Welcome to the Front Lines of the Fight Against COVID-19

A TOWN HALL CONVERSATION

We will begin at 1:30 p.m.

Houston Methodist
Leading Medicine
HM SYSTEM COVID-19 PATIENTS

Houston Methodist COVID-19
Patients by Day

- Med/Surg Pos + Now Neg
- ICU Pos + Now Neg
- Total Pos + Now Neg
- IMU Pos + Now Neg
CLINICAL OUTCOMES
HM SYSTEM ICU COVID-19 PATIENT VOLUME

ICU Volume by Admission Date - HM System - Encounter

Dashboard dates 03/07 – 06/13
RAPID EXPANSION OF ICU AND IMU CAPACITY

• In June and July overall ICU capacity had to be increased across the system, IMU beds were added to meet the needs of all critically ill patients – COVID and Non-COVID combined. This was different from March and April.

• Critical Care teams stretched to meet the demands the surge of patients presented.

• Hi-flow units, more noninvasive ventilation and IMUs allowed us to manage a lot more critical patients than in March and April.

• In August we are trending towards the New Normal for critically ill patients requiring ICU.
List of developed COVID-19 Patient Management:
Algorithms, Protocols, Processes, Guidelines

- Mechanical Ventilation in COVID-19 Patients
- ECMO Guidelines, Criteria and Algorithm
- Respiratory Management for Hypoxemia in COVID-19
- Bronchoscopy Guide for Confirmed COVID-19 Patients
- COVID-19 ICU Insulin Drop Order Set for Target Blood Glucose
- HM SARS-CoV-2/COVID-19 Anticoagulation Guidelines
- SARS-CoV-2/COVID-19 Anticoagulation Algorithm for Admitted Patients with COVID-19
- ICU Proning Algorithm
- Proning Pressure Injury Prevention Process
- HM Aerosol Container User Guide
- Transfer Out ICU COVID-19 Neg Patients
- COVID-19 Rule Out ICU Patients: Transfer from ED/Acute Care
SOME OF THE INNOVATIONS

- Continuous Glucose Monitor
- Tele-ICU
- IV Pumps Outside of the Rooms
- HM Aerosol Containers (HMACs)
- HMH CareSense Post ICU Communication
- Proning Cart
- IV hook and DIY pole (Tyler’s bar) to keep IV lines above ground
- Aerosol Helmet
- Personal Protective Pod
OUR INNOVATIVE VIRTUAL ICU IMPACT

1. VICU Team is covering over 200 patients every night, in all main ICUs at HMH, our expansion ICU areas, COVID IMU areas and (using mobile cart fleet) starting in our system hospitals

2. Save PPE
   - local VICU/camera access via VICU enable laptops to bedside teams

3. Clinical distancing
   - Consultant bridge – for consultants and patient families
   - Diminished staff exposure

4. Efficient allocation of critical care resources (Surge)
   - Oversight for non-COVID units
   - Backstop for COVID units
One of the biggest challenges our team had to help navigate was bridging the connection of family members separated from their loved one in ICUs.

We had to become their extended family.

New innovative ways of communications; e.g., consultant bridge, FaceTime, iPads, virtual family meetings.

The *New York Times* published its latest story featuring Houston Methodist:

Inside the Fight to Save Houston’s Most Vulnerable

Our reporters and cameras were given exclusive access to the COVID medical I.C.U. at Houston Methodist Hospital. Meet five patients and watch as the staff works to heal them.

By Sheri Fink, Emily Rhyne and Erin Schaff, August 10, 2020

WHY PROLONGED SYMPTOMS WITH COVID-19?
MULTI-SYSTEM INVOLVEMENT

Covid-19 can have ripple effects throughout the body, but the process is still unclear

While Covid-19 is a respiratory infection, it’s become increasingly apparent in recent months that its effects can have cascading consequences throughout the body. Scientists are now piecing together the mechanisms behind these effects in hopes of stopping some of the worst outcomes and to get ahead of long-term problems.
COVID-19 PATIENTS AVERAGE LOS

Average LOS for Encounters that require No ICU stay versus No ICU stay
HM Entity - All

Average LOS for Encounters that require No ICU stay - HMH System

Dashboard dates 03/07 – 08/14
CLINICAL OUTCOMES – VENTILATOR UTILIZATION COVID-19 PATIENTS

Ventilator Volume
HM Entity: All

<table>
<thead>
<tr>
<th>HM Entity</th>
<th>% Intubation Performed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grand Total</td>
<td>12.0%</td>
</tr>
<tr>
<td>HUH HOSPITAL</td>
<td>18.1%</td>
</tr>
<tr>
<td>HMTH HOSPITAL</td>
<td>12.0%</td>
</tr>
<tr>
<td>HMCL HOSPITAL</td>
<td>11.8%</td>
</tr>
<tr>
<td>HMWH HOSPITAL</td>
<td>10.8%</td>
</tr>
<tr>
<td>HMNH HOSPITAL</td>
<td>10.6%</td>
</tr>
<tr>
<td>HMML HOSPITAL</td>
<td>9.8%</td>
</tr>
<tr>
<td>HMWI HOSPITAL</td>
<td>9.5%</td>
</tr>
<tr>
<td>HMCC HOSPITAL</td>
<td>4.7%</td>
</tr>
</tbody>
</table>

% Intubation Performed - HMH System

Dashboard dates 03/07 – 08/14
CLINICAL OUTCOMES FOR COVID AND NON-COVID ICU PATIENTS

Vizient HM ICU Outcomes

AMC Cohort Mortality Index - 2020
 Restricted to ICU

AMC Cohort CMI - 2020
 Restricted to ICU

AMC Cohort LOS Index

Includes data for Jan 2018 – June 2020
ECMO in COVID-19

Current ECMO Status/Final Discharge Disposition/Patients By Month (n=39)

39 COVID-19 patients have been cannulated for ECMO:

COVID-19 ECMO: ECMO Status

- Decannulated: 21 (54%)
- Current: 10 (26%)
- Expired: 8 (21%)

COVID-19 ECMO: By Month

- March: 5
- April: 8
- May: 1
- June: 5
- July: 12
- August: 8

As of 3:00pm 8/17
<table>
<thead>
<tr>
<th>Study ID</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRO00025079</td>
<td>Gilead Emergency Use of Investigational antiviral Remdesivir for the treatment of COVID-19</td>
</tr>
<tr>
<td>PRO00026580</td>
<td>A Phase 3 Randomized Study to Evaluate the Safety and Antiviral Activity of Remdesivir (GS-5734™) in Participants with Severe COVID-19</td>
</tr>
<tr>
<td>PRO00025146</td>
<td>Plasma Donation Convalescent COVID</td>
</tr>
<tr>
<td>PRO00028121</td>
<td>Convalescent Plasma for the Treatment of Coronavirus Disease 2019 PRO00025121:1 IND Number: 19734</td>
</tr>
<tr>
<td>PRO00025529</td>
<td>A Pilot Trial of Cord Blood Derived T-regulatory Cell Infusions (CK0802) in the Treatment of COVID-19 Induced Acute Respiratory Distress Syndrome (ARDS)</td>
</tr>
<tr>
<td>PRO00025638</td>
<td>A Phase 1b/2, Randomized, Double-Blind, Placebo-Controlled, Multi-Center Study to Evaluate the Safety and Efficacy of TJ003234 In Subjects with Severe Coronavirus Disease 2019 (COVID-19)</td>
</tr>
<tr>
<td>PRO00025670</td>
<td>Cytoxan Emergency Use Authorization</td>
</tr>
<tr>
<td>PRO00025713</td>
<td>iNO Compassionate use</td>
</tr>
<tr>
<td>PRO00025815</td>
<td>A Phase II, Open-Label, Randomized, Multicenter Study To Investigate The Pharmacodynamics, Pharmacokinetics, Safety, And Efficacy Of 8 Mg/Kg Or 4 Mg/Kg Intravenous Toclizumab In Patients With Moderate To Severe Covid-19 Pneumonia</td>
</tr>
<tr>
<td>PRO00025929</td>
<td>A Phase 3 Open-label, Randomized, Controlled Study to Evaluate the Efficacy and Safety of intravenously Administered Ravulizumab Compared with Best Supportive Care In Patients with COVID-19 Severe Pneumonia, Acute Lung Injury, or Acute Respiratory Distress Syndrome</td>
</tr>
</tbody>
</table>
CRITICAL CARE INNOVATION

• Enabling critical care innovations that will drive the future of healthcare in a post COVID-19 world:
  o RELIANT Innovation Fund
    Critical Care collaboration with EnMed program (education and training)
      ❑ Critical Care focused program and projects
      ❑ Collaboration with medical and academic institutions
      ❑ Innovation
  o COVID-19 Caresense Program (patients)
    ❑ Provides education
    ❑ Monitors health and recovery – can help address PTSD
    ❑ Provides key reminders to needed actions or taking of medication
    ❑ Ensures resolution of patients’ action items – direct line to clinician
EDUCATION AND OUTREACH

Internal
• May 12, Medicine Grand Rounds – Institutional Response to COVID-19: Lessons Learned
• Apr 16, HMDHVC Grand Rounds – Critical Care Management of COVID-19 Patients

External highlights
• Jul 16, KHOU 11: There is concern in the Texas Medical Center about the dramatic slope upward in COVID-19 cases
• Jul 11, CNN: Texas seeing record number of hospitalizations
• Jul 7, NBC Today Show: “knee deep in first wave” of coronavirus cases surge.
• Jul 7, MSNBC: Dr. Masud is interviewed to discuss the crisis
• Jul 3, Barron’s: COVID-19 Close To Overwhelming Houston’s Vast Healthcare Complex
• Jun 27, Newsweek: ICUs in California, Arizona and Texas Prepare for Surge in COVID-19 Cases
• Jun 24, ABC World News Tonight with David Muir: Surging Virus Infections – Dr. Masud is interviewed
• May 6, ABC Good Morning America: Public safety concerns as states ease restrictions
• Apr 17, Houston Chronicle: CDC adds 6 new COVID-19 symptoms, including loss of taste or smell, to list
• Apr 16, Houston Chronicle: Doctors treating COVID-19 at HM get inside giant plexiglass
• Apr 11, Univision 45: Dr. Masud is interviewed
• Apr 7, KPRC 2: HMH District takes new innovations to combat COVID-19 System Fights Coronavirus Pandemic Head-on
RESEARCH AND PUBLICATIONS


• Anesthesia & Analgesia Journal – “Provider Burnout and Fatigue During the COVID-19 Pandemic: Lessons Learned From a High-Volume Intensive Care Unit”

• AHA/ASA Journals – “Circulation Video Series COVID: Updates from the Front Lines Houston, Texas” (Technology and Tele ICU potential)

• American Journal of Pathology – “Treatment of COVID-19 Patients with Convalescent Plasma”

• Emergency Medicine Journal – “Aerosol containment box to the rescue: extra protection for the frontline”

• CHEST Journal – “Impact of small-N studies during a pandemic”

• JAMA Network – Characteristics and Outcomes of COVID-19 Patients During Initial Peak and Resurgence in the Houston Metropolitan Area

• JMIR Publications – “Rapid Implementation and Innovative Applications of a Virtual ICU during the COVID-19 Pandemic: A Case Study”
Congrats to Dr. Deepa Gotur on being selected to receive the GlaxoSmithKline Distinguished Scholar in Respiratory Health in the amount of $150,000 for her project titled:

"Cytokine release in SARS COV2 viral illness and Trends of inflammasome expression in Acute Respiratory Distress Syndrome manifestations and Management"
143 Patients Admitted with COVID-19
72% with PNA
2 Week LOS

2 Months post discharge
• 12% completely free of any COVID-19–related symptoms
• 32% had 1-2 symptoms
• 55% had 3 or more symptoms
• Battle tested teams ready for next phase
• We all are still learning short term and long term impact of this disease
• There is a need to focus on how best to manage these patients in ICUs, how to prevent lung, heart, brain and kidney complications
• If we have better understanding of these disease processes then our treatments would be innovative, targeted and hopefully prevent short and long term complications
• Family and healthcare team well-being while caring for these complex patients
Many Thanks!

to the nurses, respiratory therapists, pharmacy, physical therapists, PCA, physician assistants, nurse practitioners, supply chain, housekeeping, administration, virtual ICU team, ECMO team, physicians and OUR COMMUNITY.

All united in the fight against COVID-19! It has been exhausting
Research in Treatments & Vaccines

H. Dirk Sostman, MD FACR

Town Hall August 19, 2020
Convalescent Plasma (351 patients treated)
  – Severe life-threatening COVID-19
  – HM data: reduces mortality (7.0% → 1.2%)
    • patients transfused within 72 h of admission
    • plasma with an anti-spike protein titer of ≥ 1:1350
  – Worldwide data: reduces mortality (25% → 13%)

Monoclonal Antibodies
  – Regeneron – inpatient study recruiting, outpatient starting soon
  – Lilly – outpatient study recruiting, inpatient starting soon

Not randomized controlled trials
• NIH sponsored RCT: remdesivir + beta-interferon
  – Interferons are broad spectrum anti-viral proteins produced by the body
  – Also used to treat cancer, MS, hepatitis
  – COVID-19 seems to suppress this defense mechanism

• Previous trials of interferon
  – Synairgen trial:
    • Inhaled beta-interferon
    • 79% reduction in progression to severe disease
  – Hong Kong trial (Lancet 2020)
    • Kaletra, Ribavirin, interferon 1-beta
    • 7 days to viral clearance vs 12 days for controls
• **Vasodilator** (discovered in 1970)
  – Concentrated in the lung and seems to protect the type II lung cell
  – Enters a cell infected with SARS-CoV-2, may block viral replication, cytokine synthesis, and cell death
  – Also ? Anti-inflammatory ? Anti-platelet activity
  – No documented clinical usefulness yet

• **Experience at Houston Methodist**
  – 50 patients treated with some anecdotal successes
  – No real data available yet, but expected soon
A Few Words About Immunity & Vaccines
How Immunity Develops

Infection → Viral antigen → Antigen presenting cell → Helper T Cell → B Cell

Vaccine

Killer T Cell

Antibodies Neutralize and Clear Pathogen

Destruction of Infected Cells
1. Is it safe?
2. Does it raise an antibody immune response?
3. Does it raise a cellular immune response?
4. Does the immune response neutralize the virus?
5. Does it prevent infection – or disease?
6. How long does immunity last?
7. One dose or two?
8. Can vaccine be produced and distributed effectively?
9. Will people take it?
### Vaccine Progress – Antibody and T Cell Responses

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Antibody Response</th>
<th>T Cell Response</th>
<th>Species</th>
<th>N of Doses</th>
<th>Protection (Monkeys)</th>
<th>EUA Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderna</td>
<td>100% (2x – 8x CP)</td>
<td>100%</td>
<td>Human</td>
<td>2</td>
<td>Infection</td>
<td>December 2020</td>
</tr>
<tr>
<td>Pfizer / BioNTech</td>
<td>100% (5x – 30x CP)</td>
<td>94%</td>
<td>Human</td>
<td>2</td>
<td>Infection</td>
<td>October 2020</td>
</tr>
<tr>
<td>J &amp; J</td>
<td>100%</td>
<td>83%</td>
<td>Monkeys</td>
<td>1</td>
<td>Infection</td>
<td>Q1 2021</td>
</tr>
<tr>
<td>Oxford / Astra Zeneca</td>
<td>100% (= CP)</td>
<td>100%</td>
<td>Human</td>
<td>2</td>
<td>Disease</td>
<td>September 2020</td>
</tr>
</tbody>
</table>

CP = convalescent plasma
COVID-19 Vaccine Side Effects

• Mild - to - moderate reactions in nearly 100%
  – Low grade fever & chills
  – Headache
  – Sore arm
  – Fatigue

• Severe reactions
  – Up to 10% (at doses higher than would be used clinically)
  – High fever > 100.4 degrees
  – Severe chills, muscle aches, etc.

• No evidence of potential rare side effects
  – Antibody dependent enhancement
  – Autoimmune reactions
Will a Vaccine Be Used?

• Reluctance to accept vaccination
  – Political issues
  – Concerns about potential side effects

• Logistics Challenges
  – Supplies (borosilicate glass vials, needles, syringes, etc.)
  – Cold chain of refrigeration
  – Air freight capacity (8,000 jumbo jets)
  – Paperwork, customs, health regulations, etc.
  – Organizing administration sites, records, personnel
  – Monitoring safety, side effects
Winter is Coming

STAY HOME
WINTER IS COMING

#COVID-19
COVID-19 Transmission in Winter
TIPS: COVID-19 in Winter

- Humidify indoor air (40% – 60% relative humidity at 70 – 75 F)
- Ventilation of indoor air
- Wear face mask to keep nose warm and moist
- Vitamin D supplements if levels low
- Wash hands to prevent indirect contact transmission
- Get plenty of sleep

- Get your flu shot!
COVID-19 Update

August 19, 2020
TMC DAILY NEW COVID-19 HOSPITALIZATIONS

ICU & Med Surg hospitalizations

Monitoring threshold:
Threshold is exceeded by the occurrence of a positive daily growth rate, averaged over 7 days.

Current status: -0.1% daily growth rate (averaged over 7 days) in the COVID-19 daily hospital admissions trend.

Notes:
While new daily cases may fluctuate for a variety of reasons (e.g., testing), the daily hospitalization trend shows an objective view of how COVID-19 impacts hospital systems.

Source: TMC Institution clinical census
TMC | TEXAS MEDICAL CENTER
"TMC" refers to the group of systems that make up Texas Medical Center.
Houston Methodist COVID-19 Cases by Day – August 18

Houston Methodist COVID-19 Patients by Day

- Med/Surg Pos + Now Neg
- ICU Pos + Now Neg
- Total Pos + Now Neg
- IMU Pos + Now Neg
Houston Methodist Current COVID-19 Stats

COVID-19 related patients through Houston Methodist as of August 18, 2020

Key Messages

- Houston Methodist has served 5,441 COVID-19 related in-patients to date.
- 4,636 patients have been successfully discharged.
<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Surge 1 3/13-5/15</th>
<th>Surge 2 5/16-7/7</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Age</td>
<td>59.9</td>
<td>57.3</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Age &lt; 50</td>
<td>208 (26.9%)</td>
<td>736 (34.6%)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Hispanic / Latino</td>
<td>196 (25.7%)</td>
<td>910 (43.3%)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Self-Pay</td>
<td>88 (11.4%)</td>
<td>423 (19.9%)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Diabetes</td>
<td>312 (40.3%)</td>
<td>475 (32%)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Hypertension</td>
<td>427 (55.3%)</td>
<td>583 (38.8%)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Obesity (BMI&gt;30)</td>
<td>261 (33.9%)</td>
<td>383 (25.7%)</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>
Isn’t this just the flu?
COVID-19 Outbreak

New coronavirus
Most estimates put the fatality rate below 3%, and the number of transmissions between 2 and 4.

Note: Average case-fatality rates and transmission numbers are shown. Estimates of case-fatality rates can vary, and numbers for the new coronavirus are preliminary estimates.
Infection Fatality Rate

Infection fatality rate by study

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>India (2nd round)</td>
<td>May</td>
</tr>
<tr>
<td>Villa et al</td>
<td>April</td>
</tr>
<tr>
<td>Baiu</td>
<td>May</td>
</tr>
<tr>
<td>Rinaldi et al</td>
<td>April</td>
</tr>
<tr>
<td>Spann</td>
<td>May</td>
</tr>
<tr>
<td>Tornai et al</td>
<td>Feb</td>
</tr>
<tr>
<td>Herzog et al</td>
<td>June</td>
</tr>
<tr>
<td>Halil et al</td>
<td>May</td>
</tr>
<tr>
<td>Ferguson et al</td>
<td>March</td>
</tr>
<tr>
<td>Modi et al</td>
<td>April</td>
</tr>
<tr>
<td>New York City</td>
<td>April</td>
</tr>
<tr>
<td>Snook et al</td>
<td>May</td>
</tr>
<tr>
<td>UNS England</td>
<td>May</td>
</tr>
<tr>
<td>Roques et al</td>
<td>April</td>
</tr>
<tr>
<td>Denmark</td>
<td>May</td>
</tr>
<tr>
<td>Jung et al</td>
<td>Feb</td>
</tr>
<tr>
<td>Sajka et al</td>
<td>May</td>
</tr>
<tr>
<td>Overall</td>
<td></td>
</tr>
<tr>
<td>Czech Republic</td>
<td>May</td>
</tr>
<tr>
<td>Verity et al</td>
<td>March</td>
</tr>
<tr>
<td>Strigle et al</td>
<td>May</td>
</tr>
<tr>
<td>Russell et al</td>
<td>March</td>
</tr>
<tr>
<td>Sweden (Stockholm)</td>
<td>May</td>
</tr>
<tr>
<td>India</td>
<td></td>
</tr>
<tr>
<td>Nishiura et al</td>
<td>Feb</td>
</tr>
<tr>
<td>Streock et al</td>
<td>May</td>
</tr>
<tr>
<td>Wu et al</td>
<td>May</td>
</tr>
<tr>
<td>Finland</td>
<td>June</td>
</tr>
<tr>
<td>CEJM</td>
<td>March</td>
</tr>
<tr>
<td>Bandi et al</td>
<td>April</td>
</tr>
<tr>
<td>Slovenia</td>
<td>May</td>
</tr>
</tbody>
</table>

IFR 0.68%

IFR 0.1-0.9%

A systematic review and meta-analysis of published research data on COVID-19 infection-fatality rates

A comparison of 25 studies that estimate the disease’s infection fatality rate* found varying results but pinpointed an overall rate of around 6.8 deaths per 1,000 infections.

<table>
<thead>
<tr>
<th>Abstract</th>
<th>(Signed)</th>
<th>(Submitted)</th>
<th>(Accepted)</th>
</tr>
</thead>
</table>

Material

An important unknown during the COVID-19 pandemic has been the infection-fatality rate (IFR). This differs from the case-fatality rate (CFR) as an estimate of the number of deaths as a proportion of the total number of cases, including those who are mild and asymptomatic.

A meta-analysis was performed in Data 15.1 using the metafun command, based on IFR and confidence intervals estimated from each study. Google/Google Scholar was used to access the grey literature relating to government reports. Risks due to data exclusions were 38 estimates of IFR included in the final meta-analysis, from a wide range of countries, published between February and June 2020. This meta-analysis demonstrate a part-oem is IFR of 0.06 (0.03-0.09%) with high

The infection fatality rate of COVID-19 inferred from surveillance data

https://www.wsj.com/articles/how-deadly-is-covid-19-researchers-are-getting-closer-to-an-answer-11595323801; https://www.medrxiv.org/content/10.1101/2020.05.03.20089854v4; https://www.medrxiv.org/content/10.1101/2020.05.13.20101253v3#disqus_thread
Houston Area R(t) Estimate Trend

This graph shows the R(t) over time. R(t) is a measure of contagiousness or how many people one COVID-19 person infects. If R(t) > 1, the epidemic is increasing. If R(t) < 1, the epidemic is declining. There is higher alert if the whole interval is above the horizontal line at 1. For Q - Houston, the rate of contagiousness is 0.89; the epidemic is decreasing.

Data as of August 18, 2020
# Historical Influenza Mortality vs. COVID-19 Mortality

<table>
<thead>
<tr>
<th>Reporting Period</th>
<th>Influenza Hospitalizations</th>
<th>Influenza Mortality Cases</th>
<th>% Influenza Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017 Sep - 2018 Apr</td>
<td>2,034</td>
<td>51</td>
<td>2.5%</td>
</tr>
<tr>
<td>2018 Sep - 2019 Apr</td>
<td>851</td>
<td>13</td>
<td>1.5%</td>
</tr>
<tr>
<td>2019 Sep - 2020 Apr</td>
<td>1,066*</td>
<td>22**</td>
<td>2.1%</td>
</tr>
<tr>
<td>Cumulative</td>
<td>3,951</td>
<td>86</td>
<td>2.2%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reporting Period</th>
<th>COVID-19 Hospitalizations</th>
<th>COVID-19 Mortality Cases</th>
<th>% COVID-19 Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>03.01.20 - 08.18.20</td>
<td>5,441***</td>
<td>463</td>
<td>9.1%</td>
</tr>
</tbody>
</table>

* In the 2019 – 2020 flu season, 9 patients were also COVID-19+
** In the 2019 – 2020 flu season, 4 mortalities were also COVID-19+
*** Outcomes known for first 5,099 patients
HM Patients and Outcomes by Age: COVID-19 vs. Influenza

Cumulative Mortality for COVID-19: 9.1%

Cumulative Mortality for Flu: 2.2%
Houston Methodist COVID-19 Cases by Day vs. Influenza


- Total Pos + Now Neg
- Flu Cases
Impact on Flu 2020

Percentage of flu tests that are positive
- 0-15%
- 20-39%
- 40-59%
- 60%
- No data

Flu season by hemisphere

Note: Regions shown are WHO ‘Influenza Transmission Zones,’ geographical groups of countries, areas or territories with similar influenza transmission patterns. Source: World Health Organization

Cut Short
A falloff in flu cases amid coronavirus control measures was first seen in some Northern Hemisphere countries earlier this year.

Share of flu tests coming back positive
CHINA

U.S.

Source: World Health Organization

GET YOUR FLU SHOT!!!!!
Houston Methodist COVID-19 Cases by Day – August 17

Houston Methodist COVID-19 Patients by Day

- State-wide Mask Order for All
- Harris County Mask Order for Businesses
- State-wide Stay-at-Home Order

Line Graph:
- Med/Surg Pos + Now Neg
- ICU Pos + Now Neg
- Total Pos + Now Neg
- IMU Pos + Now Neg
Efficacy of Masks


New research suggests that face coverings help reduce the transmission of droplets, though some masks are more protective than others.

Average distance traveled by airborne droplets. (in inches)

- Uncovered
- Bandana (Elastic T-shirt material)
- Folded handkerchief (Cotton)
- Off-the-shelf cone style mask (Unknown)
- Stitched mask (Quilting cotton)

Folded handkerchief

Leaked from the top

Leaked through the mask

0.5 sec. After the start of the emulated cough.

Impact of Universal Masking

Figure. Temporal Trend in Percentage Positivity of SARS-CoV-2 Testing Among HCWs

- No. of HCWs tested per day: <20, 20-100, 100-200, >200

- Universal masking for HCWs

- Universal masking for patients

- P < 0.001

Interventions in Massachusetts:
- March 10: Massachusetts declares state of emergency
- March 16: Massachusetts closes schools
- March 17: Massachusetts reduces public transportation
- March 24: Massachusetts issues stay-at-home orders for nonessential workers

Interventions at MGB:
- March 12: MGB restricts visitors
- March 14: MGB restricts elective procedures
- March 16: MGB restricts all business travel and limits on-site working
- March 24: MGB universal masking of HCWs
- April 6: MGB universal masking of patients

https://jamanetwork.com/journals/jama/fullarticle/2768533
“A national face mask mandate could partially substitute for renewed lockdowns. We start by showing that a national mandate would likely increase face mask usage meaningfully, especially in states such as Florida and Texas where masks remain largely voluntary to date.”

“Our baseline estimate is that a national mandate could raise the percentage of people who wear masks by 15pp and cut the daily growth rate of confirmed cases by 1.0pp to 0.6%.”

“Finally, we translate our results into GDP terms by asking how much our Effective Lockdown Index (ELI) would need to increase in order to cut infections by as much as a national mask mandate, and then converting the ELI impact into a GDP impact using the estimated cross-country relationship between the two. These calculations imply that a face mask mandate could potentially substitute for lockdowns that would otherwise subtract nearly 5% from GDP.”
Impact of State-Level Mask Mandates

Exhibit 5: Mask Mandates Are Associated with Large Declines in COVID-19 Case and Fatality Growth

Impact of State Mandating Mask Use in Public on Daily County-Level Growth Rate of COVID-19 Fatalities

*Mask mandate is measured at announcement. Error bars represent a 95% confidence interval.

I'M SORRY.
I KNOW YOU'RE DISAPPOINTED AND WANTED TO GO BACK TO SCHOOL AND SEE ALL YOUR FRIENDS.
Are we crazy to reopen schools?

Why shouldn't schools reopen since children are at very low risk and they appear to be more damaged by being out of school than by the virus?

How do you think schools should approach opening?

What are your thoughts on children returning to school and do you expect this to produce another spike in COVID cases?

Do you feel it is safe to send high school students back to school (private school that has taken all precautions) today? Other ages back to school? What metrics would you look at to make that decision?
“...the AAP strongly advocates that all policy considerations for the coming school year should start with a goal of having students physically present in school.”
When and under what conditions do you think it will be safe for middle school and high school students to return to in-person instruction in Houston?

What do you estimate to be a reasonable daily case count that would allow children to return to school safely without causing an outbreak?
When Is It Safe To Reopen Schools?

As of Aug. 17, Greater Houston has 243 daily cases per million people*

*Daily cases is a 7-day average in daily cases
THREE METRICS TO GAUGE OUR PROGRESS

**R(t): Effective Reproduction Rate**
- Harris County
- Today: 0.84
- 8 days < 1.0
- Community Control: <1.0 for 14-days

**Daily New Cases**
- Community Control: <200 for 14-days
- Today: 641

**Test Positivity Rate (%)**
- Community Control: <5% for 14-days
- Today: 8.6%

Rt measures how effective our collective behaviors (e.g., social distancing and mask wearing) are in slowing the growth of the virus. If R(t) is above 1.0, the virus spread is increasing; if R(t) is below 1.0, the virus spread is slowing.

When the number of new daily cases is over 200, it is difficult to effectively trace and help isolate further spread of the virus.

Community Control: < 200 cases/day for 14-days

A low positivity rate may indicate declining spread of the virus.

Community Control: < 5% for 14-days

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1. [https://github.com/cvd19-dashboard](https://github.com/cvd19-dashboard)
2. Sources: TX Health and Human Services (https://www.dshs.texas.gov/coronavirus/), Austin, Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery and Waller
3. Testing data includes: CHI, Texas Division, Harris Health System, Houston Methodist, MD Anderson Cancer Center, Memorial Hermann, and UT Health

This document is solely intended to share insights and best practices rather than specific recommendations. Individual institution data is shown as reported and has not been independently verified.
What do you advise schools to do if they have an outbreak during the school year? Should everyone who came in close contact with the infected individuals quarantine for 2 weeks?
What are your thoughts on participating in outdoor sports this fall? Can kids safely participate and what precautions can be taken to help them stay safe?

Thoughts on youth sports?

What are your thoughts on high school football moving forward?
THANK YOU TO OUR HEROES
Coronavirus face masks around the world - in pictures
THANK YOU FOR ATTENDING OUR TOWN HALL CONVERSATION

To continue the conversation, please reach out to foundation@houstonmethodist.org

Take care and be well

HOUSTON Methodist
LEADING MEDICINE