

09/30/2022

Development of a Standardized Approach to Identify & Manage High-Risk Patients With COVID-19

AMGA 2022 IQL



Introductions



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Moderator



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Speaker



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Speaker



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Lehigh Valley Health
Network

Speaker

Health System Overviews



- Non-profit integrated health system based in SE Louisiana
- In 2021, served 1M+ patients from across the Gulf South, every US state, and 59+ countries
- 47 hospitals and >300 care centers across the Gulf Coast – major growth post-Hurricane Katrina
- 2,300+ employed MDs & 3,000+ aligned providers in >90 specialties



- Non-profit integrated healthcare network in the Lehigh Valley region of eastern Pennsylvania
- 72,800+ acute admissions and 235,000 emergency department visits
- 11 hospitals and >300 practice locations
- 1,600+ physicians, 850+ advanced practice clinicians, and 19,300+ employees

Important Information

- **This is a Pfizer-sponsored program. Speakers have been engaged by Pfizer to share their personal and professional experiences related to population health improvement initiatives within their respective institutions, which may not necessarily reflect the views of Pfizer**
- **This program does not offer continuing medical education (CME) credit**
- **This program will not involve discussion of specific pharmaceutical products. Any questions about specific Pfizer medications should be directed to your Pfizer account management team at another time. Questions related to certain business operations, health care institution operating expenses, or reimbursement/financial metrics are beyond the scope of this program and will not be discussed**



Discussion Topics



Identifying and engaging patients at high risk for severe disease offers an opportunity for improved COVID-19 management



Proactive engagement of these high-risk patients may improve patient outcomes



COVID-19 continues to pose a substantial burden on the healthcare ecosystem



COVID-19 has impacted all aspects of the healthcare ecosystem

Variant surges

Mortality rate

Healthcare resource utilization

Hospitalization

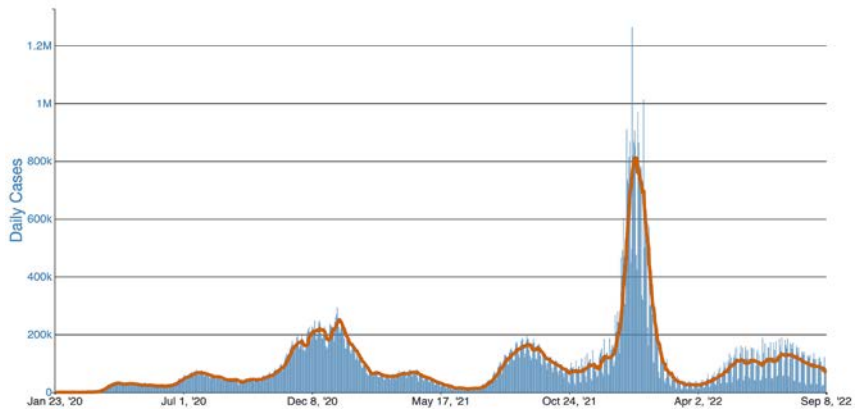
Staffing

Cost of care

COVID-19 has been associated with new, more contagious variants that can lead to infection surges and present an ongoing challenge in managing this disease^{1,2}

Daily trends in number of COVID-19 cases in the United States reported to the CDC¹

While each variant is unique, some variants of concern have shown²:



An increase in **transmissibility**

Higher risk of progression to **severe disease**

Diagnostic **detection variation**

Reduction in neutralization by antibodies generated from prior infection

New variants may escape existing immunity³

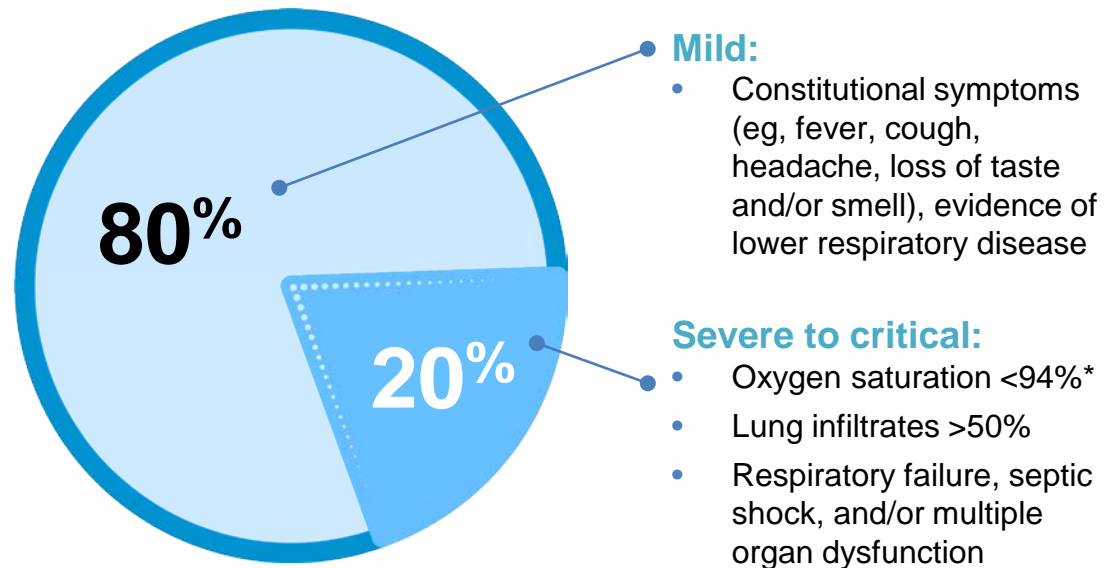
References: 1. CDC. Updated September 8, 2022. Accessed September 9, 2022. <https://covid.cdc.gov/covid-data-tracker/> 2. CDC. Updated April 26, 2022. Accessed July 27, 2022. <https://www.cdc.gov/coronavirus/2019-ncov/variants/variant-classifications.html> 3. Tuekprakhon A, et al. *Cell*. 2022;185(14):2422-2433.e13. doi:10.1016/j.cell.2022.06.005



Among patients diagnosed with COVID-19,

1 in 5 develop severe-to-critical infections, and many may experience long term effects post-discharge, posing additional burdens for health systems^{1,2}

Total COVID-19 infections



Patients with severe COVID-19 may experience a lasting impact 6 months after hospital discharge[†]

71% did not feel fully recovered

20% had a new disability[‡]

18% of those who had been working were no longer working

19% experienced a health-related change in occupation

Study design



*On room air at sea level.

[†]Follow-up study of adults aged ≥18 discharged from hospitals in the UK with a clinical diagnosis of COVID-19 (N=1077). Median assessment was undertaken at 5.9 months postdischarge and included a detailed recording of symptoms and physiological and biochemical testing.

[‡]As defined by the Washington Group Short Set on Functioning (WG-SS), a patient-reported outcome questionnaire measuring vision, hearing, walking, remembering, self-care, and communication. A participant is considered to have a new disability if response to any domain changed from “no difficulty” or “some difficulty” to “a lot of difficulty” or “cannot do it at all.”

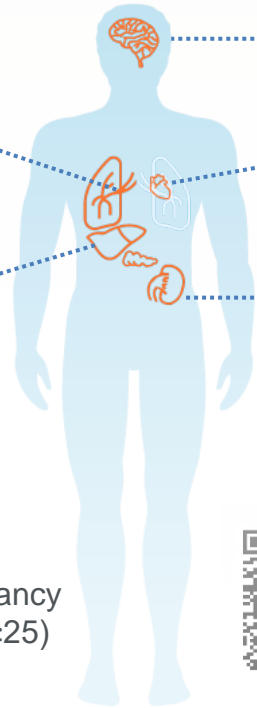
References: 1. NIH. Updated August 18, 2022. Accessed September 7, 2022. <https://www.covid19treatmentguidelines.nih.gov> 2. Evans RA, et al. *Lancet Respir Med*. 2021;9(11):1275-1287.

doi:10.1016/S2213-2600(21)00383-0



Patients with COVID-19 at high risk for progression to severe infection may have many common medical conditions and risk factors*

Underlying medical conditions associated with high risk for progression to severe COVID-19 include¹



- Chronic lung diseases[†]
- COPD

- Chronic liver disease[‡]
- Diabetes mellitus, types 1 and 2

- Cerebrovascular disease
- Mental health disorders[§]
- Heart conditions (HF, CAD, cardiomyopathies, and possibly hypertension)
- Chronic kidney disease

Other conditions include:

- Cancer
- Tuberculosis
- Pregnancy and recent pregnancy
- Overweight or obesity (BMI ≥25)



Consult the CDC for the latest information on risk factors.^{||}

Patients with COVID-19 who require hospitalization are often medically complex²

Comorbidities in patients requiring admission²

78% had hypertension	66% had gastrointestinal conditions	60% had cardiovascular disease	~46% had diabetes or were obese
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~72% of patients with COVID-19 had at least 1 characteristic or medical condition that put them at high risk for progression to severe disease²

CDC COVID-19 risk factors +

Study design +

Social determinants of COVID-19 progression +

Analysis design +

BMI=body mass index; CAD=coronary artery disease; COPD=chronic obstructive pulmonary disease; HF=heart failure.

*High risk for progression to severe COVID-19, including hospitalization or death.

[†]Interstitial lung disease, pulmonary embolism, pulmonary hypertension, bronchopulmonary dysplasia, bronchiectasis.

[‡]Cirrhosis, non-alcoholic fatty liver disease, alcoholic liver disease, autoimmune hepatitis.

[§]Mood disorders, including depression, and schizophrenia spectrum disorders

^{||}The QR code on this page will take you to a website that is owned and operated by the Centers for Disease Control and Prevention (CDC). Pfizer is not responsible for the content or services of this site.

References: 1. CDC. Updated June 15, 2022. Accessed September 6, 2022. <https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-care/underlyingconditions.html>

2. Scott A, et al. *J Med Econ.* 2022;25(1):287-298. doi:10.1080/13696998.2022.2037917



Early diagnosis and management of high-risk patients with mild-to-moderate COVID-19 is an important component of disease management¹⁻³

Complications from COVID-19 can quickly progress, underscoring the need for early testing and rapid therapeutic intervention¹⁻³

Early infection^{1,3}

Median 4-5 days from exposure

Mild symptoms, fever, cough, sore throat, malaise, headache, muscle pain, nausea, vomiting, diarrhea, loss of taste and smell

Pulmonary phase^{1,3*}

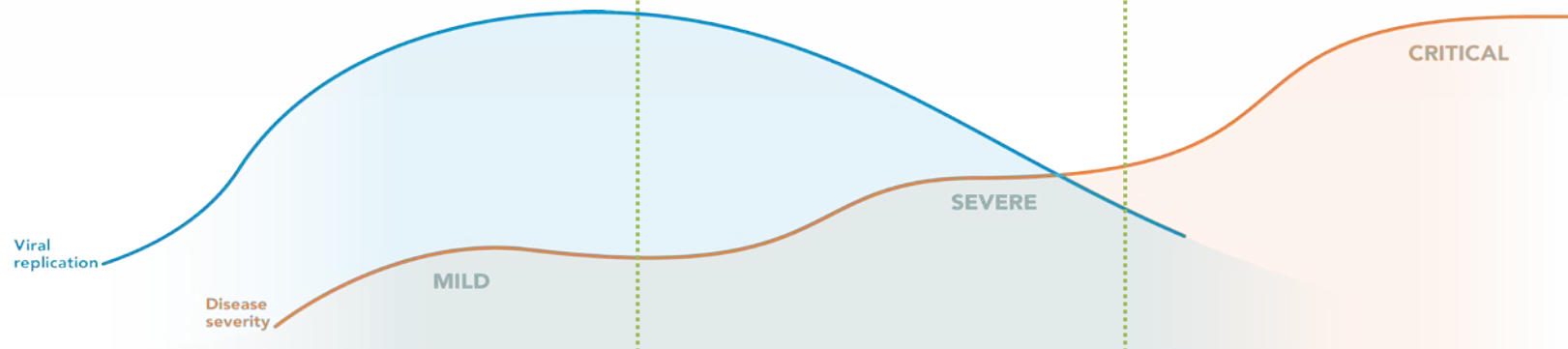
4-8 days after symptom onset

Shortness of breath, with or without hypoxia

Hyperinflammation phase^{1,3*}

2.5 days after onset of dyspnea

Acute respiratory distress syndrome, septic shock, cardiac dysfunction, exaggerated inflammatory response, exacerbation of underlying comorbidities



Analysis design

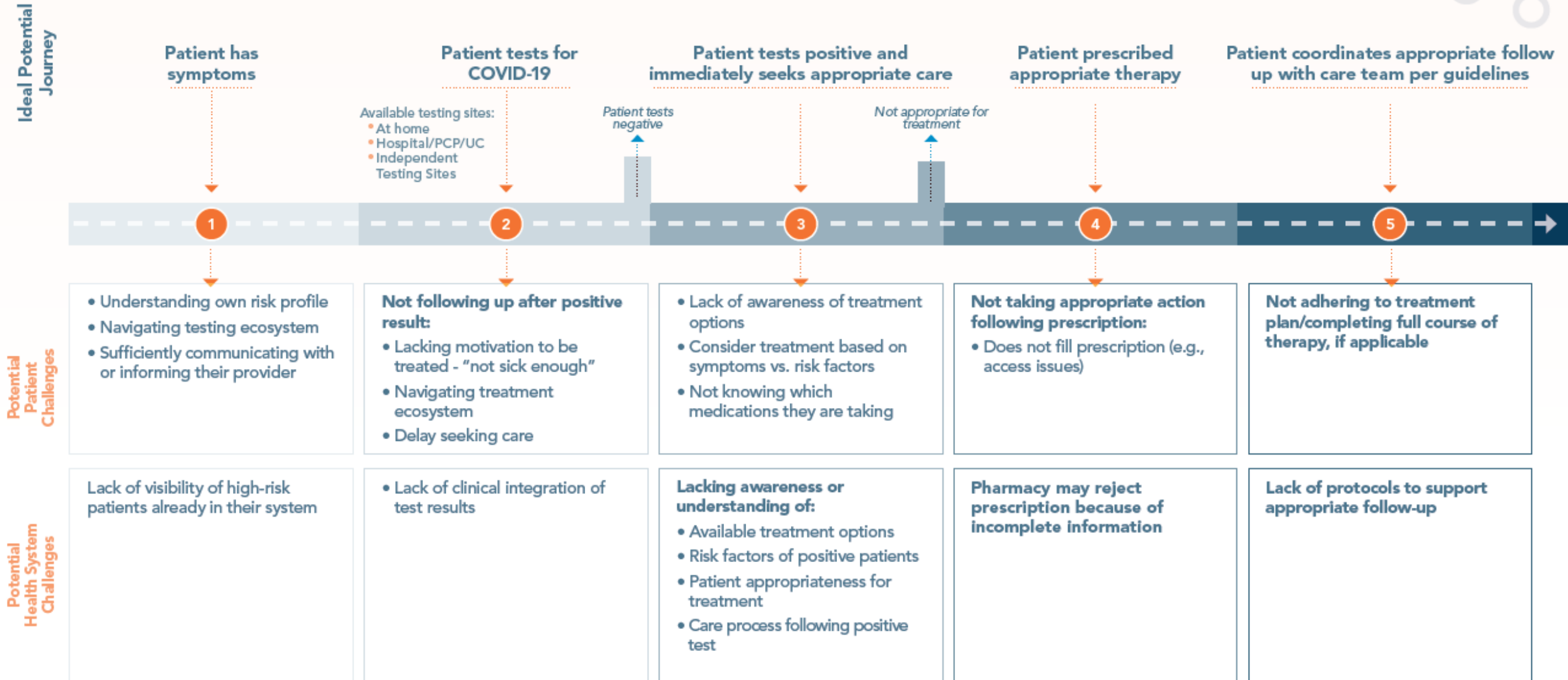


Although the Omicron variant of COVID-19 is associated with a lower disease severity than previous variants, the rapid rise in cases has resulted in the highest number of ED visits and hospitalizations to date. The CDC indicates a need for early therapeutic intervention^{4,5}

*Not all patients progress to the pulmonary/active immune response stages. The Omicron variant of COVID-19 is associated with a lower rate of progression to severe or critical disease than previous variants.

References: 1. Siddiqi HK, et al. *J Heart Lung Transplant*. 2020;39(5):405-407. doi:10.1016/j.healun.2020.03.012 2. Bestetti RB, et al. *Int J Environ Res Public Health*. 2021;18(13):7212. doi:10.3390/ijerph18137212 3. NIH. Updated August 18, 2022. Accessed September 7, 2022. <https://files.covid19treatmentguidelines.nih.gov/guidelines/covid19treatmentguidelines.pdf> 4. Iuliano AD, et al. *MMWR Morb Mortal Wkly Rep*. 2022;71(4):146-152. doi:10.15585/mmwr.mm7104e4 5. CDC. Updated May 27, 2022. Accessed September 6, 2022. <https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-care/clinical-considerations-course.html>

Potential challenges that may hinder COVID-19 management along the patient journey

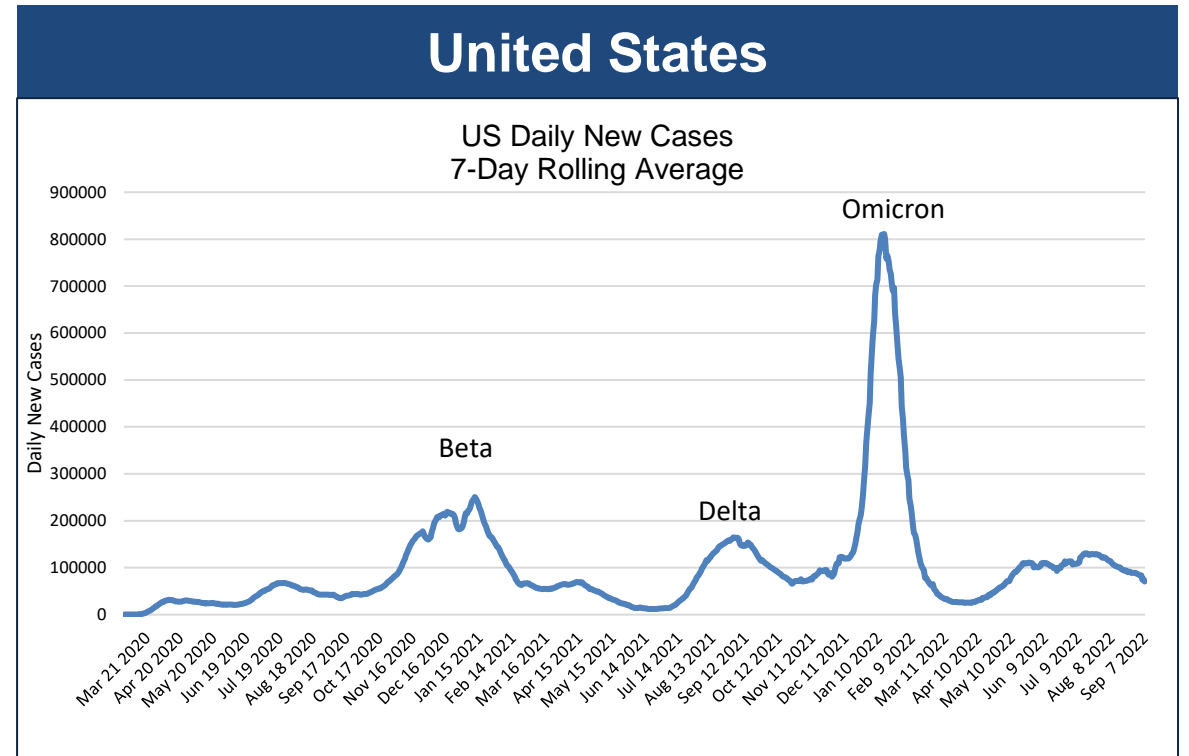
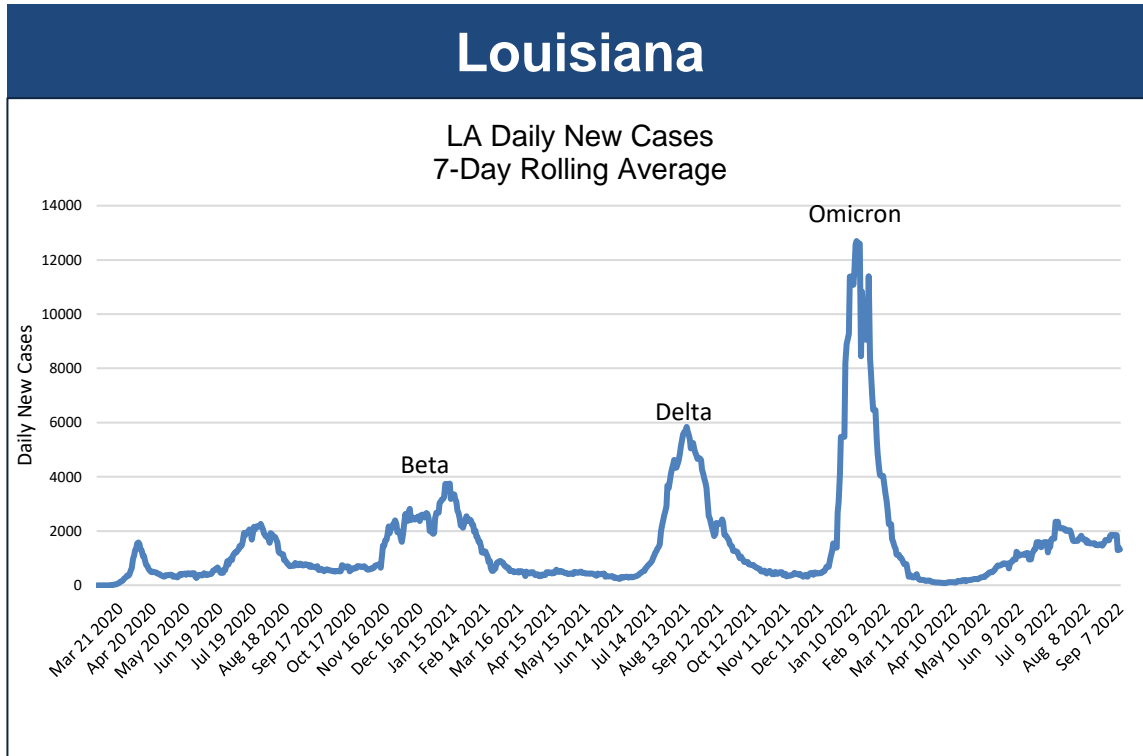




New Cases: Seven-Day Rolling Average (All Testing)



Data as of: 9.8.2022

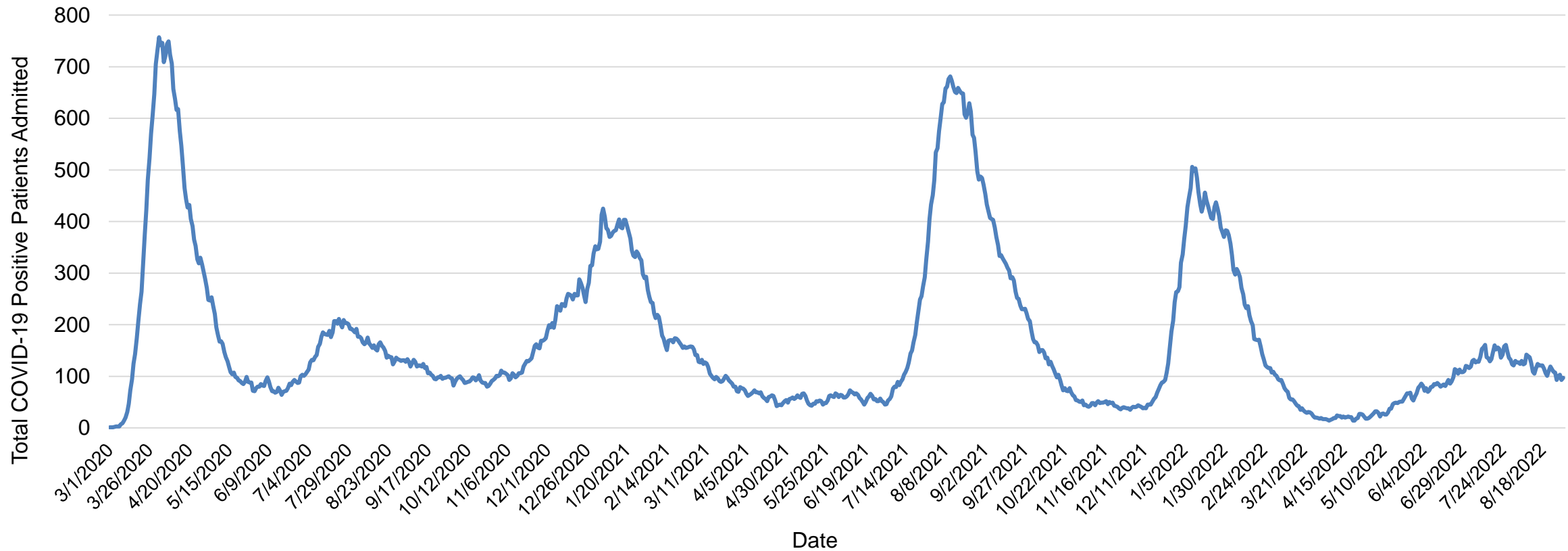


Source: Centers for Disease Control and Prevention. COVID Data Tracker. Atlanta, GA: US Department of Health and Human Services, CDC; 2022, September 9. <https://covid.cdc.gov/covid-data-tracker>

COVID-19 Hospitalizations at Ochsner Health



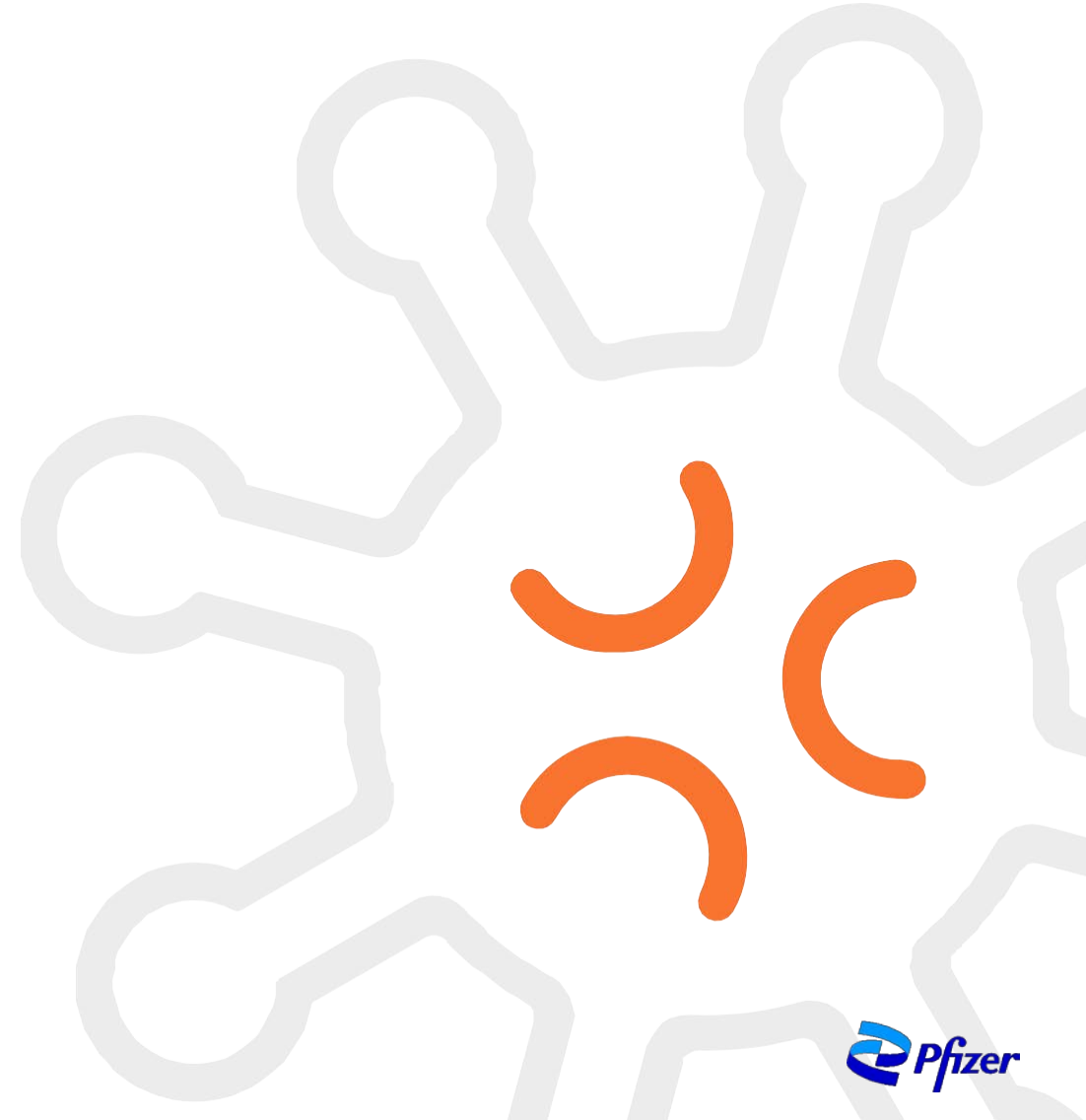
COVID-19 Patient Census, Ochsner Health
March 2020-August 2022



Source: Ochsner Health data on file.

Challenges

- Positive for COVID-19
- Process was to enroll in EUA for IV mAb
- Increasing numbers referred for IV mAb
 - Resource intensive
 - Providers slow to adopt oral medications



Initial Outpatient Management Approach

- **Problem:** People that were testing positive for COVID-19 and presenting to ED, urgent care centers or primary care sites
- Process for EUA monoclonal antibodies
- **Challenge:** Placing IVs – alternative staff identified
- Availability of oral treatments came with access issues and need for provider education



COVID-19 Complication Risk Score



- The COVID-19 Risk of Complication score is an expert-derived risk score that shows a patient's risk of mortality or serious complications in the event the patient contracts COVID-19
- The score is based upon presence of a qualifying diagnosis on the problem list
- The score is generated from a registry search
- Updates every 15 minutes after one of these diagnoses is charted

Score Logic:

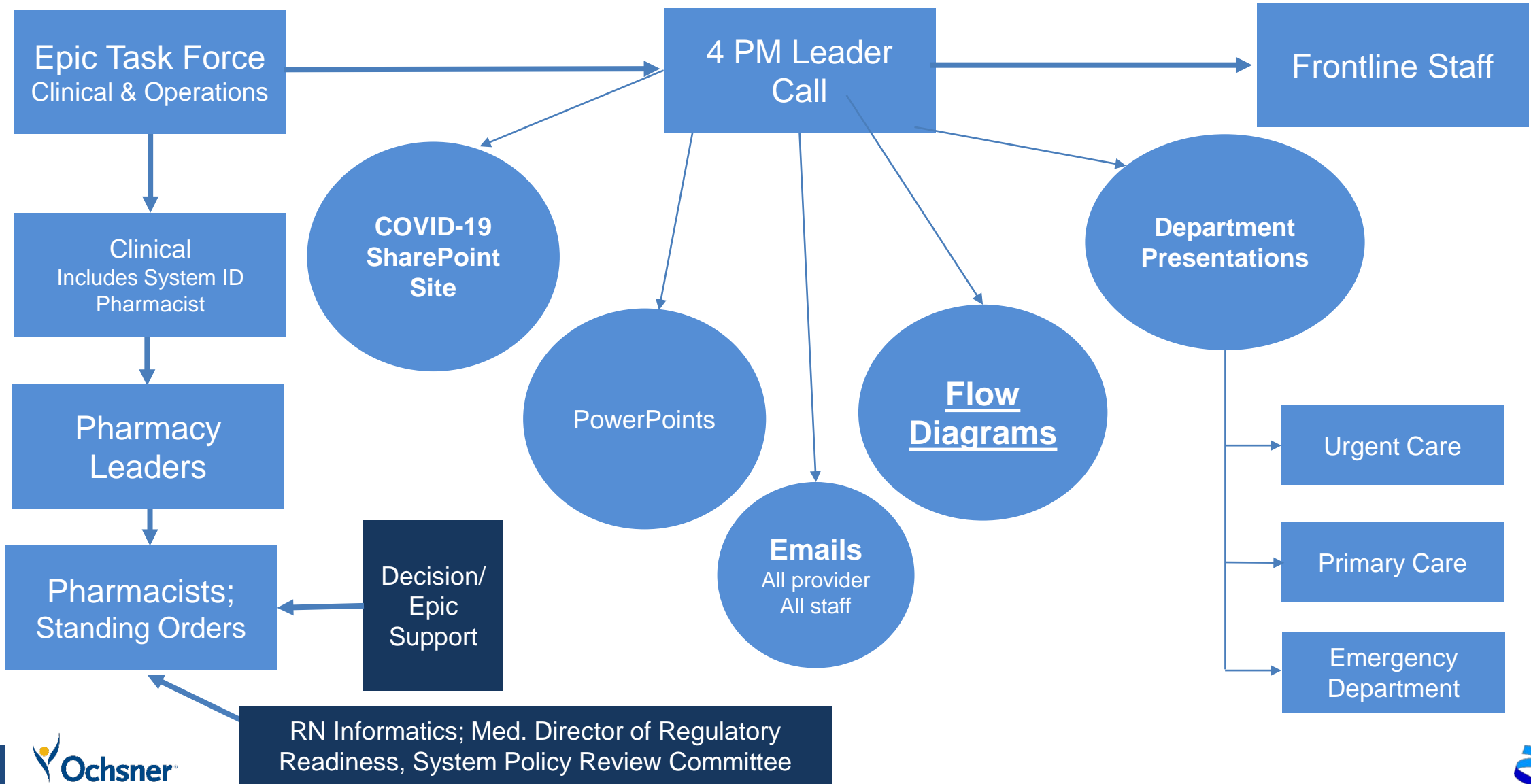
Risk Category	Point Range
High Risk	6 – 16 points
Moderate Risk	3 – 5 points
Low Risk	0 – 2 points
Risk Factor	Point Assignment
Is immunocompromised	1 point if any of the following are true: <ul style="list-style-type: none"> • Patient has HIV diagnosis on problem list • Patient is undergoing chemotherapy • Patient has an iatrogenic immunosuppression diagnosis • Patient is taking immunosuppressant drugs
Age	Patient is between 60 and 69 years old - 1 point Patient is between 70 and 79 years old - 2 points Patient is 80 or older - 3 points
Legal sex	Patient is male – 1 point
Nursing home residence	Patient is in a nursing home - 1 point
Pregnancy status	Patient is pregnant - 1 point
Has congestive heart failure	Patient has a qualifying condition on problem list - 1 point
Has congenital heart disease	Patient has a qualifying condition on problem list - 1 point
Has coronary artery disease	Patient has a qualifying condition on problem list - 1 point
Has end-stage renal disease	Patient has a qualifying condition on problem list - 1 point
Has end-stage liver disease	Patient has a qualifying condition on problem list - 1 point
Has chronic pulmonary disease	Patient has a qualifying condition on problem list - 1 point
Has diabetes	Patient has a qualifying condition on problem list – 1 point
Has hypertension	Patient has a qualifying condition on problem list – 1 point
Is obese	Patient has a qualifying condition on problem list – 1 point

COVID-19 Complication Risk Score

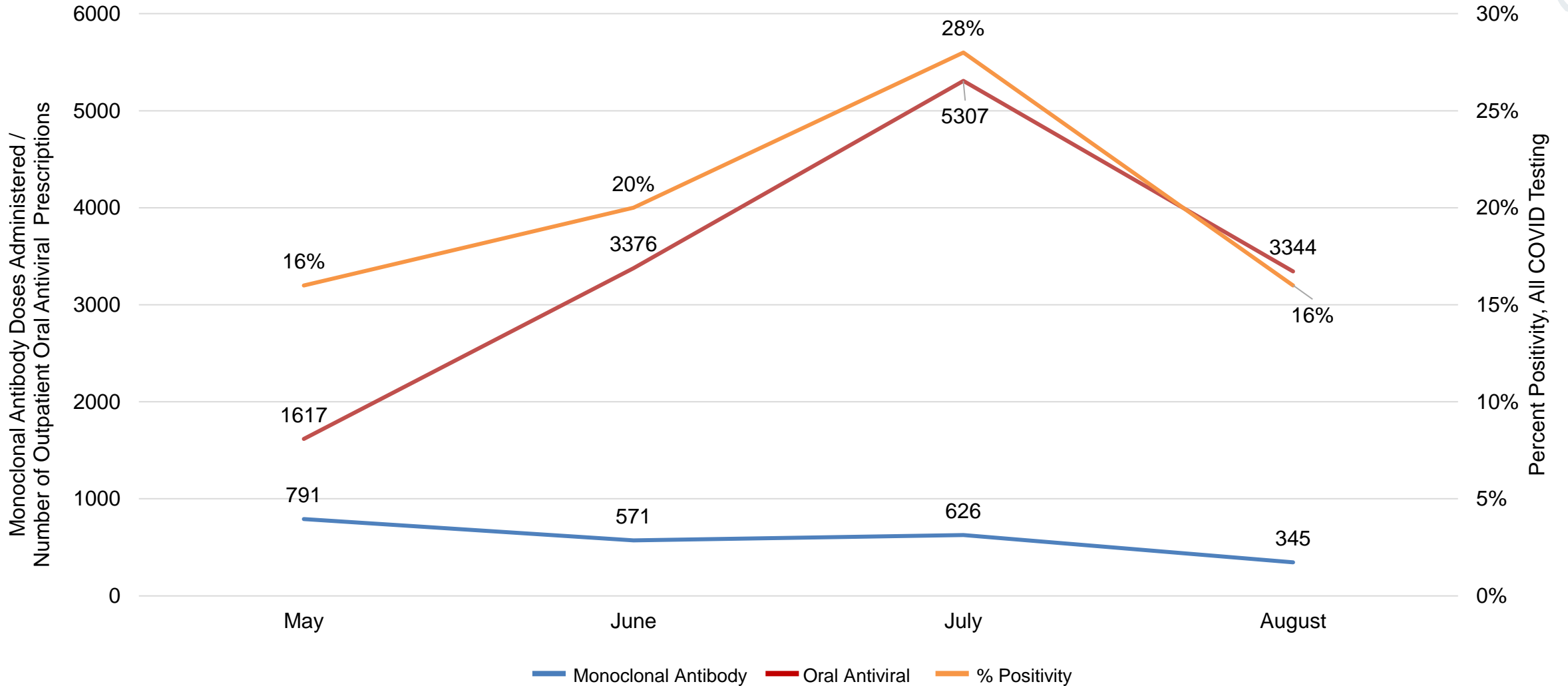


The screenshot displays an EHR interface with a navigation bar at the top containing tabs for Chart Review, Snapshot, Rooming, Hearin..., Notes, Plan, Education, Wrap-Up, Comm..., Virtua..., and AVS. The main content area is titled "SnapShot with Recent Visits" and includes a search bar and a list of tabs: SnapShot with Recent Visits, Index, Snapshot, Overview, Comp, Labs, Vitals, and Wt. A prominent red alert banner reads: "CRITICAL: This patient has a COVID-19 infection status. Please exercise proper COVID-19 precautions and policies." Below this is a yellow alert banner: "ALERT: Click Here to Complete Opioid Risk Abuse Assessment". A yellow header for the "Covid-19" section is followed by a timeline entry: "COVID-19 Detected or Suspected" on "Dec 16, 2021". A yellow circle with the number "3" indicates the "COVID-19 Risk of C...". Two care pathways are shown: "Place COVID-19 Home Symptom Monitoring [NUR727] order" leading to "Home Symptom Monitoring Program", and "Place COVID Surveillance [MYC37] order" leading to "COVID Surveillance".

Planning & Implementation



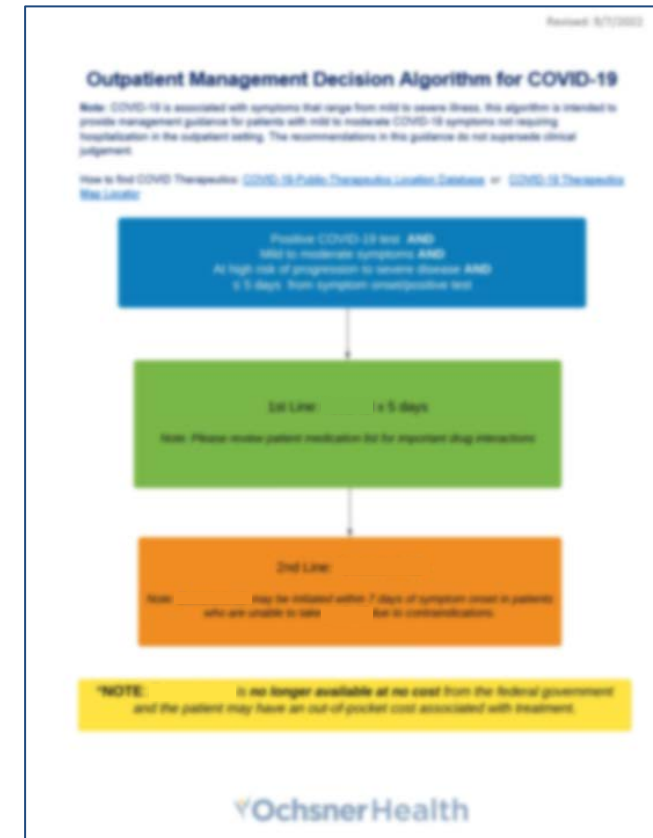
Outpatient COVID-19 Treatments by Month – 2022



Next Steps

Current Outpatient Management Decision Algorithm

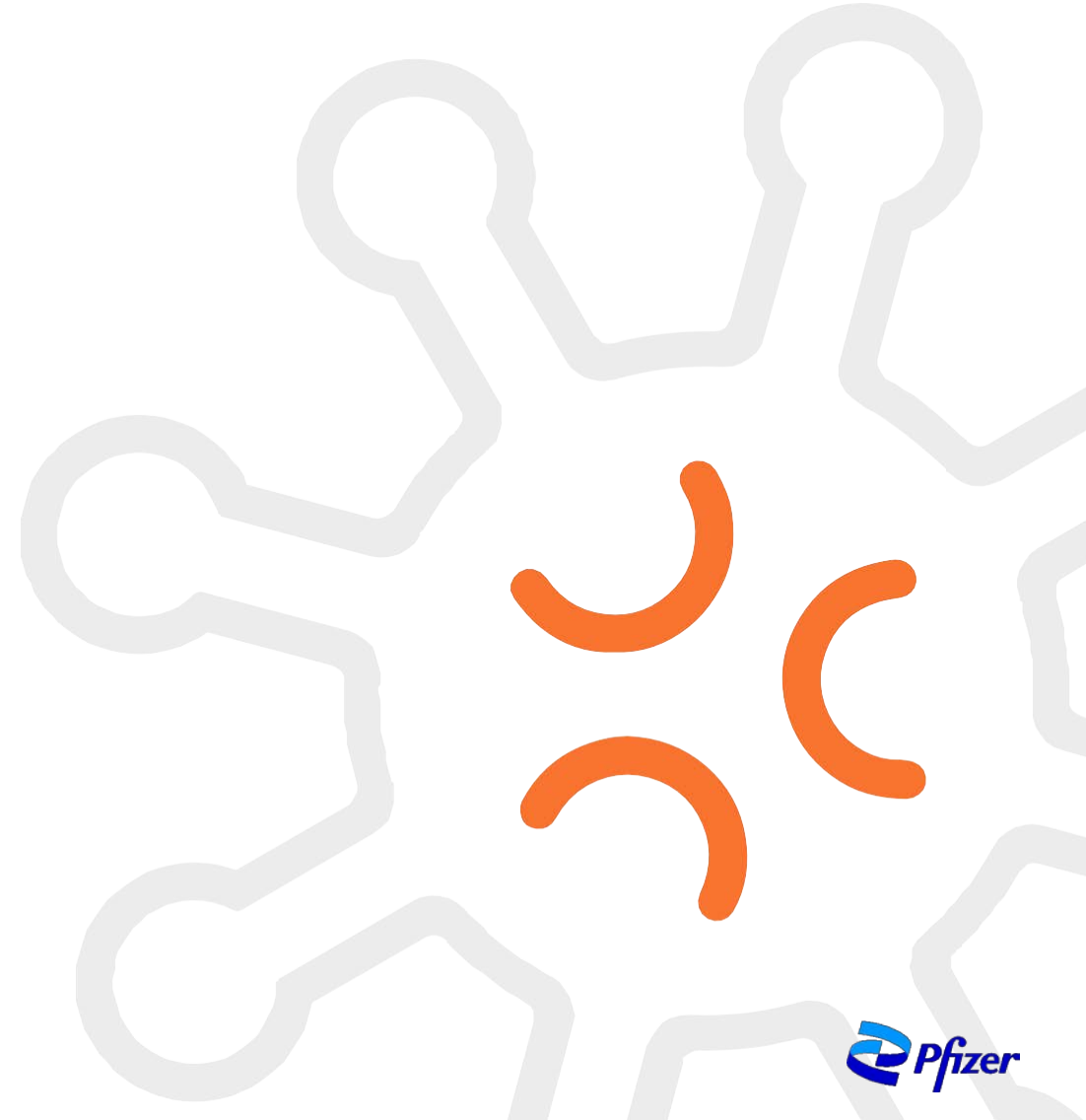
- Modified and refined algorithm based on CDC recommendations and evolving clinical data
- Supported providers with a decision tree for patients testing positive for COVID-19 based on patient symptoms AND high-risk for severe disease progression AND time from positive test
- Enhanced guidance on treatment considerations to improve confidence in prescribing



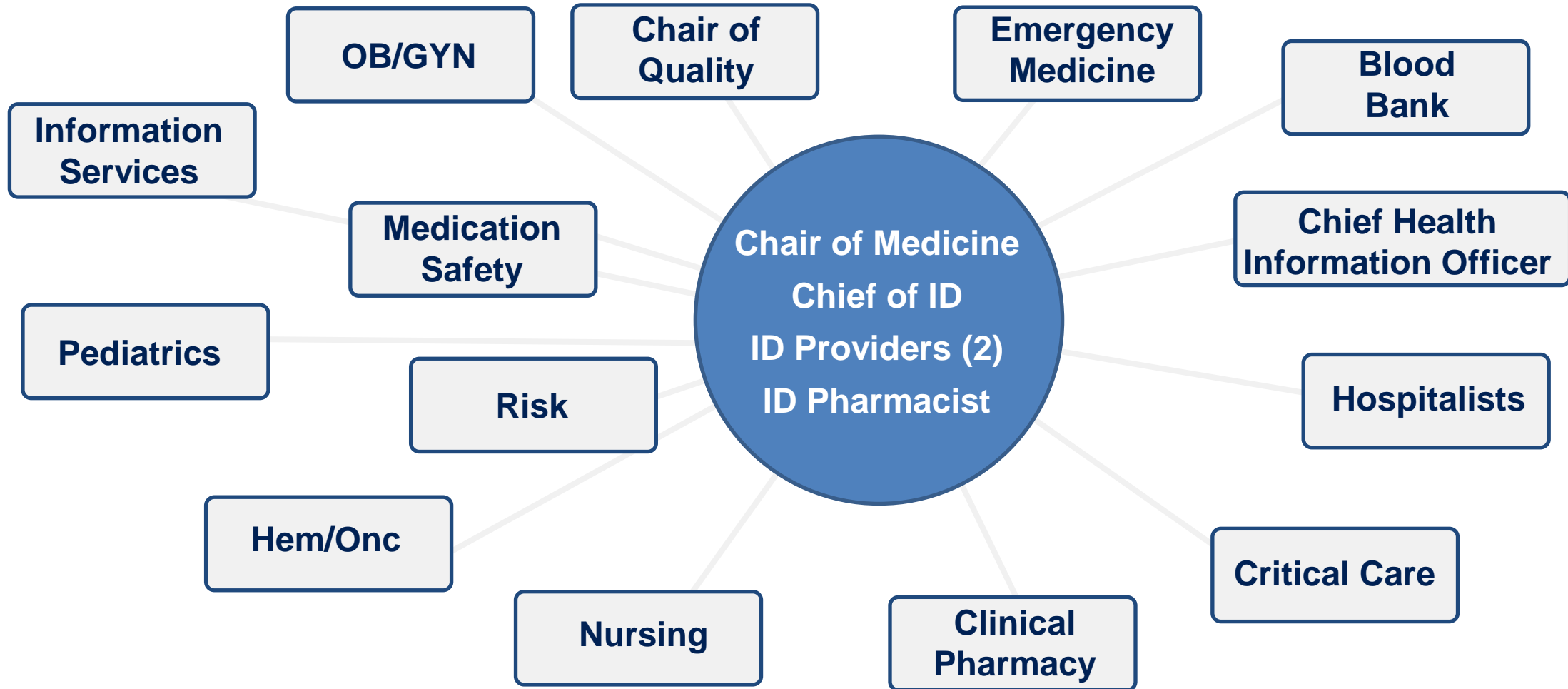


Identification and Management of High-Risk Population

- Needed an ambulatory site for infusion
- Central results model was already in place (testing and reaching out to patients)
- Education and updates regarding (i.e., Sanford guide)
- Understanding of what an EUA is
 - Which patients qualify
 - Based on limited supply and national/local guidelines
 - Responsibility of who talks to patient
 - What documentation is necessary



COVID-19 Steering Committee



Provider & Patient Education

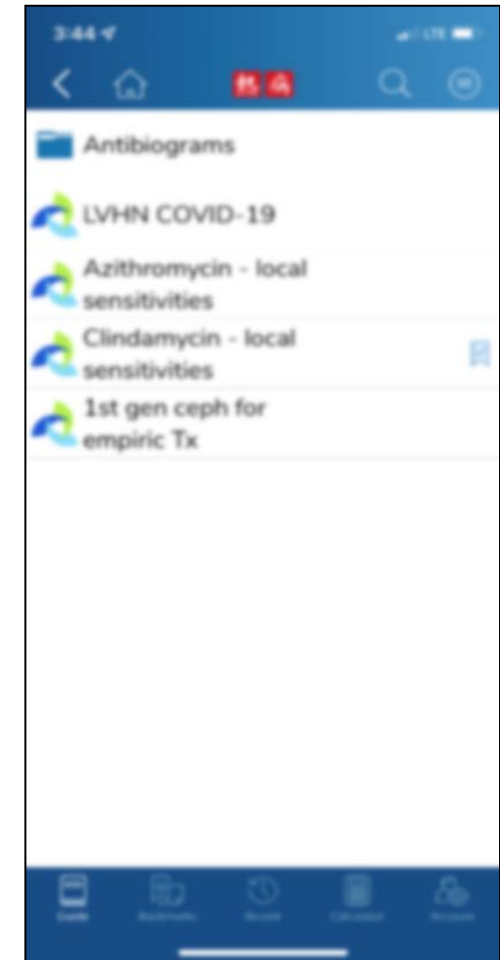


- COVID-19 leadership meetings that cascaded down to the division and department level
 - Bi-weekly → weekly → every other week → etc.
- Emails
 - Not effective
- COVID-19 website
 - Internet (public)
 - Intranet (employees)
- Patient portal
- Sanford guide
 - Links imbedded in EMR (Epic)
 - Adaptable education

Desktop



Mobile



Continuous Provider Education



- Utilized a platform that allowed for adaptation of education based on new recommendations and clinical data
- Provided clinical decision support initially via tabular format to guide providers and other members of the healthcare team on patients appropriate for IV therapy
- Evolved form now consolidates and streamlines criteria for high-risk patients testing positive to determine appropriateness for either oral or IV treatment (i.e. now with improved access and availability)
- Continue to modify guidance based on changing disease patterns and treatment options

HIGH RISK Criteria for Outpatient Injectable Therapy

Review for: **Injectable Therapy**
Version: **1.0**
Effective Date: **1/1/2020**
All for: **US**

Criteria for TREATMENT include:

Patients must have positive diagnostic test for SARS-CoV-2 with onset of symptoms within 14 days of planned administration

I	II
AND All of the following criteria: <ul style="list-style-type: none">Age 18 years or olderAge 12-17 years with parental consent for their age and gender based on CDC growth chartsAge 6-11 years or older	AND All of the following criteria: <ul style="list-style-type: none">Active treatment for cardiovascular and thromboembolic disordersRecent use of oral anticoagulant, antiplatelet, or anti-thrombotic therapyRecent use of intravenous anticoagulant or anti-thrombotic therapyRecent use of intravenous or intramuscular corticosteroid therapyRecent use of intravenous or intramuscular chemotherapyRecent use of intravenous or intramuscular immunosuppressive therapyRecent use of intravenous or intramuscular anti-infective therapyRecent use of intravenous or intramuscular anti-neoplastic therapyRecent use of intravenous or intramuscular anti-cancer therapyRecent use of intravenous or intramuscular anti-infective therapyRecent use of intravenous or intramuscular anti-inflammatory therapyRecent use of intravenous or intramuscular anti-emetic therapyRecent use of intravenous or intramuscular anti-nausea therapyRecent use of intravenous or intramuscular anti-pain therapyRecent use of intravenous or intramuscular anti-anxiety therapyRecent use of intravenous or intramuscular anti-depressant therapyRecent use of intravenous or intramuscular anti-anxiety therapyRecent use of intravenous or intramuscular anti-psychotic therapyRecent use of intravenous or intramuscular anti-epileptic therapyRecent use of intravenous or intramuscular anti-seizure therapyRecent use of intravenous or intramuscular anti-spasmodic therapyRecent use of intravenous or intramuscular anti-cancer therapyRecent use of intravenous or intramuscular anti-infective therapyRecent use of intravenous or intramuscular anti-inflammatory therapyRecent use of intravenous or intramuscular anti-emetic therapyRecent use of intravenous or intramuscular anti-nausea therapyRecent use of intravenous or intramuscular anti-pain therapyRecent use of intravenous or intramuscular anti-anxiety therapyRecent use of intravenous or intramuscular anti-depressant therapyRecent use of intravenous or intramuscular anti-anxiety therapyRecent use of intravenous or intramuscular anti-psychotic therapyRecent use of intravenous or intramuscular anti-epileptic therapyRecent use of intravenous or intramuscular anti-seizure therapyRecent use of intravenous or intramuscular anti-spasmodic therapy

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AND

- Age 18 years or older
- Age 12-17 years with parental consent for their age and gender based on [CDC growth charts](#)
- Age 6-11 years or older

AND

- Active treatment for cardiovascular and thromboembolic disorders
- Recent use of oral anticoagulant, antiplatelet, or anti-thrombotic therapy
- Recent use of intravenous anticoagulant or anti-thrombotic therapy
- Recent use of intravenous or intramuscular corticosteroid therapy
- Recent use of intravenous or intramuscular chemotherapy
- Recent use of intravenous or intramuscular immunosuppressive therapy
- Recent use of intravenous or intramuscular anti-infective therapy
- Recent use of intravenous or intramuscular anti-neoplastic therapy
- Recent use of intravenous or intramuscular anti-cancer therapy
- Recent use of intravenous or intramuscular anti-inflammatory therapy
- Recent use of intravenous or intramuscular anti-emetic therapy
- Recent use of intravenous or intramuscular anti-nausea therapy
- Recent use of intravenous or intramuscular anti-pain therapy
- Recent use of intravenous or intramuscular anti-anxiety therapy
- Recent use of intravenous or intramuscular anti-depressant therapy
- Recent use of intravenous or intramuscular anti-anxiety therapy
- Recent use of intravenous or intramuscular anti-psychotic therapy
- Recent use of intravenous or intramuscular anti-epileptic therapy
- Recent use of intravenous or intramuscular anti-seizure therapy
- Recent use of intravenous or intramuscular anti-spasmodic therapy

EXCLUDE CRITERIA

- Patients hospitalized due to COVID-19 illness
- Patients who require oxygen or mechanical ventilation due to COVID-19 illness
- COVID-19 infection that fulfills at least 2 of the following criteria:

Health System Actions & Interventions



- Outpatient management of patients testing positive for COVID-19 through ambulatory referral accessed through EHR
- Cascading questions were used to determine the best course of treatment for a given patient
- Patient risk was assessed to determine whether oral therapy was indicated based on current guidelines
- If oral treatment was determined to be contraindicated, referral was made to a centralized infectious disease team to manage IV treatment which was managed in a central location through the infectious disease team and not the responsibility of each individual primary care office or testing site

Out-of-Network Patients — Equitability



- Opportunity to support external community providers without access to EHR
- **Issue:** Providers without access to EHR-enabled referral process
 - Paper form created with similar questions and decision tree guidance
 - Process created for provider to manually complete and fax to central ID team for review and evaluation
 - Allowed equal access for the most high-risk patients to get treated and not just the ones that had access to the electronic version of the medical record

	AMBULATORY COVID-19/OUTPATIENT INFUSION TREATMENT CONSIDERATION FORM Belsivess® will be the preferred medication. Remdesivir will be the alternative if not Belsivess®. Complete and Fax to LVPH ID: 484-224-0640 Phone number: 610-402-6011
NOTE: PLEASE CONSIDER ORAL COVID MEDICATION THERAPY (i.e. PAXLOVID) BEFORE AN INFUSION TREATMENT.	
Patient Information: LVN/EPIC MRN _____ Name _____ Date of Birth: / / _____ Address/Facility Information: _____ Room Number _____ Address: _____ City: _____ State: _____ Zip: _____ Contact Person related to this order: _____ Phone/extension: _____ Sex: <input type="checkbox"/> M <input type="checkbox"/> F Weight: _____ kg Height: _____ cm BMI: _____ Drug Allergies: COVID: _____	
REQUIRED INFORMATION Please send patient medical history, medication list, advanced directives and insurance information (Diagnoses: COVID-19 part 19)	
Date of positive COVID-19 test: _____ Date of symptom onset: _____ Patient is fully vaccinated for COVID-19 (which includes booster)? YES / NO Does the patient have moderate to severe liver disease that precludes the use remdesivir? YES / NO If the answer is yes, please provide appropriate lab/medical records. Belsivess® will be utilized preferentially based on availability.	
Current Symptoms: _____ Provider Information: Provider's Full Name: _____ NPI number: _____ Address: _____ City: _____ State: _____ Zip: _____ Office contact: _____ Phone: _____ Fax: _____	

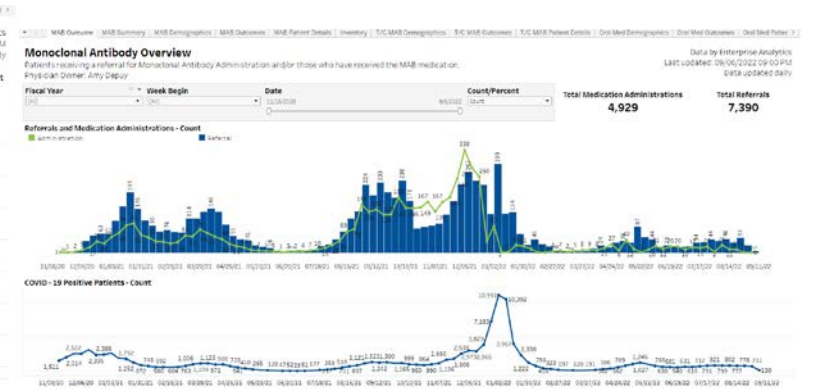
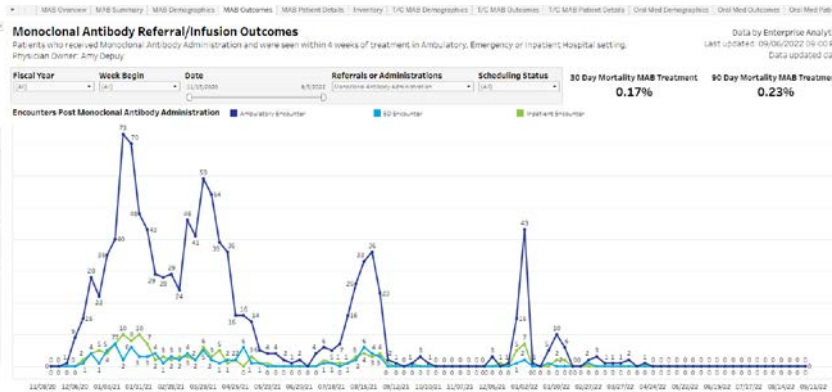
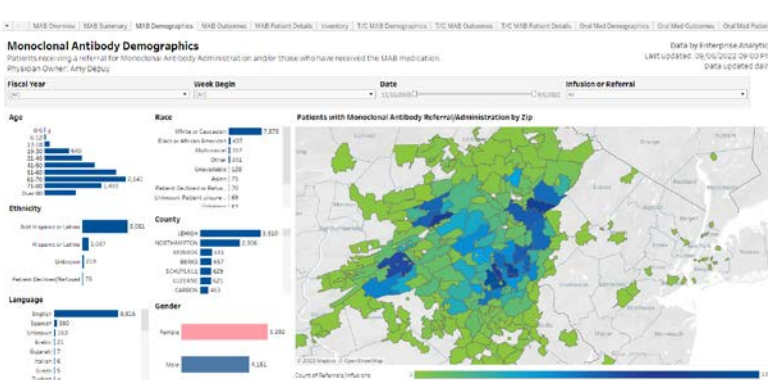
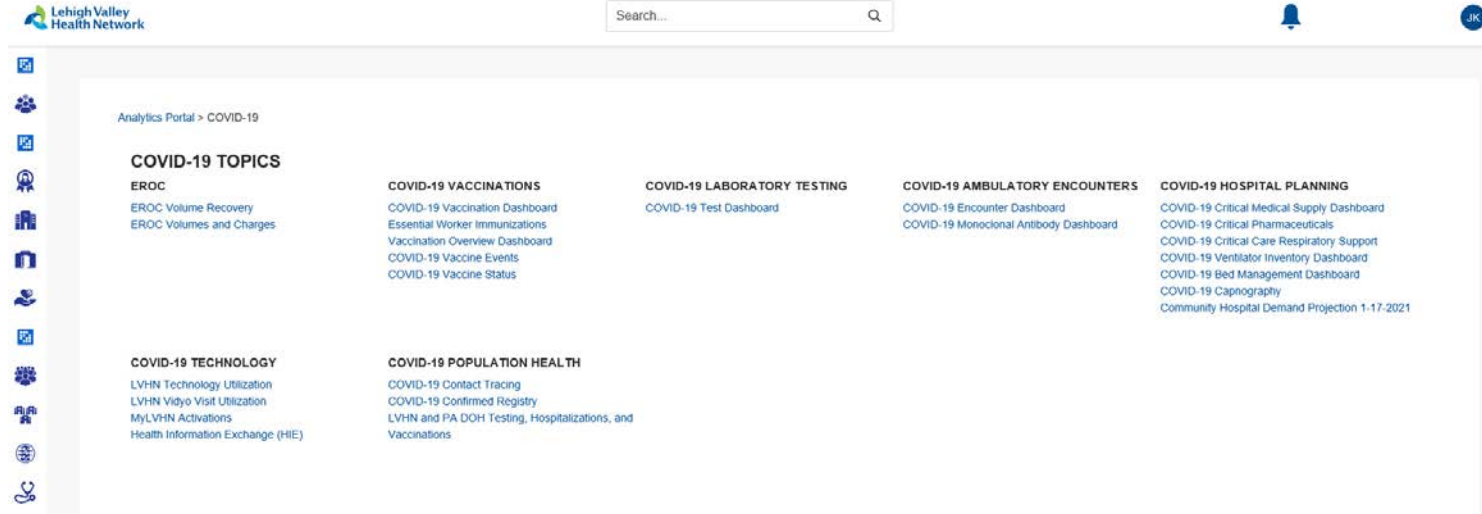
Exclusions for Therapy <ul style="list-style-type: none"> • Symptoms of COVID-19 at onset • Hospitalized with COVID-19 • NIH Requirement for Oxygen Therapy starts COVID-19 • Increased oxygen flow rate requirements starts COVID-19 when previously on oxygen therapy • Respirators are up to date with their COVID-19 vaccination histories and health requests (i.e. not immunocompromised)
Inclusion for Therapy Patients must have positive diagnostic test for SARS-CoV-2 with onset of respiratory symptoms within 7 days of planned administration
AND Weight ≥45kg AND ONE of the following:
_____ Age ≥ 65 years _____ Patients aged 18 years or older AND 1 or more high-risk criteria listed below: _____ 13-17 years AND one of the following or one of the high-risk criteria listed below: <ul style="list-style-type: none"> • BMI ≥ 35 (percentage for height and weight based on CDC growth chart) • Active or chronic respiratory disease that requires daily medication for control • Any patient/patient referred to the program will be reviewed in conjunction with our patient selection decision committee
HIGH-RISK CRITERIA
<ul style="list-style-type: none"> • Active cancer with or without treatment • Active treatment with high-dose systemic corticosteroids (i.e., ≥10 mg prednisone or equivalent per day when administered for ≥2 weeks) • Active treatment with Tumor necrosis factor (TNF) blockers and other biologic agents that are immunosuppressive or immunomodulatory (e.g., B-cell depleting agents) • BMI ≥ 35 • Cardiovascular disease (including congestive heart disease and HTN) • Chronic kidney disease (eGFR < 30) • Chronic liver disease • Chronic lung disease (i.e., COPD, asthma, bronchitis, emphysema, any chronic lung disease, cystic fibrosis, and pulmonary hypertension) • Diabetes (on long-term oral medication or insulin therapy) • Having a medical condition/technology dependence (e.g., dialysis, pacemaker, or positive pressure ventilation not related to COVID-19) • HIV, advanced disease or untreated • Moderate to severe primary immunodeficiency (e.g., B-lymphocyte dysfunction, ataxia-telangiectasia) • Neurodevelopmental disorders (e.g., cerebral palsy) or other conditions that create medical complexity (e.g., genetic or metabolic syndromes, and severe congenital anomalies)
Label to be following <ul style="list-style-type: none"> • Mail 1 case discussed and provide a copy of the current non-remdesivir antibody ELISA test results to the patient, family member, PCP or Specialist and document their agreement for administration in the medical record • Top of the patient understands the risks and benefits of treatment with Belsivess® or remdesivir and agrees to proceed with treatment. Fluoresc sign. • I have informed the patient that Belsivess® may have infection-related costs. Remdesivir may have drug and infusion related costs for the three day course.
Provider Signature (Required): _____ Date: _____

Metrics



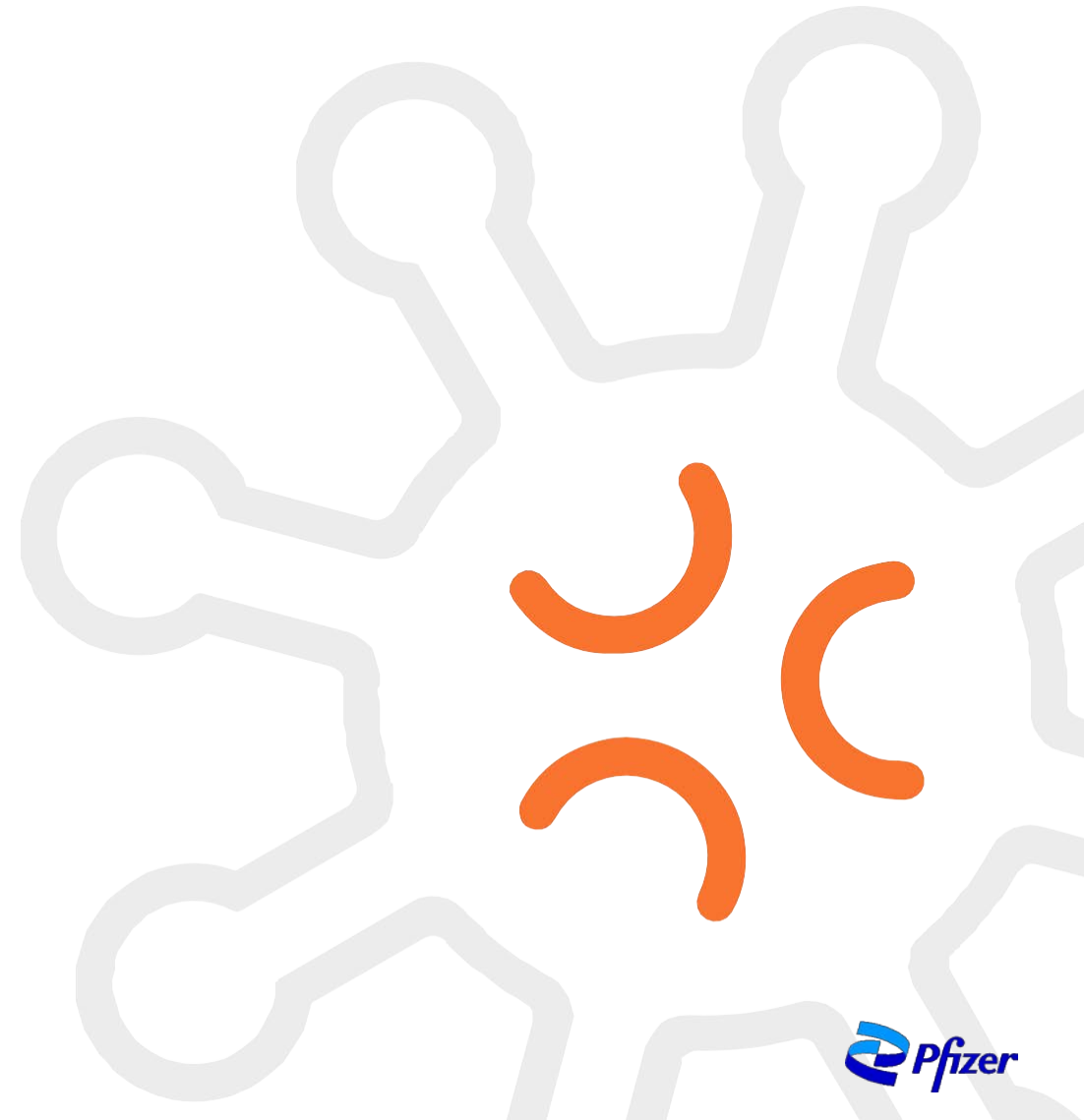
Created real-time dashboards allowing measurement of:

- Medication distribution
- Health Equity considerations
- Mortality Assessments
- Feedback loop on provider/patient re-education for high-risk patients



Next Steps

- Commercialization of the medications
 - Staffing
 - Process for pre-authorizations
 - Short time frame
 - Scheduling
- “Long-term” treatment center for COVID-19
 - People’s/provider’s question: “Can I close my eyes and make it go away?”





Identifying and engaging patients at high risk for severe disease offers an opportunity for improved COVID-19 management



Proactive engagement of these high-risk patients may improve patient outcomes



COVID-19 continues to pose a substantial burden on the healthcare ecosystem