2020 – A Tough Year

- United Healthcare Negotiation
- Global Pandemic
- Global Recession
- Focus on Racial Justice
Houston Methodist Testing Trend

Confirmed COVID-19 Lab Tests

- Positive COVID-19 Tests
- 7 Day Rolling Average of Percent of Positive Tests
Houston Methodist Current COVID-19 Stats

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

Key Messages

- Houston Methodist has served 6,814 COVID-19 related in-patients to date.
- 6,023 patients have been successfully discharged.
Possible Pandemic Scenarios

“Whichever scenario the pandemic follows (assuming at least some level of ongoing mitigation measures), we must be prepared for at least another 18 to 24 months of significant COVID-19 activity, with hot spots popping up periodically in diverse geographic areas.”

COVID-19 Precautions

- Wear a Mask
- Stay 6 Feet Apart
- Wash Your Hands
- Avoid Gatherings
- Stay Home When Sick
- Get Your Flu Shot
Researchers at Houston Methodist have published more than 30 papers on COVID-19 since March.
COVID-19 Surveillance & Outcomes Registry (CURATOR)

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

Data Elements
Demographics, Vitals, Lab Values, Medications, Procedures, Outcomes
Investment in Innovation

TELEMEDICINE  VIRTUAL ICU

CARE PATHWAYS

RPA  BOTS

PATIENT ENGAGEMENT
Among Those Who Believe A Specific Hospital Is Doing A Better Job Dealing With COVID-19,
Which Hospital Is Doing A Better Job (N=179)

45% Houston Methodist
Why Houston Methodist Is Doing A Better Job
20% - Doing research/clinical trials
19% - Good reputation/heard good things
18% - Efforts to sanitize/keep clean/PPE/social distancing
18% - Better equipped
17% - Heard in news/heard they were first/leading
13% - Concern and compassion for patients/good communication
9% - Better doctors/best health care workers

20% Memorial Hermann
Why Memorial Hermann Is Doing A Better Job
28% - Efforts to sanitize/keep clean/PPE/social distancing
19% - Good reputation/heard good things
14% - Better doctors/best health care workers
11% - Concern and compassion for patients/good communication
8% - Heard in news/heard they were first/leading
6% - Better equipped
5% - Doing research/clinical trials

Q) And which particular hospital in greater Houston do you feel is doing a better job dealing with the COVID-19 (coronavirus) crisis?
Q) What specifically is [Houston Methodist/Memorial Hermann] doing that makes you believe it is doing a better job dealing with the COVID-19 (coronavirus) crisis?
*Recoded verbatim responses to open-end questions from both April Wave I and June Wave II surveys
Cumulative HM PR Impressions/Audience/Reach through September 2, 2020
As of 9/2, 56% are related to COVID-19

Source: Meltwater
Q: What is your first choice hospital/facility for Best Image/Reputation?

Source: NRC Health, 12-month rolling average. Among those 18+ in the greater Houston 10-county area with preference for a hospital.
Coronavirus face masks around the world - in pictures
Expressions of Unity
Diversity, Equity and Inclusion

Arianne Dowdell, Vice President
Chief Diversity, Equity and Inclusion Officer
Goals for the Remainder of 2020

1. Houston Methodist will be the safest hospital system in the world
2. Volumes will again be back to normal by October 1
3. We will achieve ~75% of budgeted operating margin for September – December
4. Maintain full operations throughout the COVID pandemic
5. Press our strategic advantage

Houston Methodist will use these guiding principles in decision making and goal setting. We will remain nimble and adjust these goals as circumstances change.
Press Our Strategic Advantage

1. Focus on unparalleled safety, quality, service and innovation
U.S. News & World Report

- On the Honor Roll – ranked #20 in the country
- Houston Methodist Hospital is ranked for the 28th consecutive year in at least one specialty
- Named No. 1 in Texas nine years in a row
- Received “High Performing” in 10 out of 10 of the procedures & conditions
- For the 14th consecutive year, Houston Methodist Hospital ranked in more specialties than any hospital in Texas

- Ranked in 11 of 16 specialties:
  - Cancer (#17)
  - Cardiology & Heart Surgery (#12)
  - Diabetes & Endocrinology (#28)
  - Ear, Nose & Throat (#49)
  - Gastroenterology & GI surgery (#14)
  - Geriatrics (#26)
  - Gynecology (#26) tied with UCLA
  - Nephrology (#19) tied with Duke
  - Neurology & Neurosurgery (#23)
  - Orthopedics (#13)
  - Pulmonology and Lung Surgery (#20)
### Unparalleled Safety and Quality

**Vizient Quality & Accountability Results 2020**

<table>
<thead>
<tr>
<th>Category</th>
<th>Academic</th>
<th>Specialized Complex Care</th>
<th>Complex Care</th>
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Note: 2018 survey split hospitals into three categories; 2019 and 2020 survey split hospitals into four categories. Blue is “Vizient Top Performer” or 10th percentile. Green is 10th to 25th percentile. Yellow is 25th to 50th percentile. Red is below the 50th percentile.
Press Our Strategic Advantage

1. Focus on unparalleled safety, quality, service and innovation
2. Care for our people
3. Invest strategically and aggressively in academic programs
4. Optimize marketing and public relations for further differentiation
5. Continue strategic plans for expansions and recapitalization
6. Invest aggressively in innovation
Continued Headwinds

• Severe global recession
• Oil economy in Houston
• Record levels of unemployment and resultant loss of insurance coverage
• Reality that COVID-19 is likely “here to stay” for 18-24 months
• Consumer sentiment
Comfort with Visiting a Hospital Emergency Room During the COVID-19 Pandemic is Low

Comfort Visiting A Hospital ER During the COVID-19 Pandemic

26-64 Years Old Commercially Insured Consumers N=450

- 30% Comfortable
- 32% Uncertain
- 38% Not Comfortable

Commercially Insured Houston Methodist Patients N=110*

- 35% Comfortable
- 27% Uncertain
- 37% Not Comfortable

Q) Given the current COVID-19 (coronavirus) situation, how comfortable would you be visiting a hospital emergency room (ER)?

* Past patient individuals who have visited a Houston Methodist physician in the past year or had an inpatient or outpatient procedure at a Houston Methodist facility in the past two years.
“...the mean weekly number of new diagnoses for six common cancers dropped by 46%, with breast cancer diagnoses declining the most (52%), in March and April compared to the two months prior.”
“I wanted to thank you for publicly encouraging people to do their routine medical appointments and that it was safe to visit HM facilities to do them.

After hearing you speak, I went ahead and scheduled my mammogram —which was about a month late.

Turns out I have breast cancer —which was caught early because you said disease doesn’t wait.

I am so lucky to be part of the Houston Methodist family as I was able to get in quickly with great doctors and have all the confidence in them.

I wanted you to know that you helped save my life by encouraging me to do the routine mammogram.”
Thank you to our Heroes!
Leadership Grand Rounds

*Issues in Inflammation*

Houston Methodist Immunology Center
Distinguishing Self from Non-Self

- Parent and child
- Animal images
- Diagram of human anatomy and medical conditions
SARS-CoV-2
Mechanisms of Immunopathology

Immunity to Parasites

Immunity to Bacteria, Viruses, Fungi, and Tumors
Mechanisms of Immunopathology

**Allergic Inflammation**
- **Eosinophil**
- **Neutrophil**
- **Mast/Basophil**

**Autoimmunity, Granulomatous Diseases, and Graft Rejection**
- **Macrophage**
- **TH1**
- **TH2**
- **CD3**
- **B**
- **Ig**
- **Neutrophil**
- **Monocyte**
- **TP**
- **IL-4**
- **IL-5**
- **IL-13**
- **TNFα**
- **IL-25**
- **IL-33**
- **TSLP**
- **APC**
- **IL-18**
- **IL-1**
- **IL-6**
- **IL-23**
- **IL-12**
- **IL-21**
- **MCP-1**
- **CD3**
- **TC**
- **CD3**

**Mechanisms**
- **CD3**
- **IgE**
- **Neutrophil**
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SARS-CoV-2 induces a massive release of cytokines; a subset of them employs the JAK/STAT signaling pathway in order to induce their biological effects.

SARS-CoV2 increases IkB degradation leading to the activation of NF-κB signaling pathway and inducing the release of IL-6 and TNF-α.

Serine protease inhibitors
Inhibition of NF-κB attenuates TNFα and IL-6 expression.

Expression of pro-inflammatory cytokines and acute-phase related proteins.

S1PR1 agonist attenuates cytokine storm.

The induction of the S1P/S1PR1 axis inhibits the secretion of cytokines and chemokines associated with virus-induced pathology.

IL-6, IL-1β, IL-2, IL-8, IL-17, G-CSF, GM-CSF, IP-10, MCP-1, CCL3, TNFα

Specific blockade of TNFα attenuates inflammatory processes.
Immunology Center Task Force

- Lloyd “Lucky” Burke, Co-Chair
- James G. Frankel, Co-Chair
- Laura T. Baird
- Sandy L. Burke
- Louis B. Cushman
- Stevan L. Dinerstein, MD
- Annie Criner Eifler
- Carol Frankel
- Jennie Getten
- Michael J. Graff
- Rhonda Graff
- Christy Jennings
- Sippi K. Khurana, MD
- Carolyn C. Light
- David W. Light III
- Moez Mangalji
- Sultana Mangalji
- Jeffrey E. Margolis
- Aimee B. McCrory
- Donald Poarch
- Angela E. “Nikki” Richnow
- Mary Eliza Shaper A
- Ann G. Trammell
- David M. Underwood Jr.
- Aline D. Wilson
Immunology Center Vision

• Promote collaboration among a critical mass of clinicians and scientists to provide optimum care for patients with complex immunologic disorders

• Train the next generation of physicians in the management of these complex conditions through robust programs that currently do not exist

• Propel new advancements and groundbreaking treatments in translational research by leveraging across disciplines for an exponential effect

• Make clinical trials available to patients in Houston, the nation and the world
Immunology Center Education

• Development of new residency training programs in Allergy & Immunology and in Rheumatology are underway.
• Dr. Huston was one of only ten recipients in the nation to receive a $2.5 million, five-year Physician Scientist Institutional Award from the Burroughs Wellcome Fund to establish an Academy of Physician Scientists as a collaborative among Texas A&M University, Houston Methodist, and the Texas Medical Center. The Academy will serve as a novel and innovative pipeline for attracting and cultivating medical students and physicians during residency and fellowship to train for academic research careers as physician scientists.
IMMUNOLOGY & YOU

Understanding Your Immune System

Immunology Center
Houston Methodist
Inflammation at the Underwood Center for Digestive Disorders

Eamonn M. M. Quigley, MD, FRCP, FACP, MACG, FRCPI, MWGO
David M. Underwood Chair of Medicine in Digestive Disorders
Then

HOUSTON
Methodist
LEADING MEDICINE

ovid-19 virus structure
Sequence of Effects of COVID-19 on GI Services

- Interruption/capacity constraints of urgent and non-urgent services
- Impact of increased morbidity in underserviced chronic disease conditions, discontinuation of screening
- Funding constraints due to economic impact

COVID and Underwood

- Dramatic reduction in procedures in March and April
- Now returned to >80% of normal for hospital endoscopy but to only 50% for outpatient endoscopy center
- In-patient activity unchanged/increased
  - COVID
  - Non-COVID
- Out-patient activity mostly (>50%) virtual
  - Video visits
  - Telephone visits
- Clinical research
- Post-COVID clinic

Implications for the long-term
Fear of contracting the coronavirus in health care settings has dissuaded people from screening, diagnosis, and treatment for non–COVID-19 diseases. There already has been a steep drop in cancer diagnoses in the United States since the start of the pandemic, but there is no reason to believe the actual incidence of cancer has dropped. Modeling suggests almost 10,000 excess deaths from breast and colorectal cancer deaths over the next decade; that is, a ~1% increase in deaths from these tumor types during a period when we would expect to see almost 1,000,000 deaths from these two diseases types.

Sharpless NE. Science 2020;368:6497.
The Message

• Do not delay having symptoms attended to
• Do not postpone screening and surveillance exams
• Hospitals are very safe
  – COVID screening
  – Face mask use
  – Hand washing
  – Social distancing
    • Visitor regulations
  – PPE as standard

GET THE MESSAGE OUT THERE!
COVID and the GI Tract

- Review of 8301 patients
- GI symptoms:
  - Diarrhea – 9%
  - Nausea and vomiting – 5%
  - Abdominal pain – 4%
- Liver involvement:
  - Abnormal liver enzymes – 25%
  - Jaundice – 9%
  - Impaired clotting factors – 7%
  - Low albumin – 60%
- 20% had a severe course
- Predictors:
  - Diarrhea
  - Abnormal liver enzymes
  - Jaundice
  - Low albumin
  - Impaired clotting factors

COVID and the GI Tract North America

- Review of 1992 hospitalized patients
- GI symptoms in 53%:
  - Diarrhea – 34%
  - Nausea – 27%
  - Vomiting – 16%
  - Abdominal pain – 11%
- Preceded COVID-19 symptoms in 13%
- Liver involvement:
  - Abnormal liver enzymes – 35%
- 32% required mechanical ventilation
- 19% died
- GI symptoms mild in 74%
- More prominent than other COVID symptoms in 6%
- GI symptoms NOT predictive of outcome
- Liver dysfunction NOT predictive of outcome

Angiotensin-Converting Enzyme 2 (ACE2) and COVID-19

SARS-CoV-2 spike protein binding to ACE2

Angiotensin (I-9)

Angiotensin I

Angiotensin (I-7)

Angiotensin II

ACE inhibitors

ACE

ARBs

Angiotensin II type 1 receptor

Acute lung injury
Adverse myocardial remodeling
Vasoconstriction
Vascular permeability

Viral entry, replication, and ACE2 down-regulation

Local or systemic infection or sepsis
• Striking expression of ACE2 on the surface of the small intestine in normal individuals
• Patchy in the colon
• Not increased in inflammatory bowel disease
• No impact of IBD medications on ACE2 expression

Inflammation in the GI Tract

- **Esophagus**
  - Reflux esophagitis (GERD)
  - Eosinophilic esophagitis (EOE)
  - Lymphocytic esophagitis (LyE)

- **Stomach**
  - *Helicobacter pylori*-related inflammation

- **Small intestine**
  - Celiac disease
  - Drug-induced enteropathy

- **Small intestine and colon**
  - Inflammatory Bowel Disease
  - Inflammation, cancer and lymphoma
A Gastroenterologist’s Nightmare!
Eosinophilic Esophagitis
(“Asthma of the Esophagus”)
Lymphocytic Esophagitis

HMH Series

• 84 patients – largest series to date
• Slightly more females than males
• Average age 57
• Symptoms
  • Heartburn
  • Difficulty swallowing
• Endoscopy
  • Esophagitis
  • Rings
  • Strictures
• Overlap with
  • GERD
  • EOE
  • Candida esophagitis

Irani MK, et al. (Submitted for publication)
Helicobacter pylori and the Stomach
Helicobacter pylori and the Stomach

Celiac Disease

Lining of the small intestine

Normal villi

Celiac disease
Celiac Disease

- Approximately 0.5-1% of the population
- Adults and children
- Many symptoms
  - Diarrhea
  - Anemia
  - Infertility
- Abnormal blood tests
  - Anemia
  - Low folic acid
  - Low iron
  - Abnormal liver enzymes
  - Low albumin
- Treatment based on gluten-free diet but ongoing research!
Olmesartan-Induced Enteropathy

- 3 patients with severe diarrhea, weight loss
- Search for infection negative in all
- Celiac serology negative but small intestinal biopsies showed celiac-type changes

Olmesartan-Induced Enteropathy

- Involvement of the colon
- No response to steroids or immunomodulator
- All had hypertension
- On Olmesartan
- Symptoms resolved and biopsies improved off Olmesartan

Inflammatory Bowel Disease

Crohn’s disease
- Can affect any part of the GI tract (from mouth to anus)
- Inflamed areas appear in patches, spread to healthy areas
- Inflammation affects all the layers of the bowel wall

Ulcerative colitis
- Occurs in the large intestine (colon) and the rectum
- Inflamed areas are continuous (not patchy)
- Inflammation only affects the inner lining of the bowel wall
4-year period at HMH

- 559 IBD patients who had at least one ED visit
- 46% had multiple visits
  - Older age
  - Biologic use
  - Steroid use
- 58% received a CT scan
  - Crohn’s disease > UC
  - Biologic
  - Immunomodulator
  - Steroids
- 30% received steroids in the ED

Euers L, et al. Submitted for publication.
Glassner K, et al.  
Combination Therapy in IBD

Using Nano-Particles in Therapy

Gut Microbiome – CVS Axis

Figure 3: Gut Microbiome-Cardiovascular Axis

Inflammatory Bowel Disease Is Independently Associated with Prevalent Atherosclerotic Cardiovascular Disease in Non-Elderly US Adults

Khurram Nasir, Amit K. Dey, Isaac Acquah, Tanushree Agrawal, Kerri Glassner, Bincy Abraham, Miguel Cainzos-Achirica, Eamonn M. Quigley, Nehal N. Mehta
Cardiovascular Risk Factors Among a Nationally Representative Adult Population with Inflammatory Bowel Disease without Clinical Atherosclerotic Cardiovascular Disease

Tanushree Agrawal, Isaac Acquah, Amit K. Dey, Kerri Glassner, Bincy Abraham, Eamonn M. Quigley, Nehal N. Mehta, Khurram Nasir, Miguel Cainzos-Achirica
COVID-19 and IBD

• Systematic review:
  – Patients with IBD do not seem to be at higher risk of being infected by SARS-CoV-2 than the general population
  – In an IBD patient with COVID-19, treatment with immunomodulators or biologics is not associated with worse prognosis

• Population study
  – SARS-CoV-2 positivity 2.5% vs 3.7% in general population
  – Immunomodulators or biologics did not increase risk of hospitalization for COVID-19

Macaluso FS and Orlando A. Dig Liver Dis. 2020 [epub ahead of print].
16 cases over a 12-month period

- Variable presentation
- GI bleeding
- Obstruction
  - Esophagus
  - Stomach
  - Small Intestine
- Diarrhea
- Abdominal pain
- Anemia

Summary

• GI symptoms common in COVID-19 but implications for outcome uncertain
  – May be lower incidence in IBD and IBD therapy does not impact outcome negatively
• Inflammatory disorders of the gastrointestinal tract are common, potentially disabling and therapeutically challenging
  – Impacts beyond the GI tract
• Exciting clinical and translational research at HMH
Thank you for your support!

• Underwood Center
• Fondren IBD Program
• Hughes-Sterling Neurogastroenterology Program
• Individual bequests to the IBD Program and GI
• Food and Health Initiative
• Fondren Inflammation Collaborative

THANK YOU ALL!
DON’T DELAY – SEE YOUR GI TODAY!
HOUSTON Methodist
UNDERWOOD CENTER FOR DIGESTIVE DISORDERS