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

A TOWN HALL CONVERSATION IV

We will begin at 11 a.m.
COVID-19 Impact on Emergency Care

Alan B Lumsden FACS, FRCS Edin(hons)
Walter W Fondren III Distinguished Endowed Chair
Medical Director
Houston Methodist DeBakey Heart & Vascular Center
Chairman, Department of Cardiovascular Surgery

July 15, 2020
SARS-CoV-2 Symptoms

25% Asymptomatic
50% Mild symptoms
15% Moderate symptoms

Elderly: fatigue, confusion
Usual safety measures
Learn how to connect using social media
Mortality in COVID-19

Risks: Age, High Blood Pressure, Diabetes, Heart Disease, Co-Morbidities

By now it’s clear that people older than 65 are the most vulnerable to the novel coronavirus, and the age penalty is especially severe for the elderly with underlying health conditions.
Cardiac Involvement
Impact of Pandemic on Cardiology Clinic Visits

Cardiology

In Person  Phone  Virtual  % of Baseline


1,158 146 38 45 49 57 66 189 349 629 656 971 1038

48% 66% 59% 65% 69% 61% 70% 90% 98% 84% 98% 98%
Average Number of Outpatient Surgery Cases per Weekday

Average Weekday Outpatient Surgery Cases

<table>
<thead>
<tr>
<th>Date</th>
<th>Cases</th>
</tr>
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<tbody>
<tr>
<td>March 2-6</td>
<td>232</td>
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<tr>
<td>March 9-13</td>
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<td>March 16-20</td>
<td>160</td>
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<tr>
<td>March 23-27</td>
<td>135</td>
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<tr>
<td>April 2-6</td>
<td>56</td>
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<tr>
<td>April 9-13</td>
<td>37</td>
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<tr>
<td>April 16-20</td>
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<td>April 23-27</td>
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<td>April 27-30</td>
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<td>May 1-5</td>
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<tr>
<td>May 6-10</td>
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<tr>
<td>May 11-15</td>
<td>226</td>
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<td>May 16-20</td>
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<td>May 21-25</td>
<td>221</td>
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<tr>
<td>May 26-30</td>
<td>238</td>
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<tr>
<td>June 1-5</td>
<td>243</td>
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<tr>
<td>June 6-10</td>
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<tr>
<td>June 11-15</td>
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<td>June 26-30</td>
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<tr>
<td>July 1-5</td>
<td>243</td>
</tr>
<tr>
<td>July 6-10</td>
<td>242</td>
</tr>
</tbody>
</table>
2020 Trends in HMH Admissions for Heart Attacks & Stroke

*April consists of total discharge volume from April 1 to April 15, 2020.
The COVID-19 Pandemic and Acute Aortic Dissections in New York
A Matter of Public Health
Ismail El-Hamamsy, Derek R. Brinster, Joseph J. DeRose, Leonard N. Girardi, Kazuhiro Hisamoto, Mohammed N. Imam, Shinobu Itagaki, Paul A. Kurlansky, Christopher Lau, Samantha Nemeth, Mathew Williams, Benjamin A. Youdelman and Hiroo Takayama

![Diagram showing acute aortic dissections before and after COVID-19](image)

**Figure A**
- COVID-19 Cases
- Type AAD

**Figure B**
- 12.8
- 3.0
- p < 0.05

Ismail El-Hamamsy et al. J Am Coll Cardiol 2020;76:227-229
2020 American College of Cardiology Foundation
2020 Houston Fire Department EMS: Death on Arrival

Total DOA's

- 2018
- 2019
- 2020

January, February, March, April
Some of the paper's major points:

• Patients with signs of stroke were delaying coming to the hospital for fear of getting the coronavirus. There's a small window of time in which strokes are treatable, so delays can be life threatening.

• Mortality rate in covid-19 stroke patients is 42.8% Vs 5-10%.

• 42% of stroke-covid patients studied were < age 50 Vs 75% > 65 non Covid.

• Different, more extensive stroke distribution.

"Should we all be taking Aspirin?"
Coagulation Abnormalities in COVID

- Generalized abnormal clotting
  - Subclinical
  - Devastating "DIC"
- Deep Venous Thrombosis
  - Leg clotting
  - Upper extremity clotting
- Clotting can cause MI, limb loss, stroke

Covid Patients are treated to prevent clotting
Liberal use of Ultrasound to diagnose DVT
Mortality and pulmonary complications in patients undergoing surgery with perioperative SARS-CoV-2 infection: an international cohort study

COVIDSurg Collaborative

Summary

Background The impact of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) on postoperative recovery needs to be understood to inform clinical decision making during and after the COVID-19 pandemic. This study reports 30-day mortality and pulmonary complication rates in patients with perioperative SARS-CoV-2 infection.

Methods This international, multicentre, cohort study at 235 hospitals in 24 countries included all patients undergoing surgery who had SARS-CoV-2 infection confirmed within 7 days before or 30 days after surgery. The primary outcome measure was 30-day postoperative mortality and was assessed in all enrolled patients. The main secondary outcome measure was pulmonary complications, defined as pneumonia, acute respiratory distress syndrome, or unexpected postoperative ventilation.

Interpretation Postoperative pulmonary complications occur in half of patients with perioperative SARS-CoV-2 infection and are associated with high mortality. Thresholds for surgery during the COVID-19 pandemic should be higher than during normal practice, particularly in men aged 70 years and older. Consideration should be given for postponing non-urgent procedures and promoting non-operative treatment to delay or avoid the need for surgery.
Questions?

1. Outcomes in Transplant Patients?
2. Should I delay my colonoscopy?
Nationwide Appeal from the American College of Cardiology

CORONAVIRUS AND YOUR HEART

Most of us are worried about the new coronavirus. DON’T IGNORE HEART SYMPTOMS, especially if you have a heart condition.

GETTING CARE IS CRITICAL
You’ll get better faster.
You’ll limit damage to your health.

HEART ATTACK
- Chest Pain
- Difficulty breathing
- Discomfort in chest, arms, back, neck, shoulder or jaw

STROKE
- Numbness, weakness or loss of movement in your face, arm, or leg, especially on one side
- Confusion, trouble speaking or understanding
- Loss of balance

CALL 911
If you think you are having a HEART ATTACK or STROKE.
Heart attacks and strokes don’t stop during a pandemic.
Hospitals have safety measures to protect you from infection.

CALL YOUR DOCTOR if you have a heart condition and have questions or think you need a health visit.
DON’T DELAY routine care. You may be able to get advice over the telephone or use telehealth for a virtual visit.

For more information about the new coronavirus for people with heart conditions, visit CardioSmart.org/Coronavirus @CardioSmart

HOUSTON
Methodist
LEADING MEDICINE
Clinical Trials – Convalescent Plasma

– Severe life-threatening COVID-19
– 347 patients (287 discharged)
– Planning to extend to patients with less severe disease
Clinical Trials – Monoclonal Antibodies

Sources for antibodies against the SARS-CoV-2 virus

- Patients who have recovered from COVID-19
- Humanised mice immunised with the SARS-CoV-2 spike protein
- Laboratory techniques such as phage display

Harnessing multiple technology platforms

- Immune replica technology
- Hybridoma technology

Safety and efficacy trials

- Antibodies could be used for prophylaxis as well as treatment

- Regeneron – inpatients & outpatients
- Lilly – inpatients & outpatients
Clinical Trials – Anti-Viral Drugs

- Oral medications – could be given to outpatients
  - Favipiravir – affects same process as Remdesivir
  - Ivermectin – probably impedes protein import into cell nucleus
Clinical Trials – Immune Modulators

- **Active Trials**
  - Tocilizumab – anti-IL6
  - Ravulizumab – anti-C5
  - I-MAB – anti-G-CSF
  - Avadiptavil – anti-inflammatory
  - Cytosorb – immunosorbent

- **Trials in Development**
  - CALAVI – anti-BTK
  - REMDACTA – anti-IL6 (+ Remdesivir)
  - Clazakizumab – anti-IL6
  - Mesenchymal stem cells (2)
  - Sekukinumab – anti-IL17
HOT TOPICS

Remdesivir, Plasma, Dexamethasone, Budesonide, Hydroxychloroquine
Remdesivir

- **NEJM:** Randomized double blinded placebo controlled clinical trial (1063 patients):
  - Shortens time to recovery (11 vs. 15 days), p < 0.001
  - Trend for reduced mortality (7.1% vs. 11.9%), p = 0.06

- Unpublished: Open label phase 3 trial (312 patients) with retrospective matched cohort (818 patients)
  - Reduces mortality by 62%
Convalescent Plasma

- Plasma has been studied in severely ill inpatients
  - *Am J Pathology*: Safe in first group of 25 patients (Methodist trial)
  - *J Clinical Investigation*: Safe in 5,000 patients (National cooperative trial)
  - Efficacy under analysis (retrospective matched cohort), results available soon
Dexamethasone

- Reduced deaths in patients on ventilators
  - RR 0.65
  - p=0.0003
- Reduced deaths in patients receiving oxygen only
  - RR 0.80
  - p=0.0021
- No benefit among less severe, maybe a trend for harm
  - RR 1.22
  - p=0.14

In March 2020, the RECOVERY (Randomised Evaluation of COVID-19 thERapY) trial was established as a randomised clinical trial to test a range of potential treatments for COVID-19, including low-dose dexamethasone (a steroid treatment). Over 11,500 patients have been enrolled from over 175 NHS hospitals in the UK.

On 8 June, recruitment to the dexamethasone arm was halted since, in the view of the trial Steering Committee, sufficient patients had been enrolled to establish whether or not the drug had a meaningful benefit.

Budesonide

- Corticosteroid (like dexamethasone)
  - Reduces inflammation
  - Inhaler delivery – prophylactic for asthma
  - Oral delivery – inflammatory bowel disease

- In vitro vs. COVID: no anti-viral or anti-inflammatory effect (one study)
- Oxford University has begun a clinical trial (STOIC)

- Issues
  - COVID is a systemic disease, not limited to lungs
  - During early phase of infection, suppressing inflammation could be harmful
Phase 1 – “This is great!!”
- March: Small French study claims cures with HCQ + Azithromycin (AZT)
- President Trump, FDA advance the use of HCQ

Phase 2 – “Not so fast, cowboy!”
- May: NYC study (1) says HCQ associated with higher mortality
- May: NYC study (2) says no effect, more cardiac arrest
- May: Lancet paper says harm from HCQ – later shown as fraudulent
- June 15: FDA revokes EUA
- July 1: FDA cautions against use outside of trials or hospitals
- July 8: WHO stops clinical trial of HCQ
Hydroxychloroquine (HCQ)

- Phase 3: “Whaaaaa......?”
  - July – retrospective studies of hospitalized patients:
    - Henry Ford study (2541 patients) shows 66% reduction in mortality – but more HCQ patients were also on steroids
    - Mount Sinai study (3708 patients) shows 47% reduction in mortality
    - Columbia study (1446 patients) shows no effect on intubation or death, and no toxicity
    - HMH study (561 patients) shows no effect on mortality and no toxicity
    - French study of HCQ-AZT (3737 patients) shows 82% reduction in mortality in early cases
  - HCQ + AZT + Zinc: New York study of 104 (of 335) outpatients shows 84% reduction in hospitalization and only one death
<table>
<thead>
<tr>
<th>Company</th>
<th>Technology</th>
<th>Clinical Trial Phase</th>
<th>Goal for EUA</th>
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<tbody>
<tr>
<td>Moderna / NIAID / BARDA*</td>
<td>RNA</td>
<td>2</td>
<td>Fall 2020</td>
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<tr>
<td>Pfizer / BioNTech*</td>
<td>RNA</td>
<td>1 / 2</td>
<td>Fall 2020</td>
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<td>Oxford / Astra Zeneca*</td>
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<td>2 / 3</td>
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<tr>
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<tr>
<td>Johnson &amp; Johnson*</td>
<td>Viral vector</td>
<td>[Phase 1 plan 9/20]</td>
<td>Spring 2021</td>
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<tr>
<td>Sanofi / Glaxo / BARDA</td>
<td>Protein</td>
<td>[Phase 1 plan 9/20]</td>
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<td>Merck*</td>
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<td>[Phase 1 plan 7/20]</td>
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<tr>
<td>Innovio</td>
<td>DNA</td>
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</tbody>
</table>

* = Warp Speed vaccine candidate
What we know about the long term consequences of getting COVID-19

Khurram Nasir, MD MPH MSc
Jerold B. Katz Investigator, Academy of Translational Research
Chief, Division of CVF Prevention and Wellness
Houston Methodist DeBakey Heart & Vascular Center
Co-Director, Center for Outcomes Research
There are known knowns; there are things we know that we know.

There are known unknowns; that is to say, there are things that we now know we don’t know.

But there are also unknown unknowns – there are things we do not know we don’t know.

-Donald Rumsfeld
WELL KNOWNS
WIDE RANGE OF MECHANISMS

PRIMARILY LUNGS
MULTI-ORGAN INVOLVEMENT COMMON
ISOLATED EXTRA-PULMONARY MANIFESTATIONS NOT RARE
GAINING CLARITY
COVID-19: THROMBO-EMBOLIC STATE

Pulmonary post-mortem findings in a series of COVID-19 cases from northern Italy: a two-centre descriptive study
Luca Canina, Aurelio Sonzogni, Ahmed Nasr, Roberta Simona Rossi, Alessandro Pellegrinelli, Pietro Zenbi, Roberta Rech, Riccardo Colombo, Spinello Antinori, Mario Corbellino, Massimo Galli, Emanuele Catena, Antonella Tosani, Andrea Gianetti, Manuela Nebuloni

Pulmonary and cardiac pathology in African American patients with COVID-19: an autopsy series from New Orleans
Sharon E. Fox, Asbek Akhmedbekov, Jack L. Horner, Guang Li, Quiny Brown, Richard S. Vander Heide

Pathologist found blood clots in 'almost every organ' during autopsies on Covid-19 patients
By Ralph Ellis and Andrea Kane, CNN
Updated 7:03 AM ET, Fri July 10, 2020
Anticipated Knowns
Linger Ling Lung Function Effects

Abnormal pulmonary function in COVID-19 patients at time of hospital discharge

Xiaoneng Mo, Wenhua Jian, Zhuquan Su, Mu Chen, Hui Peng, Ping Peng, Chunliang Lei, Ruchong Chen, Nanshan Zhong, and Shiyue Li

Temporal Changes of CT Findings in 90 Patients with COVID-19 Pneumonia: A Longitudinal Study

Impact of coronavirus disease 2019 on pulmonary function in early convalescence phase

Yiying Huang, Cuiyan Tan, Jian Wu, Meizhu Chen, Zhenguo Wang, Liyun Luo, Xiaorong Zhou, Xinran Liu, Xiaoling Huang, Shican Yuan, Chaolin Chen, Fen Gao, Jin Huang, Hong Shan, and Jing Liu

Respiratory Research 21, Article number: 163 (2020)
Acute kidney injury in patients hospitalized with COVID-19

5449 patients admitted to 13 Northwell Health New York-based hospitals between March and April 2020

37% with AKI

1 in 6 require dialysis

Possible pathways: virus-mediated injury, cytokine storm, AngII pathway activation, dysregulation of complement, hypercoagulation, ischemia and microangiopathy
SURPRISING PATTERNS
CARDIAC INVOLVEMENT

Myocardial Injury Seen in Over One-Third of Hospitalized COVID-19 Patients

The data confirm earlier reports and show that these patients are at an increased risk of dying in the hospital.

Myocarditis in COVID-19: An Elusive Cardiac Complication

Patrice Wendling
July 08, 2020

Cardiac Manifestations in COVID-19: Echocardiographic Study

- The most frequent abnormality in COVID-19 was RV dilation with or without dysfunction, likely due to pulmonary parenchymal or vascular disease.

ST-Elevation Myocardial Infarction in Patients With COVID-19

Clinical and Angiographic Outcomes
Most Hospitalized COVID Patients Have Neurologic Symptoms
— Severe complications seen in all stages of COVID-19, including recovery

Imaging in Neurological Disease of Hospitalized COVID-19 Patients: An Italian Multicenter Retrospective Observational Study

* A.M. and R.G. contributed equally to this article.

Publisher Online: May 21, 2020 | https://doi.org/10.1148/radiol.2020201933
"He’s Our Miracle Patient": A special send-off was held Friday for Gregg Garfield who spent over two months in the hospital after contracting coronavirus during a group ski trip to Northern Italy.

‘He’s Our Miracle Patient’: Man Who Contracted COVID-19 On Italian S... A special send-off was held Friday for a man who spent over two months in a Burbank hospital after contracting coronavirus during a ... losangeles.cbslocal.com
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
INITIAL INSIGHTS ON RECOVERY
NON-HOSPITALIZED PATIENTS

Report Suggests Some ‘Mildly Symptomatic’ Covid-19 Patients Endure Serious Long-Term Effects

1,622 Covid-19
91% of the patients not hospitalized
88% persistent intense fatigue
75% shortness of breath
45% chest pressure
40% headache
36% muscle

Pre Covid-19: 85% considered themselves healthy
2-3 months Post Covid-19: Only 6% consider themselves healthy
KNOWN UNKNOWNS

Who gets long-term symptoms and why?
Severe lung damage? Is it reversible?
Long term renal damage? permanent dialysis?
Heart Damage in Mild Cases, Epidemic of right heart failures?
What's going on with the brain? Long-term cognitive deficit?
Long-term effects of quarantine & social distancing on mental health?
Health care workers burnout & distress?
### Social Determinants of Health

<table>
<thead>
<tr>
<th>Economic Stability</th>
<th>Neighborhood and Physical Environment</th>
<th>Education</th>
<th>Food</th>
<th>Community and Social Context</th>
<th>Health Care System</th>
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<tbody>
<tr>
<td>Employment</td>
<td>Housing</td>
<td>Literacy</td>
<td>Hunger</td>
<td>Social integration</td>
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<td>Transportation</td>
<td>Language</td>
<td>Access to healthy options</td>
<td>Support systems</td>
<td>Provider availability</td>
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<td>Safety</td>
<td>Early childhood education</td>
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<td>Community engagement</td>
<td>Provider linguistic and cultural competency</td>
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<td>Debt</td>
<td>Parks</td>
<td>Vocational training</td>
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<td>Discrimination</td>
<td>Quality of care</td>
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<td>Medical bills</td>
<td>Playgrounds</td>
<td>Higher education</td>
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<td>Stress</td>
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<td>Support</td>
<td>Walkability</td>
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<td>Zip code / geography</td>
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</tr>
</tbody>
</table>

### Health Outcomes
- Mortality, Morbidity, Life Expectancy, Health Care Expenditures, Health Status, Functional Limitations
“We must begin now to prepare for the future; we cannot wait until the details are known or fully understood, nor can we expect that others will address our concerns or solve our problem.”

David B. Schowalter, M.D.
Co-Founder, Mayo Clinic Biospecimen Trust Oversight Group
COVID-19 Surveillance and Outcomes Registry (CURATOR)

All Patients Tested for SARS-CoV-2 within Houston Methodist System (Inpatient and Outpatient)

Total Patients Tested for SARS-CoV-2
54340

SARS-CoV-2 Positive
8060
  Admitted 2574
  Not Admitted 5486

SARS-CoV-2 Negative
46280
  Admitted 13158
  Not Admitted 33122

Data Elements
Demographics, Vitals, Lab Values, Medications, Procedures, Outcomes
POTENTIAL ROADMAP

STAKEHOLDERS

• PRIMARY CARE/INTERNAL MEDICINE
• CENTERS OF EXCELLENCE
• HMRI
• CENTER FOR OUTCOMES RESEARCH

INTEGRATED COVID CLINICAL AND RESEARCH PROGRAM

• SURVEYS
  • RECOVERY
  • SDOH
  • QUALITY OF LIFE
• COVID RECOVERY CLINIC
  • LUNG FUNCTION
  • COGNITIVE TESTING
  • IMAGING (HEART/Brain)
• BIOBANKING

COLLABORATIVE PARTNERSHIP WITH TMC & NATIONAL INSTITUTIONS
Prognosis

**Virus Survivors Could Suffer Severe Health Effects for Years**

By Lisa Du
May 12, 2020, 4:00 PM CDT

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Prof. Nicholas Hart
@NickHartThorax

#COVID19 is this generation's polio. Patients have mild, moderate and severe illness

Large numbers of patients will have physical, cognitive and psychological disability post critical illness that will require long-term management

We must plan ahead

#recovery #rehabilitation

5:24 PM · Mar 29, 2020

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**PLAN AHEAD**
What a Difference a Month Makes

Houston Methodist – COVID-19
Patients by Day

Data as of June 9, 2020
Houston Methodist COVID-19 Cases by Day

Houston Methodist – COVID-19 Patients by Day

Data as of July 14, 2020
What a Difference a Month Makes

COVID-19 related patients through Houston Methodist as of June 10, 2020

Key Messages

- Houston Methodist has served 1,119 COVID-19 related in-patients to date.
- 873 patients have been successfully discharged.

Data as of June 10, 2020 at 9:00 am
Houston Methodist Current COVID-19 Stats

COVID-19 related patients through Houston Methodist as of July 14, 2020

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Positive</td>
<td>11,691</td>
</tr>
<tr>
<td>Total Hospitalized</td>
<td>3,799</td>
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<tr>
<td>Currently Hospitalized</td>
<td>700</td>
</tr>
<tr>
<td>Discharged</td>
<td>2,882</td>
</tr>
<tr>
<td>Deaths</td>
<td>217</td>
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</tbody>
</table>

Key Messages

- Houston Methodist has served 3,799 COVID-19 related in-patients to date.
- 2,882 patients have been successfully discharged.

Data as of July 14, 2020; Hospitalized numbers as of 7pm and Total Positive Tests as of 11:59pm
Houston Methodist Testing Trend

Confirmed COVID-19 Lab Tests

- Positive COVID-19 Tests
- 7 Day Rolling Average of Percent of Positive Tests
Monitoring threshold:
Threshold is exceeded by the occurrence of a positive daily growth rate (averaged over 7 days) in the new daily case trend.

Current status:
4 days of positive daily growth rate (averaged over 7 days) in the new daily case trend.

---

1. Austin, Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery and Waller Source: TX Health and Human Services [https://www.dshs.texas.gov/coronavirus/]

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.
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:
2.5% 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 Refers to the group of systems that make up Texas Medical Center

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.

July 14, 2020
July 14, 2020

OVERVIEW OF TMC ICU BED CAPACITY AND OCCUPANCY

This capacity is actively managed by each of the hospitals and changes on a minute-by-minute basis

Potential additional Intensive Care capacity

Phase 3 Intensive Care

Phase 2 Intensive Care

Phase 1 Intensive Care

Further capacity can be added by converting additional Medical / Surgical beds to ICU

ICU beds occupied by COVID-19 (%)

Total ICU beds occupied (%)

676 – Current COVID-19 ICU patients

1,359 – Total ICU beds occupied

Phase 1 & 2 Intensive Care

Phase 1 & 2, & 3 Intensive Care

Phase 1 Intensive Care

Phase 2 planned beds are 8% occupied (29 out of 373 beds)

This can be managed by appropriately transferring patients from ICU to Medical / Surgical beds and potentially by delaying some procedures

Internal data collected from CHI St Luke’s, Harris Health System, Houston Methodist, MD Anderson Cancer Center, Memorial Hermann, Texas Children’s Hospital, UTMB

“TMC” refers to the group of individual hospitals and institutions that make up Texas Medical Center

All guidelines should be in accordance with CDC guidelines

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
Current Houston Methodist ICU Bed Surge Planning

<table>
<thead>
<tr>
<th>Surge</th>
<th>ICU Beds</th>
<th>Staffing</th>
<th>Beds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surge I</td>
<td>485</td>
<td>Stretched Staffing</td>
<td>Add Closed ICUs and PACUs as ICUs</td>
</tr>
<tr>
<td>Surge II</td>
<td>592</td>
<td>Modified Pandemic Staffing</td>
<td>Add Additional PACUs, IMUs as ICUs</td>
</tr>
<tr>
<td>Surge III</td>
<td>750-800</td>
<td>FEMA National Guard</td>
<td>Field Hospitals Utilize Closed Facilities</td>
</tr>
<tr>
<td>Existing</td>
<td>302</td>
<td>Standard Staffing</td>
<td>Usual</td>
</tr>
</tbody>
</table>

- **Peak: Minimal Social Distancing ~2,520**
- **Peak: Moderate Social Distancing ~580**
- **Peak: Maximum Social Distancing ~290**
TMC Early Warning Signs Dashboard

TMC 2-WEEK PROJECTION USING BED OCCUPANCY GROWTH

% total bed occupancy

- For the past 7 days, the average daily growth in occupancy for COVID-19 patients has been:
  - 1.3% for Med Surg
  - 1.5% for ICU
- TMC is in Phase 2 Intensive Care Capacity
- If this growth continues, TMC:
  - Will likely not move into Phase 3 Intensive Care within 2 weeks
- This calculation assumes a similar occupancy for non-COVID-19 procedures as today

The health and wellbeing of our community requires that each of us do our part to slow the spread of COVID-19, including:
- Maintaining social distance
- Wearing a mask while in public
- Washing hands regularly
- Test and self-isolate, if sick

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.
Houston Methodist
Cumulative Mortality

COVID-19 Cumulative Mortality


0.00% 2.00% 4.00% 6.00% 8.00% 10.00% 12.00% 14.00%
Key Statistics by Month

### Discharges

<table>
<thead>
<tr>
<th>Month</th>
<th>Deaths</th>
<th>Discharges</th>
<th>Deaths + Discharges</th>
<th>Mortality Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Through April</td>
<td>58</td>
<td>441</td>
<td>499</td>
<td>11.62%</td>
</tr>
<tr>
<td>Through May</td>
<td>89</td>
<td>744</td>
<td>833</td>
<td>10.68%</td>
</tr>
<tr>
<td>Through June</td>
<td>136</td>
<td>1,652</td>
<td>1,788</td>
<td>7.61%</td>
</tr>
<tr>
<td>Through July 14</td>
<td>217</td>
<td>2,882</td>
<td>3,099</td>
<td>7.00%</td>
</tr>
</tbody>
</table>

Data through July 14, 2020
COVID-19 CFR Comparison

COVID-19 Case Fatality Rate by Country

United States: 4%
Canada: 8%
France: 14.3%
Germany: 4.5%
Italy: 14.4%
Mexico: 11.7%
Spain: 11.1%
Sweden: 7.3%
Switzerland: 6%
United Kingdom: 15.4%

https://coronavirus.jhu.edu/data/mortality
COVID-19 CFR Comparison

COVID-19 Case Fatality Rate by State

- NY: 7.9%
- CA: 2.1%
- FL: 1.5%
- TX: 1.2%
- NJ: 8.8%
- IL: 4.7%
- AZ: 1.8%
- GA: 2.7%
- MA: 7.4%
- PA: 6.9%
- Harris County: 1%
- Dallas County: 1.3%

Our lives begin to end the day we become silent about things that matter.

– Martin Luther King, Jr.
UNITY
My hope is that the generous instincts of unity will not depart from us...[so that we] become the prey of the little folk who exist in every country and who frolic alongside the juggernaut car of war to see what fun or notoriety they can extract from the proceedings.

– Winston Churchill
UNITY
We must all learn to live together as brothers or we will all perish together as fools. We are tied together in the single garment of destiny, caught in an inescapable network of mutuality. And whatever affects one directly affects all indirectly.

– Martin Luther King, Jr.
Unity to be real must stand the severest strain without breaking.

– Mahatma Gandhi
UNITY
Remember upon the conduct of each depend the fate of all.

– Alexander the Great
UNITY
Alone we can do so little, together we can do so much.

– Helen Keller
1. Science, especially biological science, is messy in real time.
1. Science, especially biological science, is messy in real time.

Science is also our only real hope to conquer COVID-19
2. Hospitals together must work on their “Sacred AND”
2. Hospitals together must work on their “Sacred AND”

Care for COVID-19 patients AND care for traditional patients AND protect our staff and physicians
3. Our political leaders must work together on society's "Sacred AND"
3. Our political leaders must work together on society's “Sacred AND”

- Control COVID-19 **AND**
- protect the economy **AND**
- educate our children
4. Our social lives must take a backseat to the “Sacred AND”
4. Our social lives must take a backseat to the “Sacred AND”

- No bars
- No large gatherings, including sporting events
- Limited social gatherings
5. Masks are a means to accomplish the “Sacred AND”
5. Masks are a means to accomplish the “Sacred AND”

- We have proven to be incapable of accepting this on our own
- Masks must be mandatory until the virus is in control
"I told him as an expert in the field I strongly recommend wearing it, but he just kept bringing up his 'rights.'"
I am concerned with how Houston Methodist staff, doctors and nurses are faring...
How can we best help you and the staff there to thank you for all the tremendous work you are doing?
We must accept finite disappointment, but never lose infinite hope.

– Martin Luther King, Jr.
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