

Monoclonal Antibodies: A Reduction in Hospital Admissions in COVID-19 Therapy

Northern Light Health

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Executive Summary

Northern Light Health is the most expansive integrated healthcare system in Maine. Northern Light Health is comprised of 10 member hospitals with 987 licensed beds, a single physician-led medical group, eight nursing homes with 585 long-term beds, five emergency transport members, 37 primary care locations and employ more than 12,000 people in Maine.

In December 2020, Northern Light Health began sporadically giving its first doses of monoclonal antibodies (MAb) as a treatment for COVID-19. Teams went through major transitions to create a system-wide approach that included utilization of algorithms to proactively identify high-risk patients, creation of workflows and PowerPlans for standardized care delivery, management of workforce and supply chain, establishment of safe infusion centers, and support models for at home infusions for individuals who could not travel to a

clinic. The clinical informatics (CI) and information systems (IS) teams also created a system-wide schedule to display infusion location sites, an online referral program and additional tools to standardize the process. The goal was to ease the difficulties the community experienced scheduling therapy and strive for optimal patient outcomes.

Northern Light Health showed an improvement in care delivery and clinical outcomes for patients who received mAb therapy. Over time, Northern Light Health has administered 2,754 mAb treatments leading to 183 preventable hospital events. The preventable events are based on the current clinical research, which indicates that patients receiving mAb therapy have fewer ED visits, hospital admissions and overall improved mortality rates.¹

The road to the utilization of mAb was paved with lessons learned from the evolution of testing and vaccination processes, supply chain and workforce management decisions.

Challenges and lessons learned included:

The communications around COVID-19 were constantly changing, and keeping current with the recommendations was difficult. Northern Light Health created a system-wide Incident Command System (ICS) to provide effective communication to teams.

Staffing multiple locations with a stressed workforce to meet the demand of patient needs required a commitment to go above and beyond the normal workday, provide streamlined education, and unite as a true system; One Northern Light Health.

Training provided an opportunity to create an abbreviated version of the documentation tool enabling RNs, who had been away from the bedside, and Home Care nurses, who use a different EHR, to quickly learn the system.

The success of the mAb project was the result of a governance-led and data-supported coordinated multidisciplinary team approach.

Braving the Maine weather in the dead of winter was a challenge that pushed us to develop drive-thru and mobile operations for testing and vaccination and mobile and pop-up sites for the administration of mAb.

Northern Light Health developed outreach and mobile care delivery systems to provide care across the board to every Maine zip code, utilized technologies for language barriers and paid attention to every detail to ensure that our patients received equitable care without barriers to inclusion.

One of our main goals was to learn from this experience and develop proactive approaches to reach people before they are sick enough to require hospitalization or other disease treatment processes.

Define the Clinical Problem and Pre-Implementation Performance

Northern Light Health needed to learn testing and vaccination process lessons before creating solid workflows for intravenous and oral therapies for COVID-19. The path to treatment versus the path to stabilization and prevention provided the foundation for a rollout allowing for the delivering therapies at a critical pace. The ability for the Northern Light Health hospitals to come together as One Northern Light Health proved to be the cornerstone in our foundation to provide comfort and hope and improve patient outcomes. We are better as an organization for this journey and our bond to our community certainly grew.

In the beginning of the COVID-19 pandemic, the country was seeing unimaginable death rates, and the data showed it was spreading toward our communities. Prior to the utilization of mAb and the realistic goal of therapies to prevent hospitalizations, we monitored and stabilized our communities with a system-wide data-driven approach. We relied heavily on our interactive data dashboards, agile implementations of new workflows and people who came to the table willing to learn and get to work. Northern Light Health completed 511,371 tests and 449,686 vaccines as represented in Figure 1 and Figure 2. There have been 43,523 confirmed cases, 2297 hospitalizations with 462 associated deaths. The overall goal of the implementation of therapies was to prevent the need for hospitalizations and to improve the outcomes in the COVID-19 population.

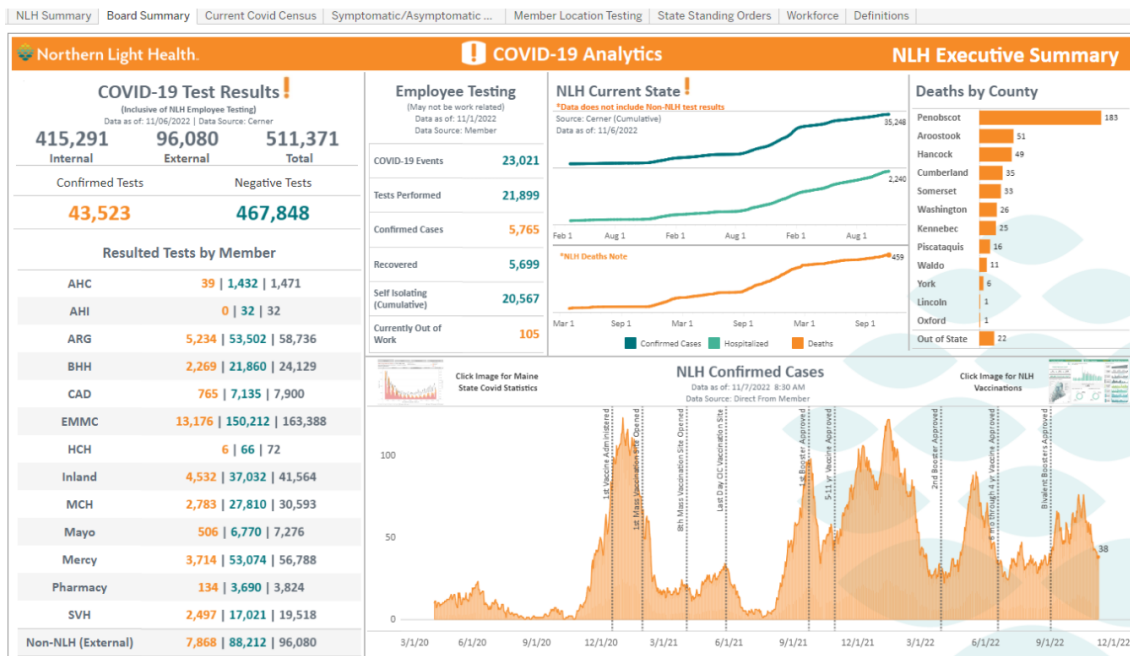


Figure 1

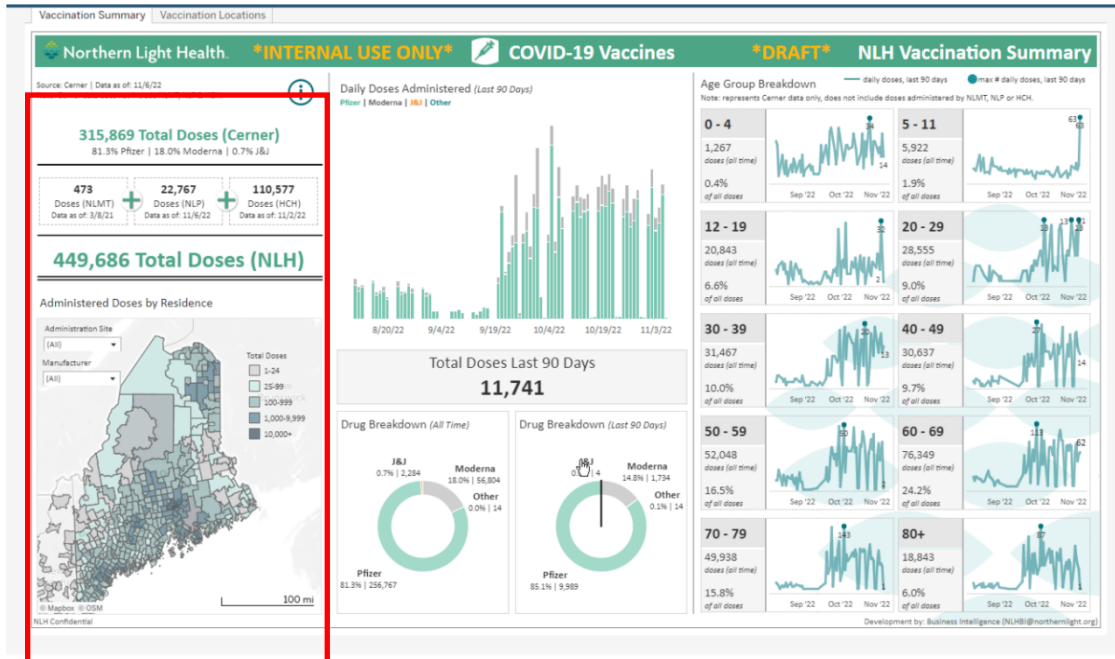


Figure 2

Pre-implementation of the mAb workflows were centered around prevention and stabilization. Once the therapeutics were available, we were able to tackle the pandemic from another front. Northern Light Health followed guidelines from the CDC, NIH, WHO and multiple published resources to quickly adapt to the recommended practice of mAb infusions. Northern Light Health developed our mAb team, protocols, workflows and implementation plan for delivery and rolled out the next phase of COVID-19 management.

Over time, Northern Light Health has administered 2,754 mAb treatments leading to 183 preventable hospital events. Inclusion criterion to receive the mAb was as follows.

Criteria for Use (all must be met):

- Age 12 or older
- Weight 40 kg or more
- Outpatient (patient is not hospitalized)
- Patient has symptoms and presents within 10 days of onset
- Confirmed Positive Test Result within 10 days of specimen collection
- Greatest benefit within 3-5* days of symptom onset. Benefit of use beyond 5 days was not well defined.
- Does not require oxygen, or oxygen saturation is not decreased from baseline due to COVID-19

If all criteria are met, the patient then moves into a tier of risk and the mAb pathway is followed, see Figure 3.

mAb Pathway

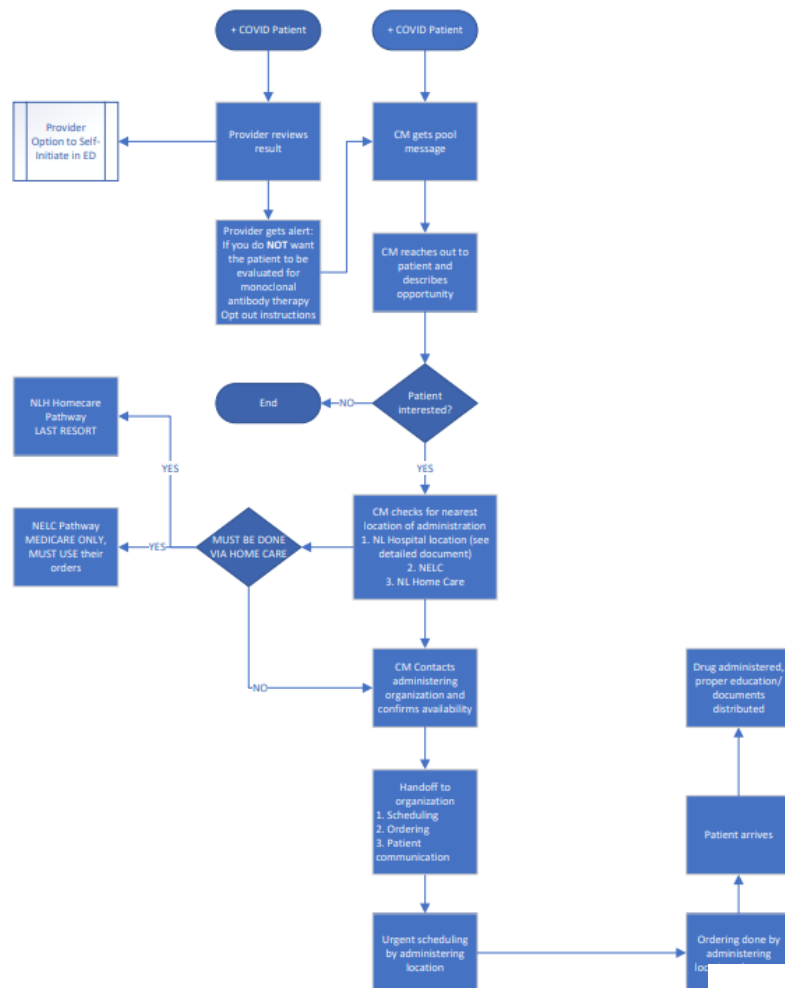


Figure 3

During the peak utilization of mAb therapy, September 1, 2021 – April 25, 2022, Northern Light Health administered 2,754 doses in association to 21,451 positive test results. Prior to the comprehensive mAb project utilization, only 100 doses were given from 2020 – September 2021.

Design and Implementation Model Practices and Governance

Northern Light Health implemented a system-wide Incident Command System to provide effective communication, manage resources efficiently and ensure all Northern Light Health facilities were operating under one governance as represented in Figure 4. We immediately established standing 7 a.m. Zoom meetings with leaders representing the entire organization. Additionally, each member organization stood up an incident command and worked within their regions to manage operations (including staff and care of patients). The system level incident command facilitated information sharing, resource gathering and allotment, and advanced communications to ensure people had the information they needed to stay safe, continue to provide care and prepare for what might happen next.

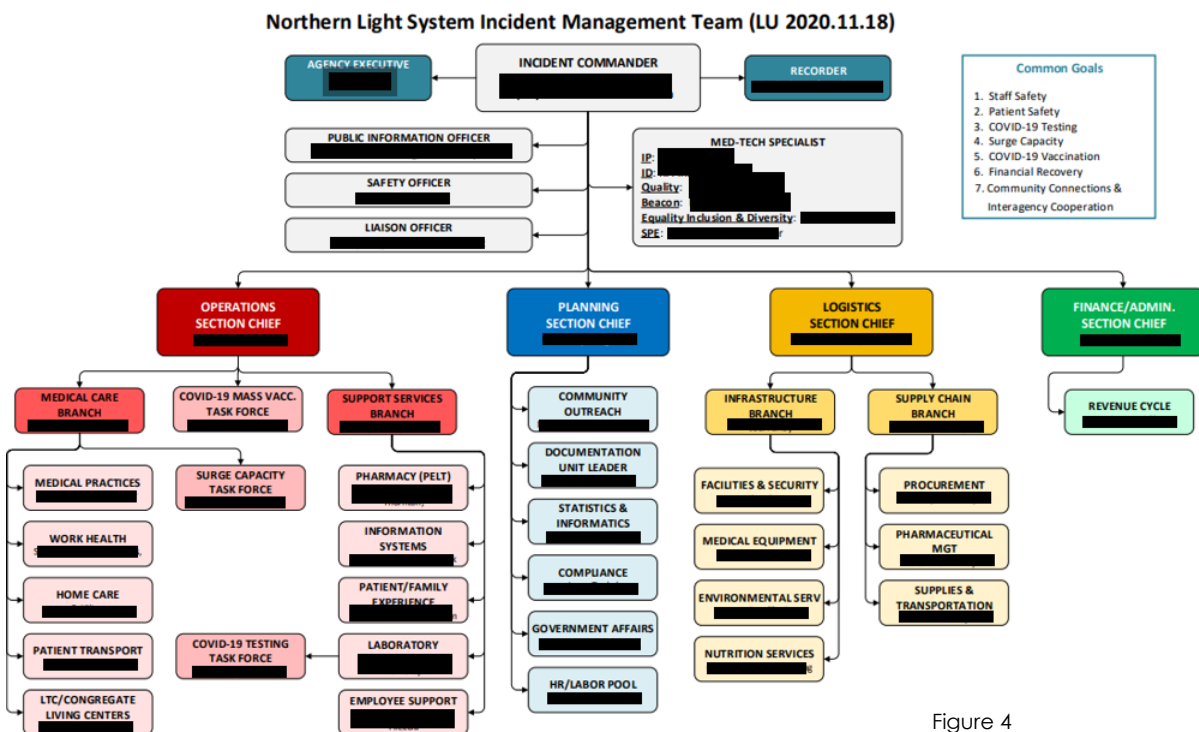
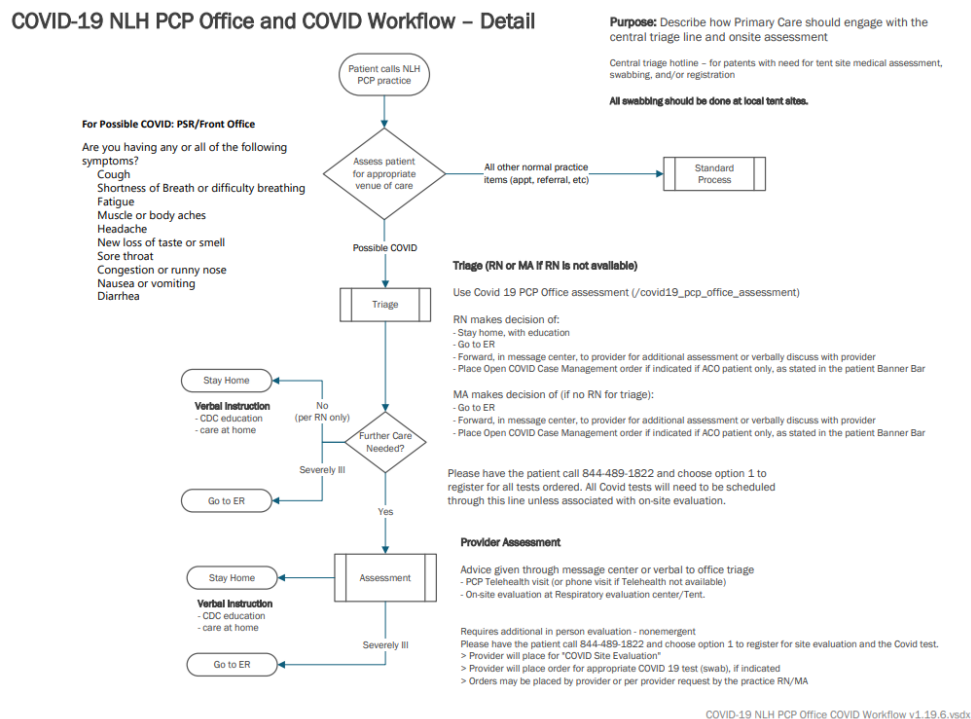


Figure 4

Step one in the earliest stages involved making complex decisions surrounding cancelling elective procedures for the anticipated surge in patients, restricting visitation policies and sending staff home to work where possible. Managing workforce and supply chain was critical. The Incident Command System relied on data to make these difficult decisions.

When Northern Light Health began preparing for potential COVID-19 surges, our leaders needed new options to help visualize capacity and forecast trends. We partnered with our EHR provider to develop a new dashboard that provided situational awareness of critical resources with near-real-time data. In addition to depicting an overview of the current situation, the use of artificial intelligence and predictive models helped anticipate future capacity, staffing needs and other resources. Having access to data was critical as we worked to prepare for the needs of our communities and care teams.

COVID-19 testing was an initial key factor, and our teams relied on data to drive multiple iterations of workflows to ensure we were providing the best care possible while changing the path as soon as new data was available. Figure 5 represents one of our early testing workflows.



(Figure 5)

The testing phase brought the need for new documentation tools posing an educational challenge to get new workforce personnel trained on the EHR solution, and the logistical need of having people in the right place at the right time. Patient engagement took on new meaning. We accelerated our virtual care capabilities and enhanced the functionality of our patient portal so patients could see their results in the timeliest manner.

The lessons we learned in testing quickly became valuable in the vaccine stage. Again, relying on near-real-time data, educating and mobilizing staff, and making

logistical plans working in concert as one system under a centralized command. Partnering with the EHR provider on the vaccination workflow proved to be as successful as the dashboards. Northern Light Health used a workflow that leveraged both critical clinical resources and administrative resources effectively for their respective components.

When we started with vaccination, some sites used the standard clinical vaccination workflow. Then, Northern Light Health organized their first large scale mass vaccination site at the Cross Insurance Center in Bangor, Maine using the Mass Vaccination (Mass Vacc) technology and workflow. Maine Governor Janet Mills and Nirav Shah, MD, JD, director of the Maine CDC, acknowledged that Northern Light Health's vaccine distribution was a vital component to the state's ability to control the pandemic.

The average throughput from when a patient arrived, checked in and received vaccination was very efficient. The actual contact time was in the low 30-minute range. That included check in, the immunization process and a 15-minute observation time that included helping our older patients take jackets on and off in the harsh winter.

When scheduling, patient sign-up was straightforward. The state would notify Northern Light Health late in the week prior about the number of doses to expect the following week. The teams then worked through the supply chain, workforce and logistical needs to schedule the vaccines. Appointments were released on Monday and Wednesday afternoons, allowing the registration team to complete registration within the EHR platform, our single source of record for clinical data.

We built interfaces between the EHR platform and the state immunization registry that met the requirement to document within 24 hours of administration. The process also served as a reorder mechanism for the second doses for the Moderna and Pfizer vaccines.

EHR workflows were created allowing people to enter their desired gender identification ensuring their protected health information (PHI) remained consistent.

Since the scheduling capability allowed patients to see appointment availability online, people from all over Maine traveled many miles and stayed in hotels to receive the vaccination. Northern Light Health vaccinated more than 4,300 people across all locations on a single day, including more than 2,100 at its high-volume clinic at the Cross Insurance Center.

The COVID-19 Vaccine Monitoring Dashboards provided analytics for our COVID-19 management. As a testing partner with our EHR vendor for the social determinants of

health social vulnerability index dashboard, staff can now leverage this information by zip code to help address vaccine equity and understand multiple vulnerabilities. Capabilities also include searching by chronic illnesses and other variables so linking testing, vaccination and mAb data to the social determinants of health dashboard helps to identify and treat the most vulnerable populations.

People, process and technology lessons learned in testing and mass vaccination translated into a successful deployment of the mAb and oral therapies rollout. mAb therapy is a treatment for COVID-19 for people who have tested positive, have had mild symptoms for seven days or less, and are at high-risk for developing more serious symptoms. The goal of this therapy is to help prevent hospitalizations, reduce viral loads and lessen symptom severity. Our goal was to provide the therapy to as many people as possible who met the requirements. We effectively transferred our workflows and virtual capabilities from testing and vaccination into the administration of the mAb. The initial doses began in December 2020 with our first 100 doses and ramped up in August 2021 as the delta variant hit Maine. As the course of COVID-19 management changed, we progressed to the oral treatments.

Some of the biggest challenges included scheduling, logistics, workforce availability, creation of care pathways to ensure criteria were followed, and drug availability. Workflows and technologies will be highlighted in the technology section.

A key component of success came from the utilization of system RN care management teams for coordination of patient treatment. Care managers ensured that patients received the mAb even if that meant taking the medication to the patient. In areas where language was a barrier, they traveled with a mobile device translator. Through a centralized scheduling system, care managers were able to refer patients to any therapeutic location with availability.

The development of a risk stratification tool to identify COVID-19 positive, high-risk patients helped maximize use of the limited supply of the antiviral. The development and utilization of alerts for practitioners of high-risk patients assisted in workflow efficiency and referral. In time, these alerts were phase out and a care management note added to the test results if a patient was to be evaluated by the mAb team. The overall process Northern Light Health developed for pandemic management led to successful utilization of the mAb and the achievement of avoidable hospital events.

Clinical Transformation enabled through Information and Technology

The path to the utilization of mAb began with lessons learned in testing and progressed from there. We will touch on those aspects as they carried forward in the development of the mAb process. The ability to streamline testing and scheduling throughout eight different infusion locations was extremely important in the delivery and management of the mAb therapies across a large geographical area.

Testing was built to cover the needs and outline the process for both our patients and care teams (Figures 6 and 7). An online algorithm and self-scheduling were created for testing to make the process as easy as possible. This technology also helped with supply chain and workforce management ensuring the testing sites were prepared. We supported our four critical access hospitals with mass vaccination sites and drive through testing, serving high need communities.

As pop-up testing centers became the norm, we used our registration and scheduling workflows to support those clinics. At the request of state government, Northern Light Health became the hub and spoke model of testing. We created an interoperability path and integration point with HealthInfoNet, Maine's statewide health information exchange (HIE), so Northern Light Health could see the results of patients not only in our system, but across the entire State of Maine. Northern Light Health was used as the state repository for all results.

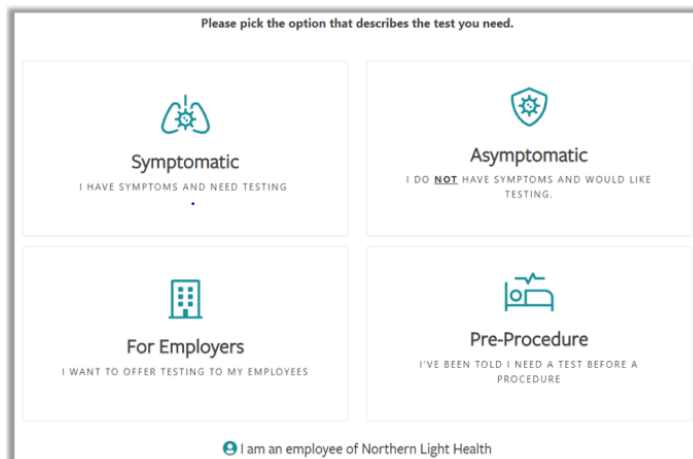
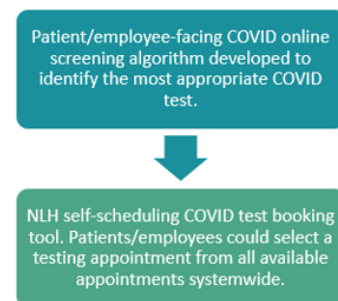


Figure 6



Testing Locations:

- Initial Swab and Go Testing Sites (tents) have transitioned to more permanent care sites providing better protection for patients and staff
- Testing expanded to include NL Pharmacy who offer self-pay, drive-thru, self-swab tests
- Testing was expanded to include all inpatients at NLH facilities, creating an even safer environment for our patients and staff

Figure 7

Another aspect of testing included a proactive push for the utilization of the patient portal (Figure 8). Patients were educated on the portal functionality and the fact they could see their test results as soon as they were available (Figure 9). This addition also led to an increase in the utilization of the patient portal. (Figure 10).

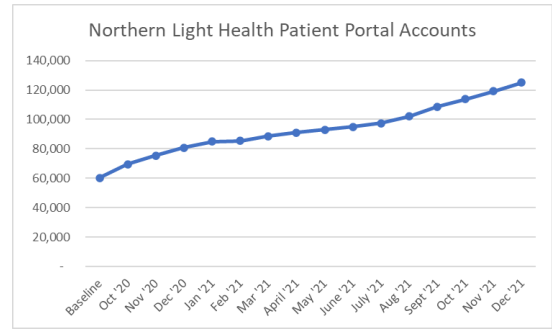


Download the HealthLife app for your device.

Figure 8



Figure 9



(Figure 10)

Initially, we waited for patients who tested positive to contact NL Northern Light Health H for mAb treatment. The infusion was scheduled where resources were available using a paper process. This paper process quickly transitioned to digital PowerPlans containing online references from the CDC (Figures 11 and 12). Data analysis indicated we were not treating as many patients as possible and potentially not treating the highest need population. The team created a system-wide, proactive scheduling approach with a risk stratification tool directing us to those who may not have knowledge of the mAb treatment and were at high risk for poor outcomes.

Northern Light Health
Northern Light Health Member Organization Pharmacy Department

EMHC Phone: (207) 873-8286 Fax: (207) 873-4781
 Mercy Phone: (207) 879-3383 Fax: (207) 879-3380
 Island Phone: (207) 863-3380 Fax: (207) 863-3382
 SWH Phone: (207) 467-4888 Fax: (207) 463-3995
 S. Mayo Phone: (207) 564-4283 Fax: (207) 564-4111
 N. AKG Phone: (207) 768-4338 Fax: (207) 768-4338
 CA Dean Phone: (207) 686-5279 Fax: (207) 693-4803
 MaineCoast Phone: (207) 664-5470 Fax: (207) 664-5375
 Blue Hill Phone: (207) 576-3986 Fax: (207) 576-3958
 Acadia Phone: (207) 873-6509 Fax: (207) 873-6208

Patient Identification: _____ Room No. _____
 Known allergies / medication sensitivities: _____
 Patient Phone Number: _____

COVID-19 Monoclonal Antibody Outpatient Infusion

Provider must call their local member organization pharmacy department to determine whether product is available and which tiers are currently being supplied. Do not call to reserve dose if patient does not meet criteria below.

Height: _____ cm Weight: _____ kg Age: _____ yrs

Diagnosis: Confirmed Covid-19 Infection (ICD10: U07.1)

Criteria for Use (all must be met):

Age 12 or older Weight 40 kg or more Outpatient (patient is not hospitalized)

Patient has symptoms and presents within 10 days of onset*

Confirmed Positive Test Result within 10 days of specimen collection*

*Greatest benefit within 3-5 days of symptom onset. Benefit of use beyond 5 days not well defined

Does not require oxygen, or oxygen is not increased from baseline due to Covid-19

If all Criteria for Use is met, select Risk Tier:
 Limited available product will be released with the following priority: Tier 1 > Tier 2. SELECT ONE:

Tier 1 - EITHER of the following:
 65 years and older
 OR
 18-64 years old with body mass index (BMI) greater than or equal to 35
 OR
 Residents of long-term care facilities meeting any EUA criteria from Tier 1 or Tier 2

Tier 2 - any ONE of the following:
 65 years or older, OR
 18-64 years old with body mass index (BMI) greater than or equal to 35, OR
 Chronic Kidney Disease, OR
 Diabetes Mellitus, OR

Date: _____ Time: _____
 Provider Signature: _____ Print Name: _____
 Phone: _____ Fax: _____
 Pharmacy Signature: _____
 PROVIDERS MUST EXERCISE INDEPENDENT CLINICAL JUDGMENT WHEN USING ORDER SETS
 Last updated July 1, 2021. The most up to date version is available at: _____

Figure 11

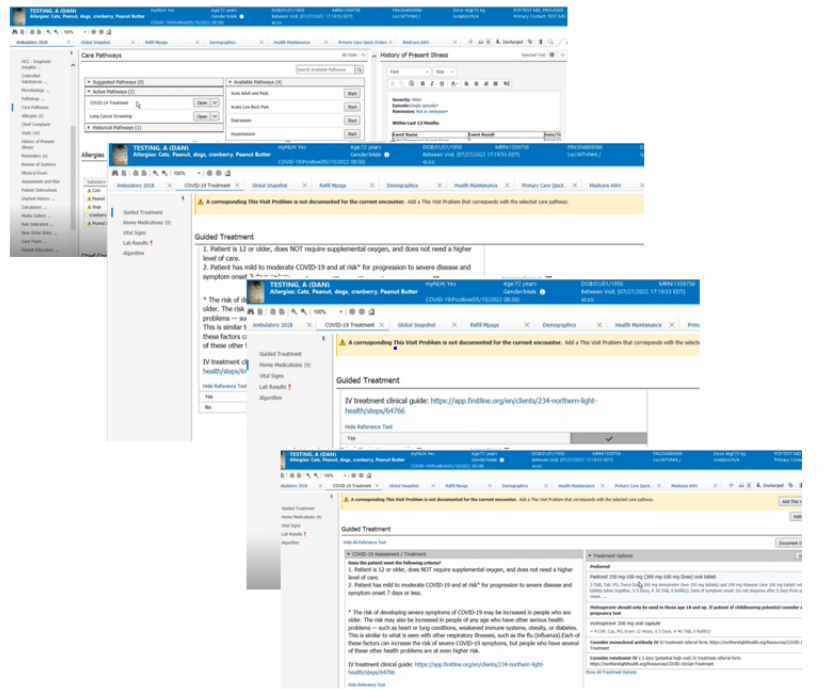


Figure 12

The risk stratification tool included key medical condition and age care indicators (Figure 13).

Conditions	
Medical Conditions	
	Diabetes
	Obesity (BMI>30); or 35
	Chronic Kidney Disease
	Neurologic/Neurocognitive Disorders
	Hypertension
	Stroke
	Chronic Lung Disease
	Immunosuppression
	Cardiovascular Disease
	3+ conditions
Age	
	18-49
	50-69
	70-79
	>=80
Ethnicity/Race	
	Non-hispanic black
	Other race/ethnicity
Population	
	Medically underserved zip-code
Conditions of public importance	
	Pregnancy
Gender	
	Male

(Figure 13)

The IS team created a visible system-wide scheduling tool for the large infusion sites. Other infusion locations were scheduled on a case-by-case basis. Alerts were built to send to the care management message center to assist with standardization for referrals (Figures 14 and 15).



Figure 14

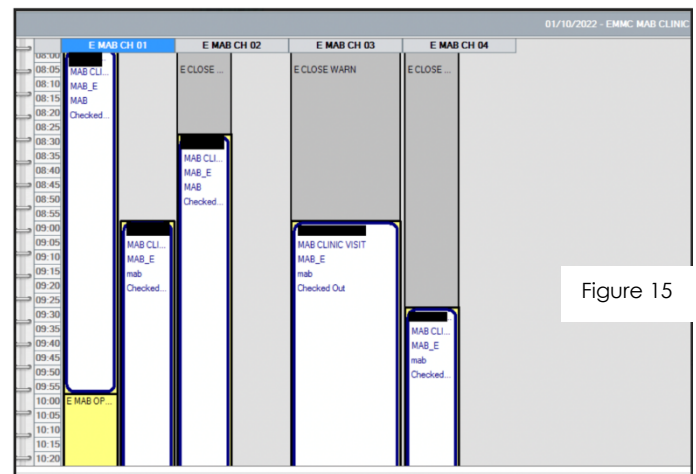


Figure 15

When mAb availability was low, we used the algorithm and a tiered system to help decide how to distribute the therapies for both internal and external referrals. Because state and federal guidance was changing frequently and the drug availability was decreasing, our governance process shifted the control of dose approval to the mAb team. Physicians would receive an alert if the patient tested positive and was over the age of 65. All positive results went to the mAb team, who would then reach out to the patient and discuss the possibility of receiving mAb infusion. The physicians were educated on the process and the role of the mAb team so that everyone was using the same playbook. The creation of the risk stratification tool helped to ensure that those patients with the highest risk of hospitalization and death actually received the medication.

Very early in this journey, there was not sufficient physical locations to meet the need of the infusion centers. The Northern Light Health facilities teams built infusion sheds, staffed with licensed personnel willing to join the front line to help deliver the care (Figure 16). IS teams brought in computers and built IT locations so that billing could take place for the new physical locations.

Education was rolled out to the new EHR users through on-line video courses, flyers and elbow-to-elbow sessions to make the process as easy as possible (Figures 17 & 18).



Figure 16

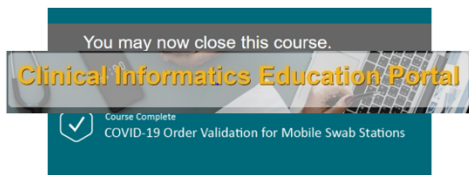


Figure 17

[Clinical Informatics Education \(northernlighthealth.org\)](http://northernlighthealth.org)

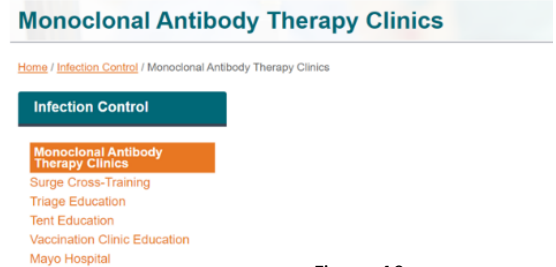


Figure 18

Care management was an integral part of care delivery team. In an effort to bring care to all patients in some of our most rural areas, we supplied our home health mobile teams with equipment suitable for in-home infusions of the MAb. In situations where language was a barrier, they traveled with mobile device interpreters (Figure 19).



Figure 19

Telehealth also evolved over time. Northern Light Health transitioned its telehealth platform from Zoom to Amwell and the appropriate governance structure followed. We created telehealth specific workflows to ensure access to patients even in our most rural areas (Figures 20 and 21).

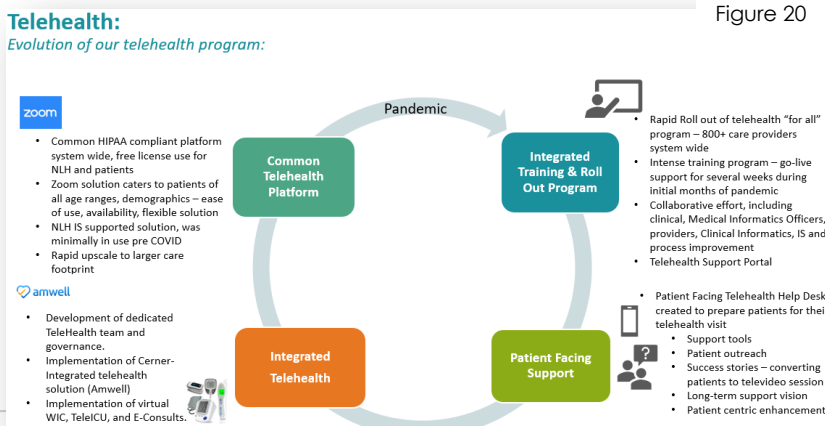


Figure 20

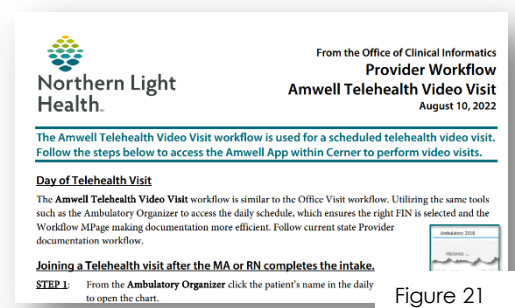


Figure 21

IS played a pivotal role with many internal customers. They make changes to the portal landing pages to help communicate essential information to patients, assisted in creating a mailing list and pushed approval for an email communication tool to ensure patients could get weekly updates about the newest important information available. This team also facilitated the implementation of a public-facing helpdesk to support telehealth patients.

Data — we would not have survived without data. The utilization of the Incident Command System and the near-real-time dashboards were critical. Our HealthIntent platform provided the data warehouse to manage the data and populate the views. The platform provided data governance with a single source of information for the longitudinal record and the capabilities to follow all patients (Figure 22).



Figure 22

The COVID-19 Dashboard library provided the Incident Command System team with actionable information required to manage the COVID-19 pandemic across all communities (Figure 23).

Dashboard: Organizational summary of Covid census patient profile and trending

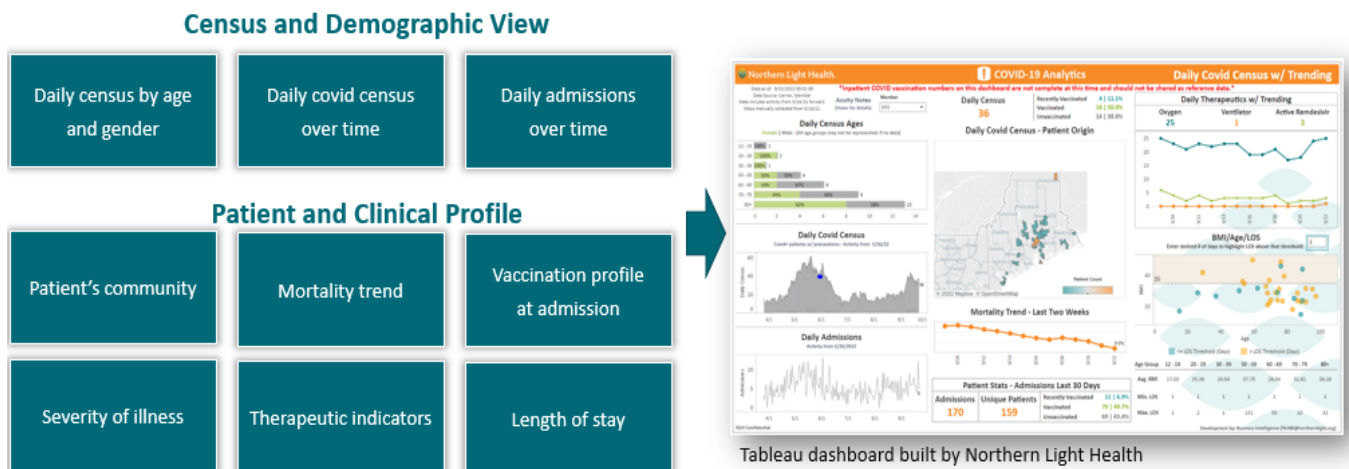


Figure 23

As oral therapeutics became available, we also built a Care Pathway to ensure the practitioner was prescribing the most appropriate therapy for patients with access to links regarding the most up to date recommendation. (Figures 24-28)

Information. Acute COVID-19 is documented for the current encounter.

Guided Treatment

What is the time since symptom onset (or test positivity if that occurred first)?

5 days or less	<input checked="" type="checkbox"/>
----------------	-------------------------------------

Does that patient have a contraindication to Paxlovid?
 Center Drug Drug Interaction Checker will NOT flag all relevant interactions. The Liverpool COVID-19 Drug Interactions Checker is the recommended tool to evaluate interactions for all medications, for all patients <https://www.covid19-druginteractions.org/>
[Hide Reference Text](#)

No	<input checked="" type="checkbox"/>
----	-------------------------------------

Based on patients renal and hepatic function, choose the best category
 Go to Clinical Calculators - Clinical Pharmacology (clinicalkey.com) to reference a child-pugh calculator
[Hide Reference Text](#)

GFR less than 30-change OR Severe Hepatic Impairment (child-pugh class C)	<input type="checkbox"/>
GFR 30-59	<input type="checkbox"/>
None	<input type="checkbox"/>

Save

Figure 24

Information. Acute COVID-19 is documented for the current encounter.

Guided Treatment

[Hide All Reference Text](#)

COVID-19 Assessment / Treatment

Does the patient meet the following criteria?

Criteria

1. Patient is 12 or older, does NOT require supplemental oxygen, and does not need a higher level of care.
2. Patient has mild to moderate COVID-19 and at risk* for progression to severe disease and symptom onset 7 days or less.

* The risk of developing severe symptoms of COVID-19 may be increased in people who are older. The risk may also be increased in people of any age who have other serious health problems — such as heart or lung conditions, weakened immune systems, obesity, or diabetes. This is similar to what is seen with other respiratory illnesses, such as the flu (influenza). Each of these factors can increase the risk of severe COVID-19 symptoms, but people who have several of these other health problems are at even higher risk.

IV treatment clinical guide: <https://app.firstline.org/en/clients/234-northern-light-health/steps/64766>

[Hide Reference Text](#)

Yes

Treatment Options
[Show All Treatment Options](#)

Pathway History All Visits

Document Off Pathway

Figure 25

Information. Acute COVID-19 is documented for the current encounter.

Guided Treatment

[Hide Reference Text](#)

None

None

Consider treatment:
 Preferred: Paxlovid
 Center Drug Drug Interaction Checker will NOT flag all relevant interactions. The Liverpool COVID-19 Drug Interactions Checker is the recommended tool to evaluate interactions for all medications, for all patients
<https://www.covid19-druginteractions.org/>

Add the following information to "note to pharmacy" section of prescription:
 Date of symptom onset:
 Do not dispense after 5 days from symptom onset.
 Creatinine/eGFR level OR no history for renal impairment:
 Medication review completed by provider:
 If you have additional questions or concerns, please contact your local hospital pharmacy

[Hide Reference Text](#)

Pathway History All Visits

Figure 26

<p>▼ Treatment Options Order All</p> <p>This is an EUA-approved therapy. Verbal consent is required prior to use and should be documented within progress note.</p> <p>Paxlovid 300 mg-100 mg Dose Pack oral tablet 3 TAB, Tab, PO, Twice Daily, X 5 Days, # 30 TAB, 0 Refill(s)</p> <p>▼ CP-COVID-19 Treatment</p> <p>molnupiravir 200 mg oral capsule = 4 CAP, Cap, PO, Every 12 Hours, X 5 Days, # 40 TAB, 0 Refill(s)</p>

Figure 27

Improving Adherence to the Standard of Care

Northern Light Health orchestrated a successful COVID-19 pandemic management strategy. The implementation of an Incident Command System was a communication strategy foundational for our success. We nimbly progressed from testing to mass vaccination, to therapeutics.

The utilization of mAb began in December 2020/January 2021 and ramped up in August 2021 with the Delta surge. In this study period, 2,754 mAb treatments were given leading to 183 preventable hospital events based on the current research (Figure 28). Criteria were established, integrated into the EHR and followed to ensure that the therapeutic was given appropriately. No prior benchmarks to note exist; however, the guidelines did follow the recommendations of the CDC, NIH, WHO and current research and organization collaborations. Data were collected via the EHR and managed via our data warehouse HealthIntent (see the technology section).

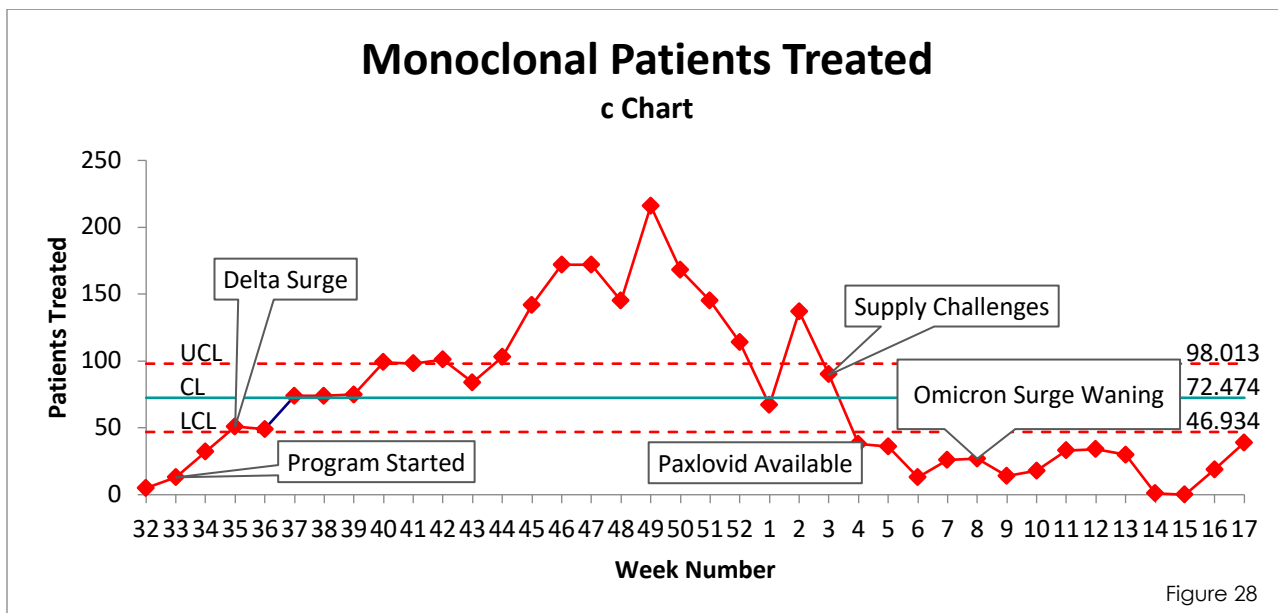


Figure 28

Improving Patient Outcomes

Northern Light Health ramped up the utilization of mAb in August 2021 and added oral therapeutics in January 2022. Based upon the current research, the utilization of mAb has a direct impact in decreasing hospitalization events for the treated population. Our data indicate that we avoided 183 hospital events by utilizing the mAb treatment plan (Figure 29).¹

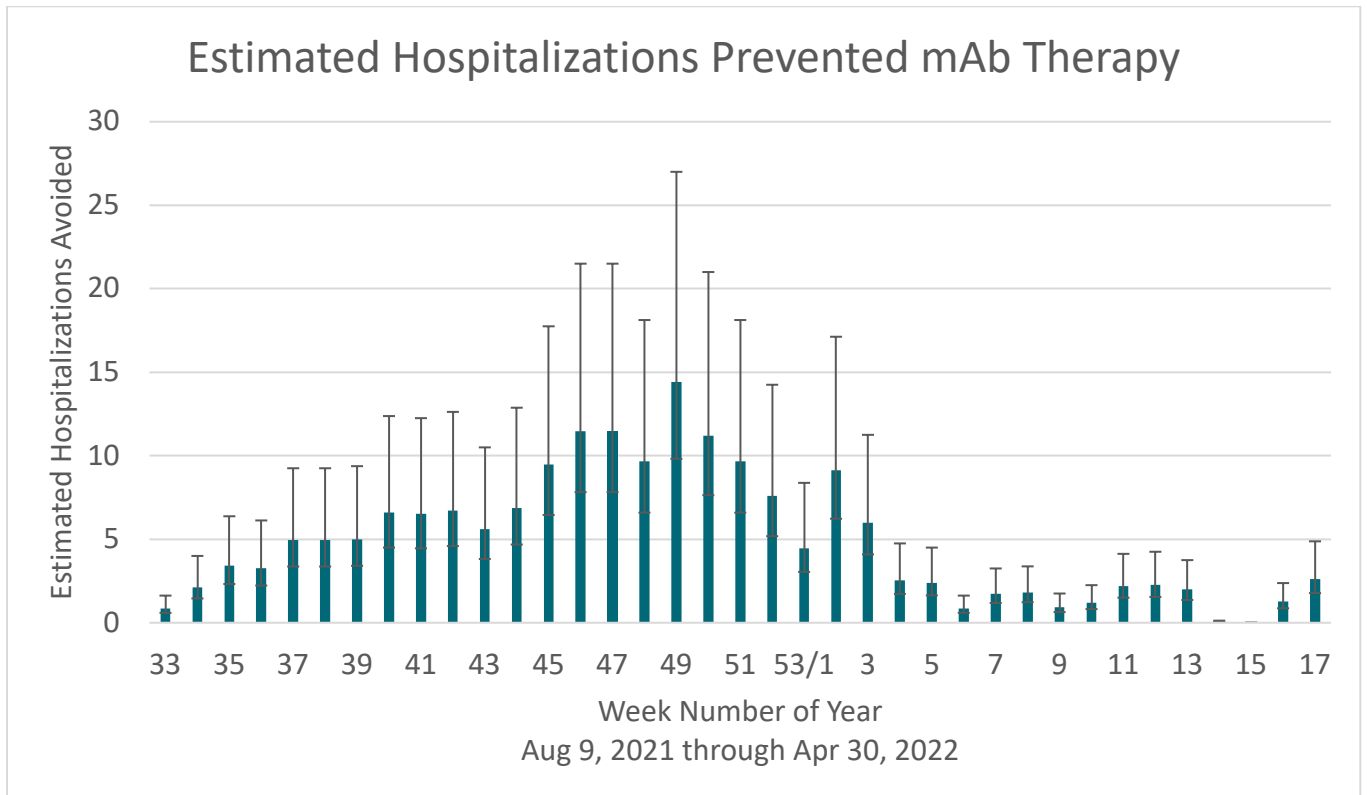
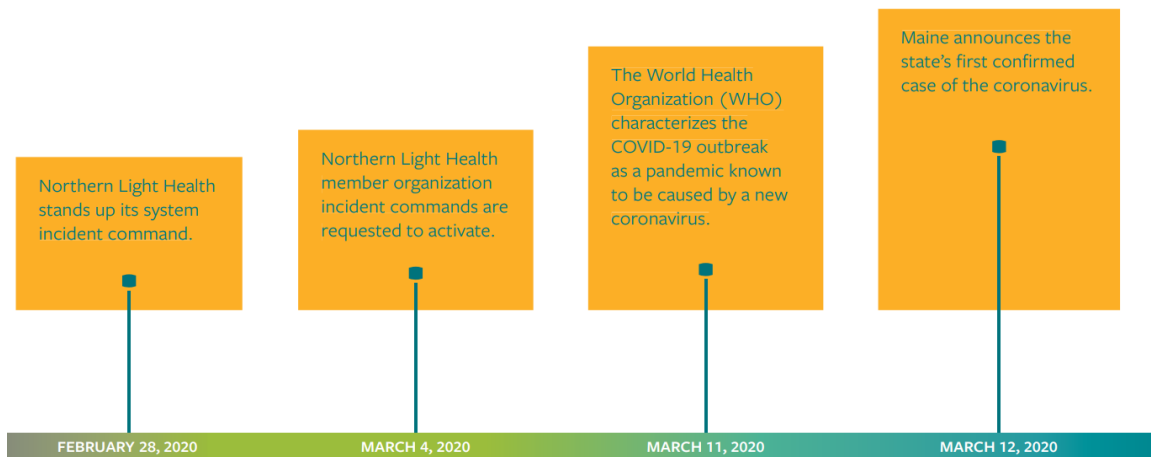


Figure 29

Accountability and Driving Resilient Care Redesign



Northern Light Health relied on a near-real-time, data driven, system-wide approach to manage the COVID-19 pandemic. As the unimaginable began to unfold across the world and throughout the United States, Maine had one goal: be ready. By standing up the Incident Command System (ICS) early in the process, we created a fundamental form of management with the purpose of enabling incident managers to identify key concern, often under urgent conditions, without sacrificing attention to any component of the command system. The governance of the ICS had a view of the day-to-day operations and the data to identify any gaps, improvement opportunities, and successes.



The multiple dashboard views are addressed in the technical section, and an overview is shown in Figure 30.

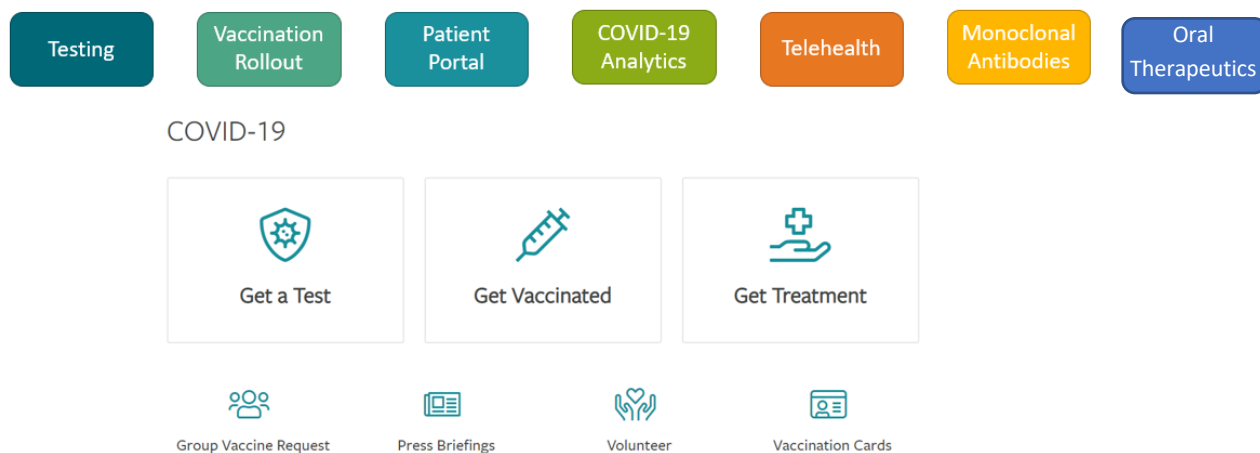


Figure 30

People, process and technology were leveraged from testing through the use of mAbs. Using a data driven process, workflows were created, and care delivery was supported. Care pathways ensured a standardized care delivery process even under constantly changing guidelines. All processes were documented in the EHR. Some started on paper, some were even faxed, but all made their way into a digital format. Care pathways, order sets and data dashboards are referenced in the technology section.

Behind the scenes of any dashboard was the effort to identify, gather and validate data before displaying in a meaningful way as information. Early on, whenever possible, data were drawn from trusted, automated sources. As COVID-19 had never been seen before, some of the information had to be gathered manually by reaching out to frontline staff at our locations. In most cases, the external requests were for developing mandatory reporting for State and Federal agencies. The data analytics team evolved into Data Governance that stepped up to be the single source of truth for data; thereby, clearing up confusion and allowing frontline staff to focus on patients. As COVID-19 advanced, so did our ability to manage data, create order sets and develop workflows required to provide the best outcomes possible. Achieving a successful mAb process and keeping people out of the hospital and at home were driving factors for our teams.

What is next?

We ask ourselves, "What is an area of focus where we could utilize this work to improve outcomes in other areas?" One area that comes to mind is a key performance indicator for breast health. In the scheduling of mammograms, we could provide a positive impact if we use the visible scheduling tool allowing patients to schedule their mammogram at the most convenient location and time.

We also ask, can we use these tools to have a more proactive outreach to people with chronic illnesses such as CHF and COPD? We believe we can and are dedicated to moving forward with these lessons learned to improve access and care delivery at Northern Light Health.

References:

1. [The impact of neutralizing monoclonal antibodies on the outcomes of COVID-19 outpatients: A systematic review and meta-analysis of randomized controlled trials - Lin - 2022 - Journal of Medical Virology - Wiley Online Library](#)