimized scheduling templates in order to continuously maximize patient flow and chair usage. The results were dramatic."



Jamie Bachman Former Executive Director, Oncology Services



"We were very pleased with how fast we were able to implement iQueue for Infusion Centers and see a difference. We see lots of happier patients because things are happening on-time."



Karen Craver Clinical Practice Administrator



"Our nurses love using the huddle report every morning because it gives us a really good indication for if we can take patients back early who arrive early, and for knowing where the day's best opportunities are for handling add-ons. Our days run much smoother because we are really utilizing our time better."



Joy Lombardi, RN, OCN Manager



"We took two years of historical data and pumped that into the analytic engine as well as operating constraints, how many infusion chairs are available, the hours when the chairs are open and the staff that's available and that's translated into mathematical equations into iQueue and out comes as a production schedule."



Sridhar Seshadri Vice President, Cancer Services



Contact us for a no obligation demo:

info@leantaas.com

www.leantaas.com



