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

AMGA 2022 IQL
Introductions

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Speaker
Health System Overviews

Ochsner

- 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

Lehigh Valley Health Network

- 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.

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Note: Speakers do not have any disclosures.
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

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\(^1,2\)

While each variant is unique, some variants of concern have shown\(^2\):

- 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 immunity\(^3\)

References:
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\textsuperscript{1,2}

**Total COVID-19 infections**

- **Mild:**
  - Constitutional symptoms (eg, fever, cough, headache, loss of taste and/or smell), evidence of lower respiratory disease

- **Severe to critical:**
  - Oxygen saturation <94\%\textsuperscript{*}
  - Lung infiltrates >50\%
  - Respiratory failure, septic shock, and/or multiple organ dysfunction

*On room air at sea level.

\textsuperscript{*}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.

\textsuperscript{†}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.”

**Patients with severe COVID-19 may experience a lasting impact 6 months after hospital discharge\textsuperscript{†}**

- 71\% did not feel fully recovered
- 20\% had a new disability\textsuperscript{‡}
- 18\% of those who had been working were no longer working
- 19\% experienced a health-related change in occupation

\textsuperscript{‡}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:
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 include:

- 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)

Comorbidities in patients requiring admission

<table>
<thead>
<tr>
<th>Condition</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension</td>
<td>78%</td>
</tr>
<tr>
<td>Gastrointestinal conditions</td>
<td>66%</td>
</tr>
<tr>
<td>Cardiovascular disease</td>
<td>60%</td>
</tr>
<tr>
<td>Diabetes or were obese</td>
<td>~46%</td>
</tr>
</tbody>
</table>

~72% of patients with COVID-19 had at least 1 characteristic or medical condition that put them at high risk for progression to severe disease.

References:

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.
Early diagnosis and management of high-risk patients with mild-to-moderate COVID-19 is an important component of disease management\(^1\text{-}^3\)

Complications from COVID-19 can quickly progress, underscoring the need for early testing and rapid therapeutic intervention\(^1\text{-}^3\)

**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

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

1. **Patient has symptoms**
   - Understanding own risk profile
   - Navigating testing ecosystem
   - Sufficiently communicating with or informing their provider

2. **Patient tests for COVID-19**
   - Available testing sites:
     - At home
     - Hospital/PCP/UC
     - Independent Testing Sites
   - Not following up after positive result:
     - Lacking motivation to be treated - “not sick enough”
     - Navigating treatment ecosystem
     - Delay seeking care

3. **Patient tests positive and immediately seeks appropriate care**
   - Lack of awareness of treatment options
   - Consider treatment based on symptoms vs. risk factors
   - Not knowing which medications they are taking

4. **Patient prescribed appropriate therapy**
   - Not taking appropriate action following prescription:
     - Does not fill prescription (e.g., access issues)

5. **Patient coordinates appropriate follow up with care team per guidelines**
   - Not adhering to treatment plan/completing full course of therapy, if applicable

Potential Patient Challenges:
- Lack of visibility of high-risk patients already in their system
- Lack of clinical integration of test results

Potential Health System Challenges:
- Lacking awareness or understanding of:
  - Available treatment options
  - Risk factors of positive patients
  - Patient appropriateness for treatment
  - Care process following positive test
- Pharmacy may reject prescription because of incomplete information
- Lack of protocols to support appropriate follow-up
New Cases: Seven-Day Rolling Average (All Testing)

Data as of: 9.8.2022

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
Health System Tools

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:

<table>
<thead>
<tr>
<th>Risk Category</th>
<th>Point Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Risk</td>
<td>6 – 16 points</td>
</tr>
<tr>
<td>Moderate Risk</td>
<td>3 – 5 points</td>
</tr>
<tr>
<td>Low Risk</td>
<td>0 – 2 points</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Point Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is immunocompromised</td>
<td>1 point if any of the following are true:</td>
</tr>
<tr>
<td></td>
<td>• Patient has HIV diagnosis on problem list</td>
</tr>
<tr>
<td></td>
<td>• Patient is undergoing chemotherapy</td>
</tr>
<tr>
<td></td>
<td>• Patient has an iatrogenic Immunosuppression diagnosis</td>
</tr>
<tr>
<td></td>
<td>• Patient is taking immunosuppressant drugs</td>
</tr>
<tr>
<td>Age</td>
<td>Patient is between 60 and 69 years old - 1 point</td>
</tr>
<tr>
<td></td>
<td>Patient is between 70 and 79 years old - 2 points</td>
</tr>
<tr>
<td></td>
<td>Patient is 80 or older - 3 points</td>
</tr>
<tr>
<td>Legal sex</td>
<td>Patient is male – 1 point</td>
</tr>
<tr>
<td>Nursing home residence</td>
<td>Patient is in a nursing home - 1 point</td>
</tr>
<tr>
<td>Pregnancy status</td>
<td>Patient is pregnant - 1 point</td>
</tr>
<tr>
<td>Has congestive heart failure</td>
<td>Patient has a qualifying condition on problem list - 1 point</td>
</tr>
<tr>
<td>Has congenital heart disease</td>
<td>Patient has a qualifying condition on problem list - 1 point</td>
</tr>
<tr>
<td>Has coronary artery disease</td>
<td>Patient has a qualifying condition on problem list - 1 point</td>
</tr>
<tr>
<td>Has end-stage renal disease</td>
<td>Patient has a qualifying condition on problem list - 1 point</td>
</tr>
<tr>
<td>Has end-stage liver disease</td>
<td>Patient has a qualifying condition on problem list - 1 point</td>
</tr>
<tr>
<td>Has chronic pulmonary disease</td>
<td>Patient has a qualifying condition on problem list - 1 point</td>
</tr>
<tr>
<td>Has diabetes</td>
<td>Patient has a qualifying condition on problem list – 1 point</td>
</tr>
<tr>
<td>Has hypertension</td>
<td>Patient has a qualifying condition on problem list – 1 point</td>
</tr>
<tr>
<td>Is obese</td>
<td>Patient has a qualifying condition on problem list – 1 point</td>
</tr>
</tbody>
</table>
COVID-19 Complication Risk Score
Planning & Implementation

Epic Task Force
Clinical & Operations

Clinical
Includes System ID
Pharmacist

Pharmacy Leaders

Pharmacists;
Standing Orders

Decision/ Epic Support

COVID-19
SharePoint Site

PowerPoints

Emails
All provider
All staff

Flow Diagrams

4 PM Leader Call

Department Presentations

Frontline Staff

Urgent Care

Primary Care

Emergency Department

RN Informatics; Med. Director of Regulatory Readiness, System Policy Review Committee
Outpatient COVID-19 Treatments by Month – 2022

Monoclonal Antibody Doses Administered / Number of Outpatient Oral Antiviral Prescriptions

Percent Positivity, All COVID Testing

Monoclonal Antibody
Oral Antiviral
% Positivity

May
June
July
August

791
571
626
345

16%
20%
28%
16%

5307
3376
5307
3344

0%
5%
10%
15%
20%
25%
30%
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

Chair of Medicine
Chief of ID
ID Providers (2)
ID Pharmacist

- OB/GYN
- Chair of Quality
- Emergency Medicine
- Blood Bank
- Chief Health Information Officer
- Hospitalists
- Critical Care
- Information Services
- Pediatrics
- Medication Safety
- Risk
- Hem/Onc
- Nursing
- Clinical Pharmacy
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
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
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
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
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.

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