



AASLD COVID-19 Clinical Oversight & Publications Subcommittee Presents

COVID-19 and the Liver: Reentry and Return to a Pre-Pandemic State

May 14, 2020
4-5 pm ET

Presenters:

Patricia Harren, DNP, DCC
David C. Mulligan, MD, FAASLD
Bilal Hameed, MD

Moderator:

Kimberly Ann Brown, MD, FAASLD

Webinar Moderator

Kimberly Ann Brown, MD,
FAASLD

Chief, Division of
Gastroenterology & Hepatology

Henry Ford Health System



Webinar Presenter

Patricia Harren, DNP, DCC

Clinical Director of the Center for Liver
Disease & Transplantation / Clinical
Director for Pediatric Transplantation
& Adult Abdominal Organ
Transplantation

Columbia University



Webinar Presenter

David C. Mulligan, MD, FAASLD

Professor of Surgery and Chief
of Transplantation and
Immunology

Yale University / Yale New
Haven Health System



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Bilal Hameed, MD

Associate Professor of Medicine
and the Hepatology Clinic Chief

University of California,
San Francisco



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COVID-19 Resources



For resources and updates on COVID-19 and the liver, visit aasld.org/COVID19

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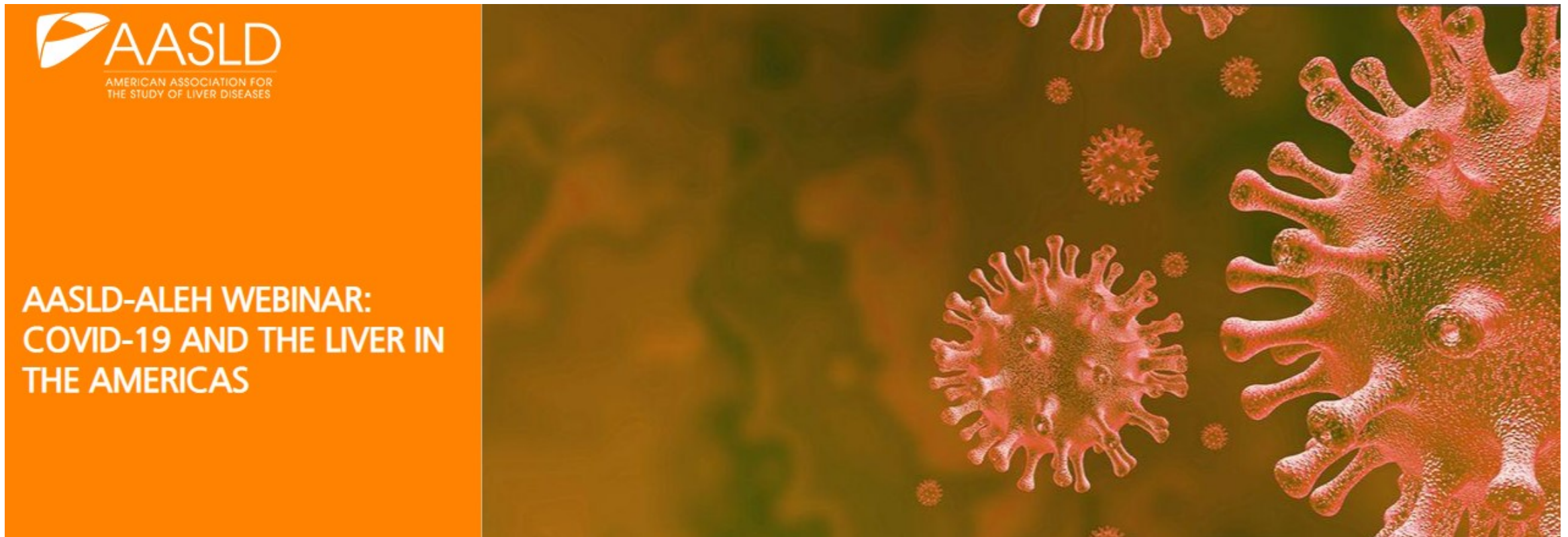
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COVID-19 and the Liver: Reentry and Return to a Pre-Pandemic State

Webinar Agenda

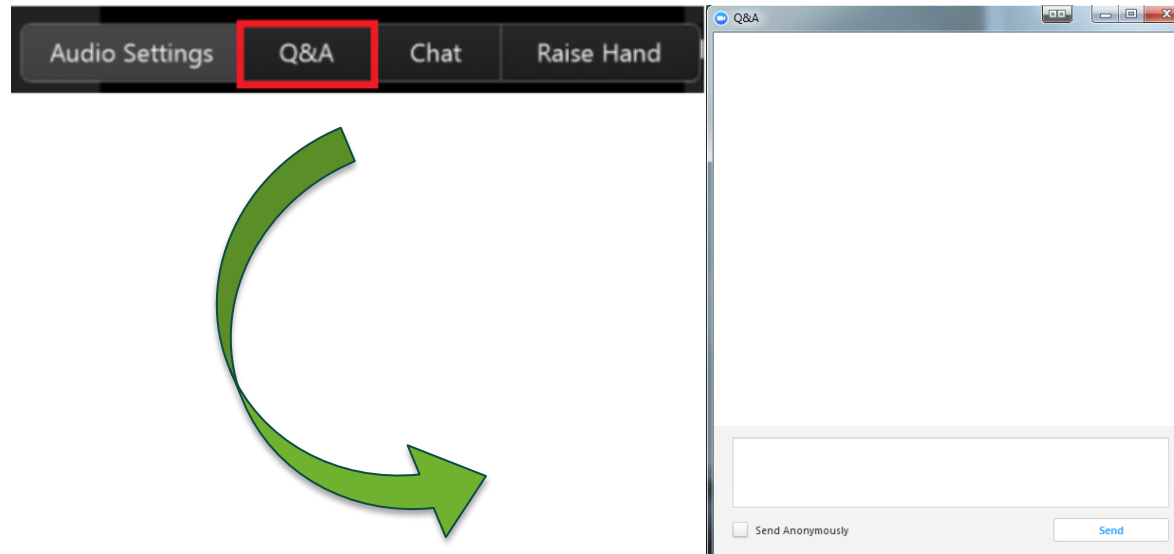
- Webinar Contributors
- Presenter Introductions – Dr. Kimberly Brown
 - Housekeeping Items
 - OpenSAFELY Study – Dr. Kimberly Brown
- Expert Consensus Panel Update – Dr. Oren Fix
 - Outpatient – Dr. Bilal Hameed
 - Inpatient – Dr. Patricia Harren
 - Transplant – Dr. David Mulligan
 - Panel Discussion / Q&A

Clinical Oversight & Publications Subcommittee

- Co-chair, Oren K. Fix, MD, MSc, FAASLD, Swedish Medical Center (Washington)
- Co-chair, Elizabeth C. Verna, MD, MS, Columbia University (New York)
- Kimberly Brown, MD, Henry Ford Health System (Michigan)
- Jaime Chu, MD, Icahn School of Medicine at Mount Sinai (New York)
- Bilal Hameed, MD, University of California (California)
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- Michael Schilsky, MD, FAASLD, Yale University (Connecticut)
- Norah Terrault, MD, MPH, FAASLD, Keck Medical Center of USC (California)
- Andrew Reynolds, (Patient Advocate)
- Raymond Chung and K. Rajender Reddy (ex-officio)

Webinar Q&A

Submit your questions in the Q&A box at the top or bottom of your screen.



Questions will be answered at the end of the presentation.

Webinar Moderator

Kimberly Ann Brown, MD,
FAASLD

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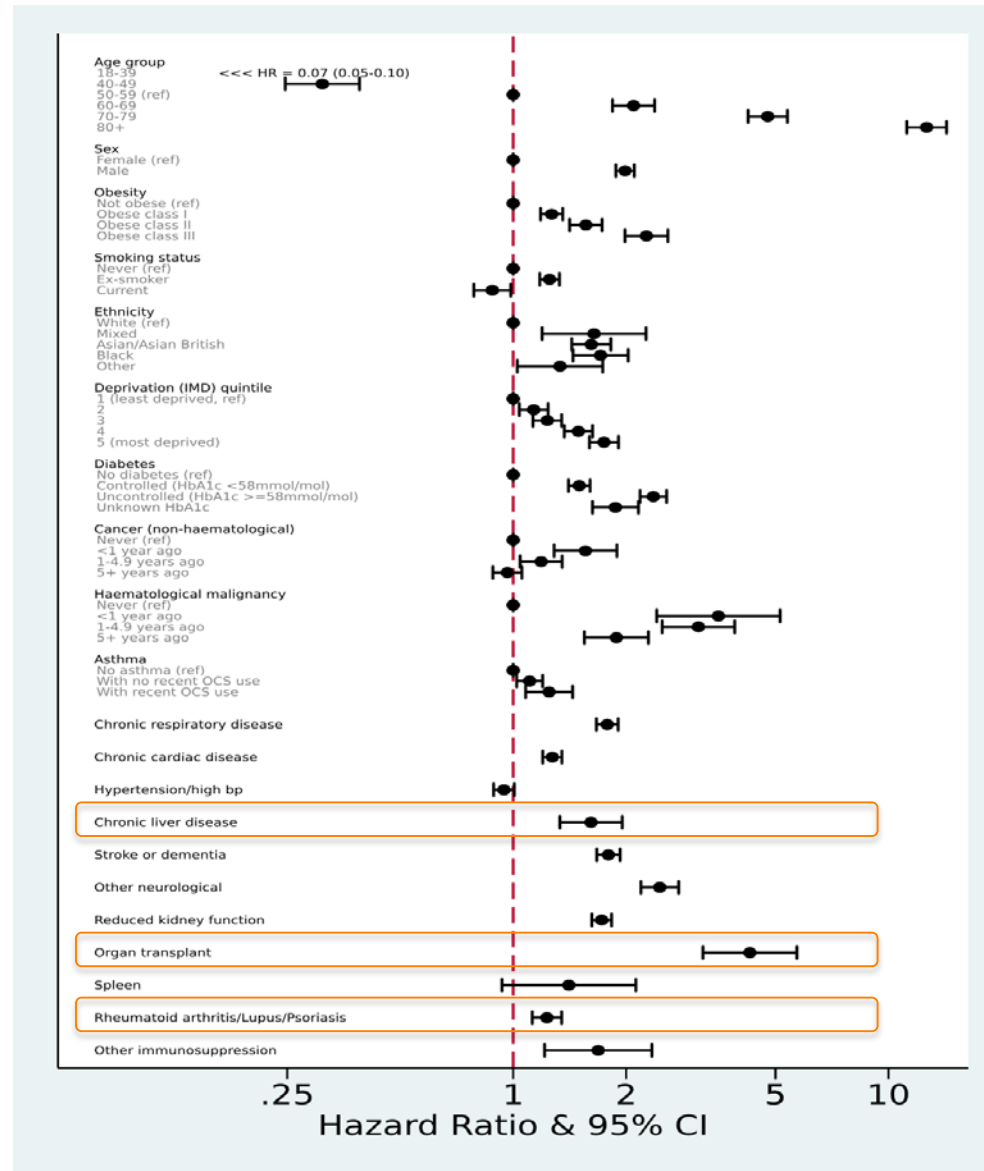


Webinar Panelist

- **Oren K. Fix, MD, MSc, FAASLD**, Swedish Medical Center (Washington)
- **Elizabeth C. Verna, MD, MS**, Columbia University (New York)
- **Jaime Chu, MD**, Icahn School of Medicine at Mount Sinai (New York)
- **Karen Hoyt, BA**, Patient Advocate
- **Guadalupe Garcia-Tsao, MD, FAASLD**, Yale University (Connecticut)
- **Ryutaro Hirose, MD**, University of California, San Francisco (California)
- **K. Gautham Reddy, MD, FAASLD**, University of Chicago Medical Center (Illinois)

- OpenSAFELY: Factors associated with COVID-19-related hospital deaths in the linked electronic health records of 17 million adult NHS patients
 - 17,425,445 adults
 - Feb 1, 2020 to April 25, 2020
 - Primary outcome death in hospital in patients with confirmed COVID-19 (5683 deaths)

<https://doi.org/10.1101/2020.05.06.20092999>



HR adjusted for all other factors listed other than ethnicity

- Largest cohort study to date evaluating a variety of clinical factors for death from COVID-19
- Asians and blacks appear to be at increased risk of in-hospital death with only partial attribution to pre-existing clinical risk factors or deprivation
- Patients with pre-existing liver disease, transplantation or on immunosuppression appear to have increased risk of in-hospital death when adjusted for age/sex alone or fully adjusted
- Strengths
 - Largest cohort study to date representing 40% English population
 - Inclusion of variables including liver disease, transplant for analysis
- Weaknesses
 - Deaths related to patients with false-negative tests or died without testing would be missed
 - Censoring patients at date of death from other causes or outside the hospital stopped 9 days short of study end
 - Cohort limited to those practices using the EHR software SystemOne Some variables were assumed absent if missing
 - Characterization of “liver disease” is general and not complete
- Further characterization of liver disease and potential risks due to etiology, MELD, etc will be helpful in future studies

<https://doi.org/10.1101/2020.05.06.20092999>

Expert Panel Consensus Statement

- First published online March 23rd
- New update posted today:
www.aasld.org/covid19
- Spanish and Portuguese translations available online
- *Hepatology* manuscript published online



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updates

Released: May 14, 2020

CLINICAL BEST PRACTICE ADVICE FOR HEPATOLOGY AND LIVER TRANSPLANT PROVIDERS DURING THE COVID-19 PANDEMIC: AASLD EXPERT PANEL CONSENSUS STATEMENT

This is a "living" document that will continue to evolve and will be updated as new information becomes available.

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May 14th Update: Major Changes

- Acknowledgement of possible link between COVID-19 and Kawasaki-like pediatric multisystem inflammatory syndrome
- Italian autopsy series describing involvement of hepatic vasculature including acute portal and sinusoidal thrombosis
- Introduction of SARS-CoV-2 antigen testing in addition to increasing availability of antibody testing

https://www.health.ny.gov/press/releases/2020/docs/2020-05-06_covid19_pediatric_inflammatory_syndrome.pdf

Sonzogni et al Preprints 2020

<https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-authorizes-first-antigen-test-help-rapid-detection-virus-causes>

May 14th Update: Major Changes

- OpenSAFELY study from the UK: chronic liver disease is a risk factor for in-hospital death from COVID-19
- Large US study also showed that chronic liver disease and cirrhosis are associated with higher COVID-19 mortality

May 14th Update: Major Changes

- Clarification that treatment of hepatitis B is not contraindicated in patients with or without COVID-19
- Recommendations regarding use of masks for patients and caregivers as well as providers in the clinic or hospital setting

May 14th Update: Major Changes

- Evolving data on hydroxychloroquine suggesting it should no longer be used outside RCTs
- New data on triple therapy with lopinavir-ritonavir, ribavirin and interferon-beta-1b showing more rapid viral clearance compared to lopinavir-ritonavir (phase 2 RCT)
- **Reentry**

Impact of COVID-19 on Liver Disease: Safe Outpatient Re-Entry Process

Bilal Hameed, MD

Associate Professor of Medicine

Clinic Chief, Hepatology

University of California, San Francisco

Outline

- The COVID-19 effects on liver care
- Recommendations for re-entry and re-opening facilities
- Ambulatory re-entry and recovery challenges and plan at UCSF
- Gradual re-entry of liver patients in the ambulatory setting

The Untold Toll — The Pandemic's Effects on Patients without COVID-19

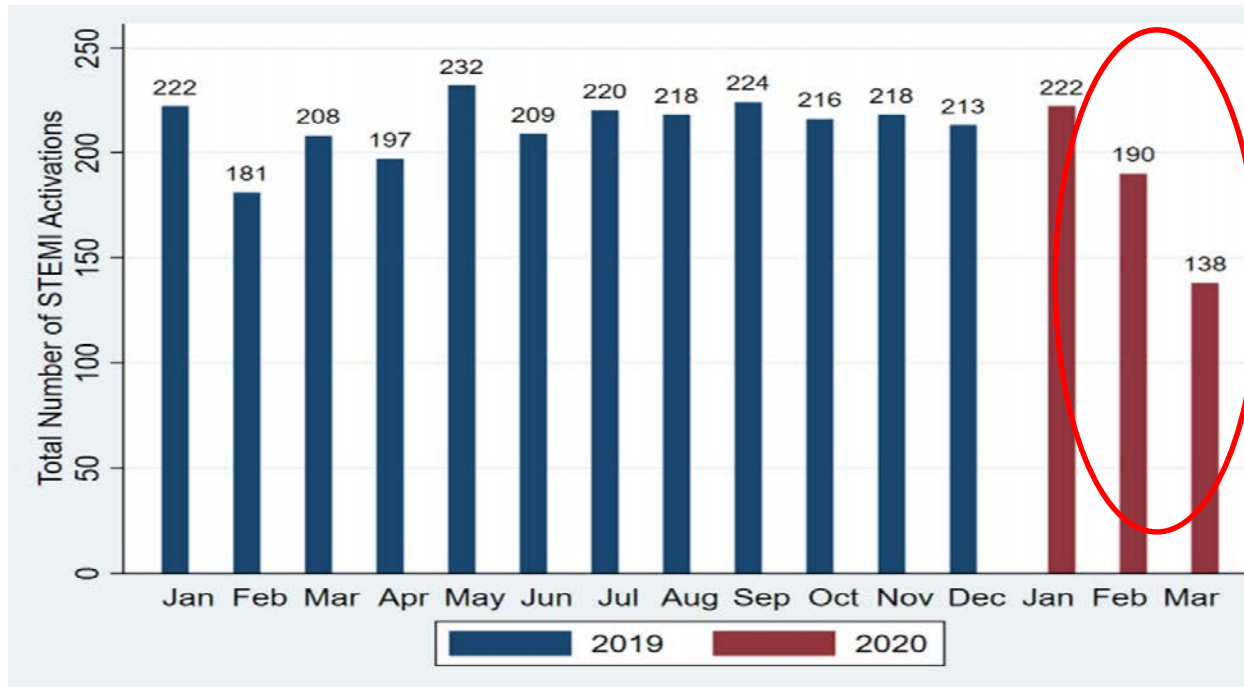
The Washington Post

Patients with heart attacks, strokes and even appendicitis vanish from hospitals

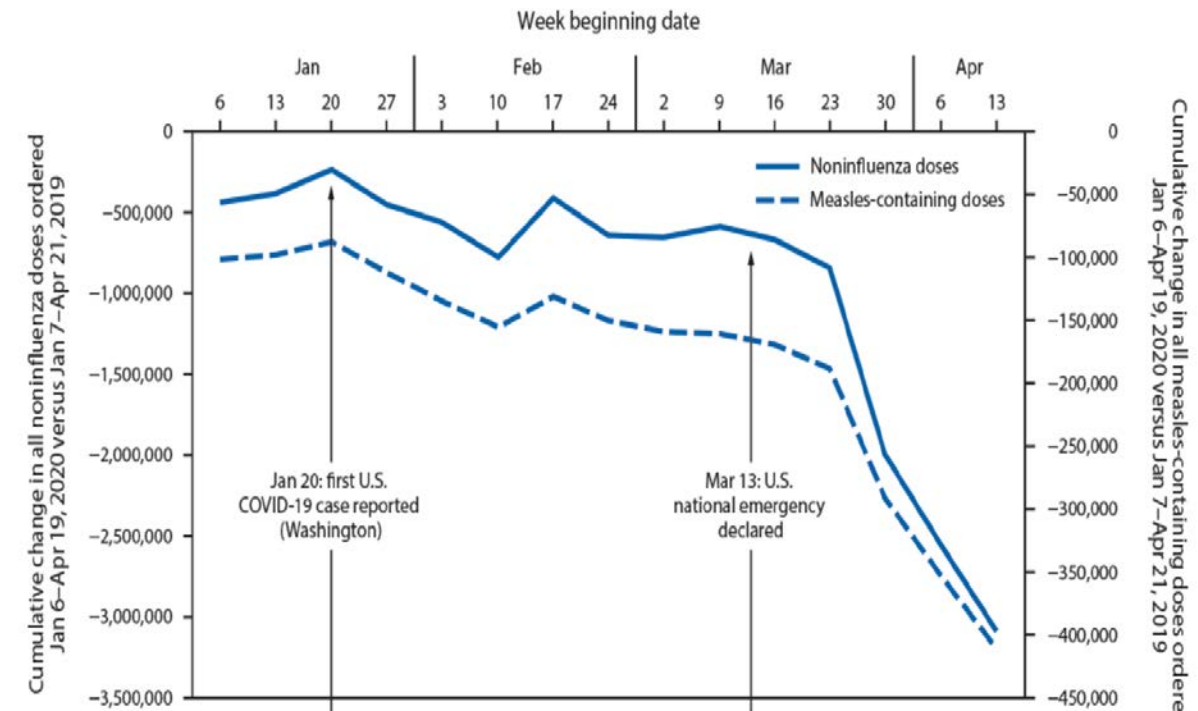


The Pandemic's Effects on Patients without COVID-19

38% reduction in STEMI activations in the US during COVID-19 pandemic



Decrease in routine pediatric vaccination during COVID-19

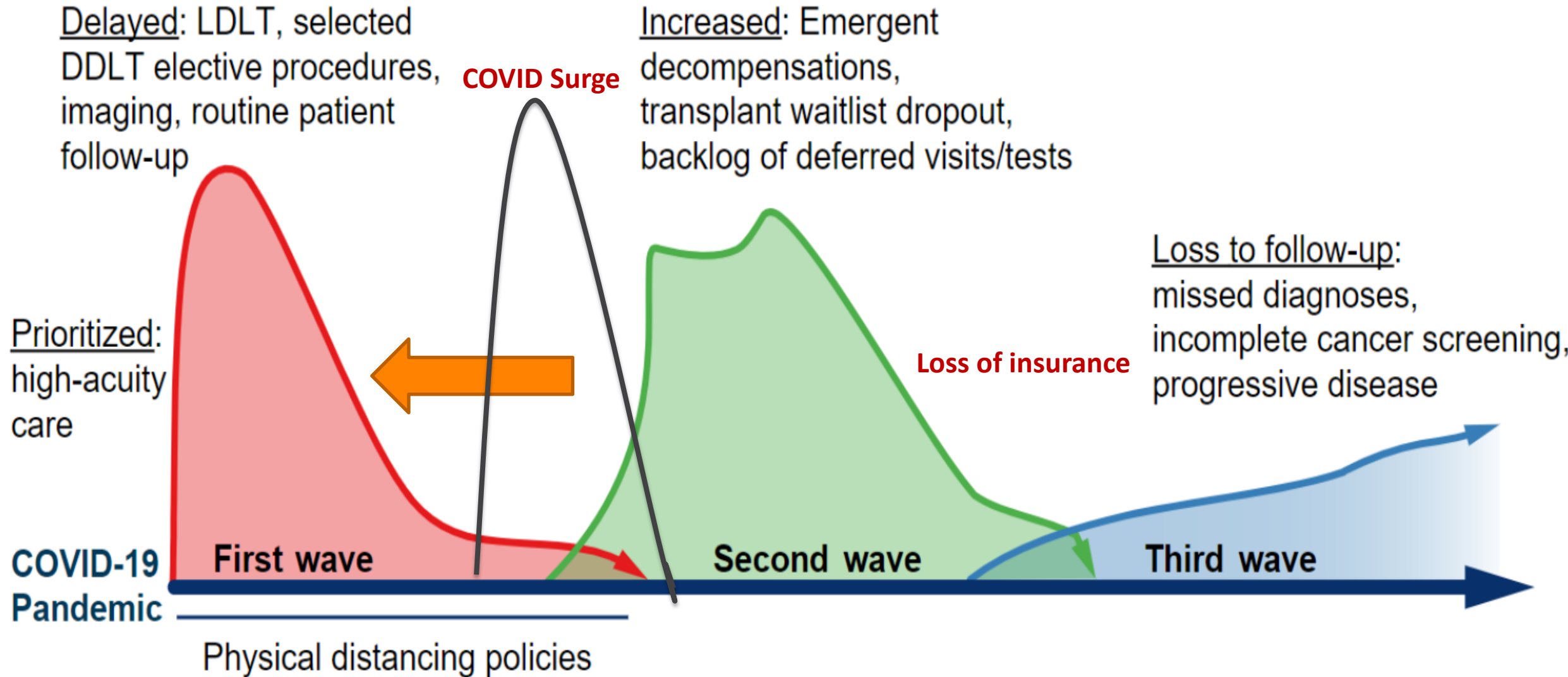


Unexpected Consequences of the Pandemic

- To expand capacity for COVID-19 patients, on March 18th CMS recommended limiting non-essential care and procedures
 - 8 week pause in usual care activities
 - Fear of returning to care
 - Change in patient's perception of risk/benefit
- Areas with low/stable incidence of COVID-19, CMS allowing non-emergent, non-COVID-19 healthcare



COVID-19 Pandemic: Impact on the Cirrhosis Care

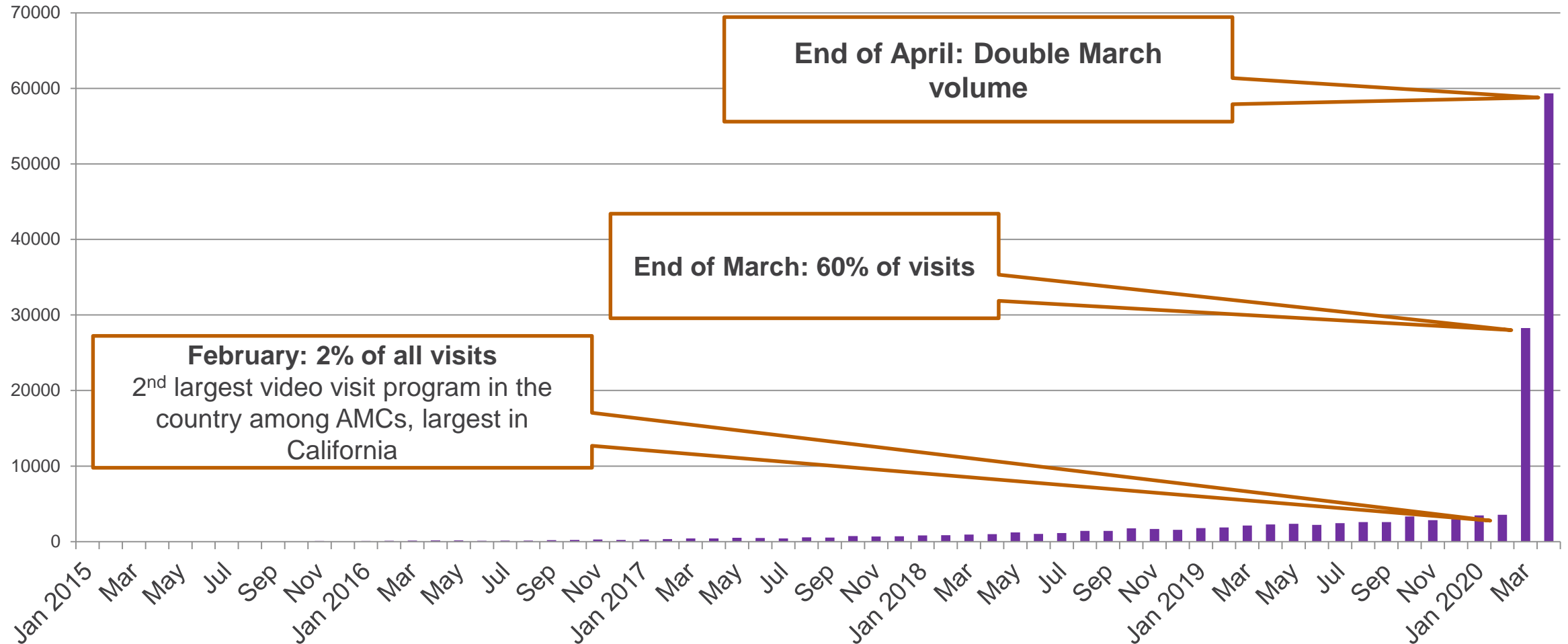


Outpatient Impact of COVID-19 Pandemic: UCSF Experience

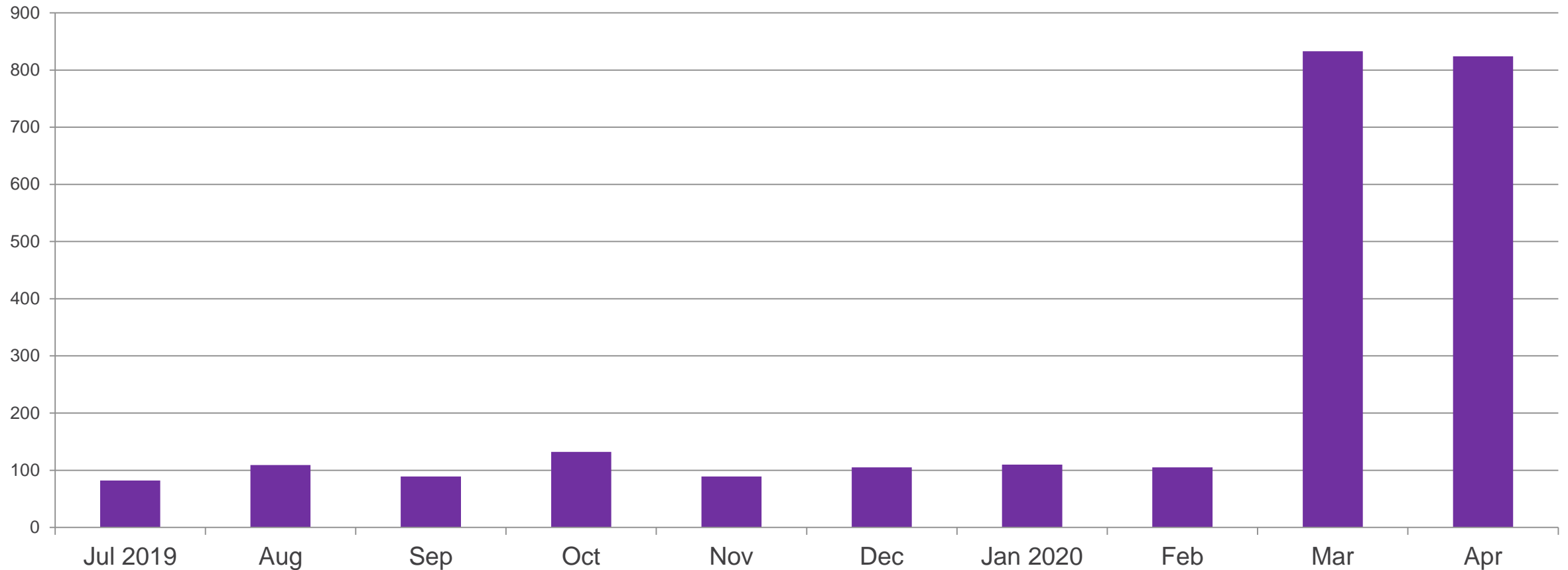
Maximizing Appropriate Use of Video Visits during Re-entry

Prior State	Current State	Future State
~ 20% of total visits were video visits	~ 95% of total visits are video visits	Appropriate mix of telehealth visits ~ 50% Continue expanding to: <ul style="list-style-type: none">-Patients that live far away-Post-ops & post-discharge follow-up-Chronic disease management (NAFLD/HBV/HCV etc)-Free up clinic space

UCSF Video Visits by Month (Jan 2015-April 2020)



Hepatology Video Visits by Month at UCSF



Able to see the same number of patients even during pandemic

CMS Phase I Recommendations: Re-opening Facilities for Non-emergent Non-COVID-19 Healthcare

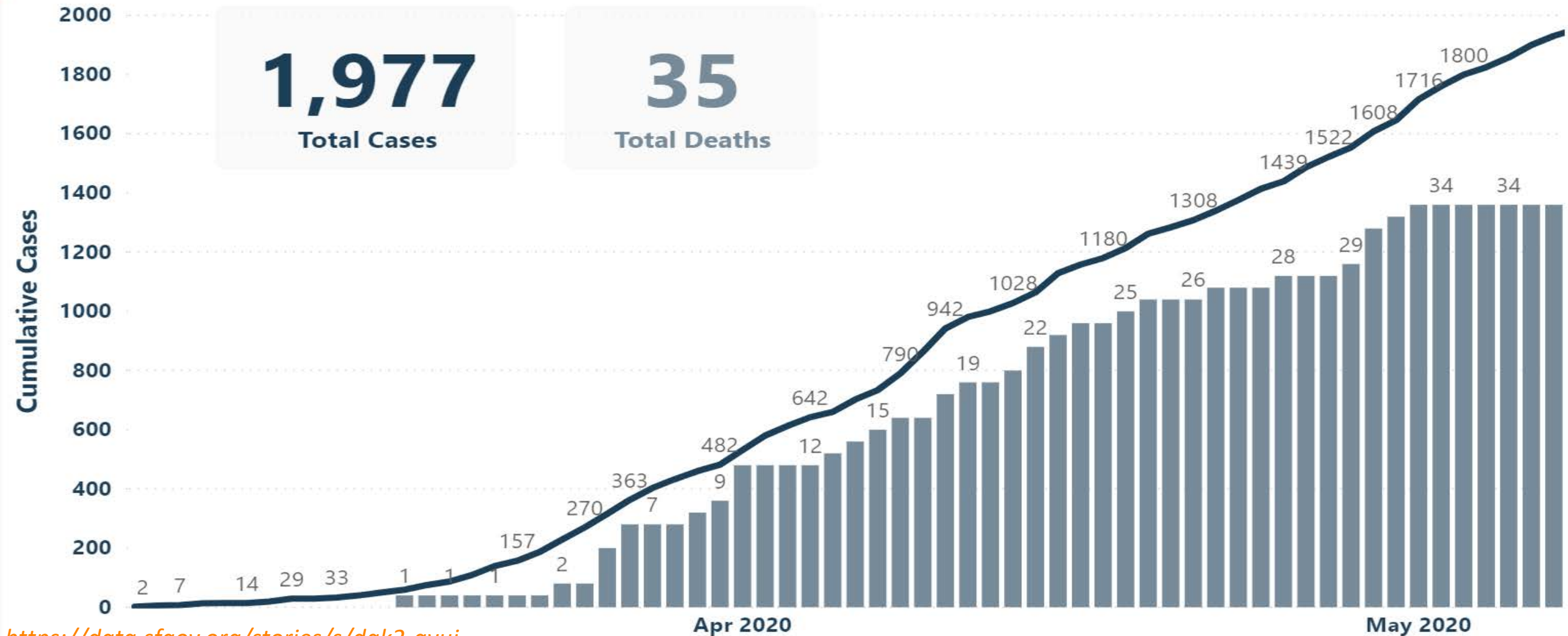
- In coordination with State and local public health officials, evaluate the incidence and trends for COVID-19 in the area
- Prioritize surgical/procedural care and high-complexity chronic disease management and select preventive services
- Consider establishing Non-COVID Care (NCC) zones that would screen all patients for symptoms of COVID-19
- Sufficient resources should be available across phases of care, including PPE, healthy workforce, testing capacity etc, and without jeopardizing surge capacity

<https://www.cms.gov/files/document/covid-flexibility-reopen-essential-non-covid-services.pdf>

<https://www.whitehouse.gov/openingamerica/#criteria>

<https://www.facs.org/covid-19/legislative-regulatory/executive-orders>

San Francisco COVID-19 Numbers



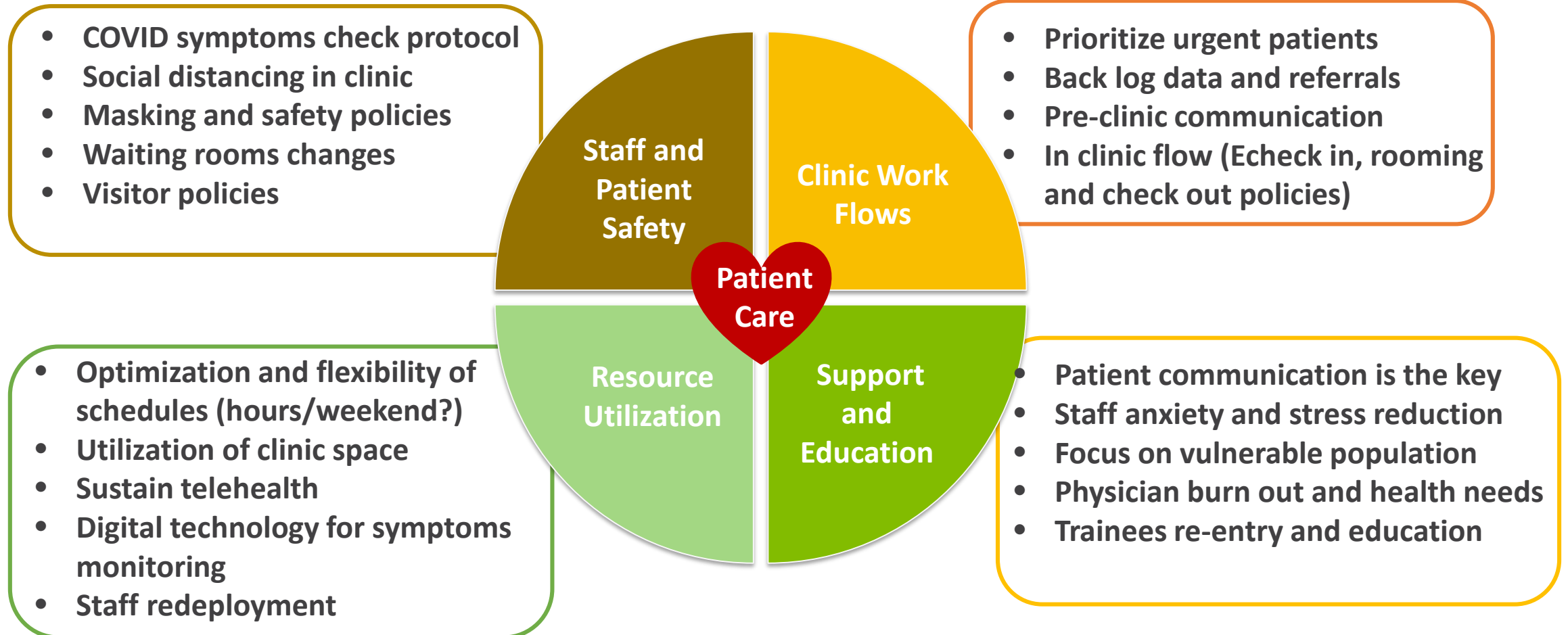
Ambulatory Re-entry and Recovery – Cascaded Principles

Strategies to limit unnecessary exposure while continuing to provide high-quality care for our liver patients

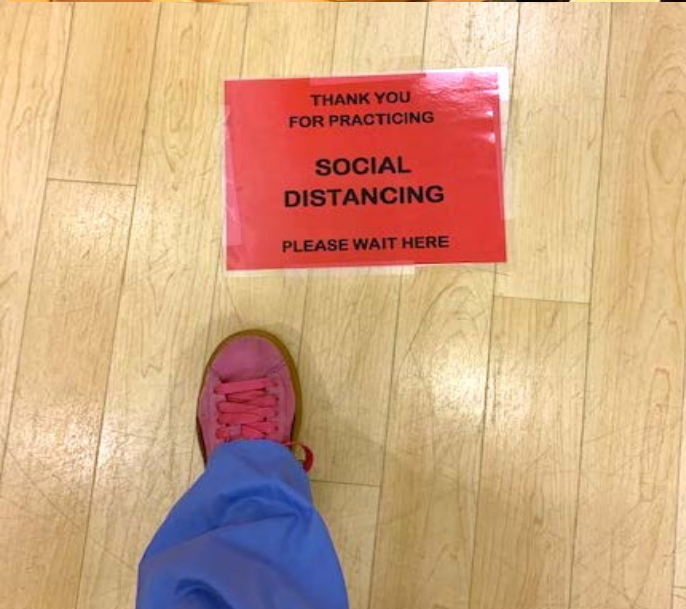
- Ensure morbidity and mortality do not increase due to liver related illness and provide care in a safe manner
- Continue to prioritize the health and safety of workforce
- Prioritize urgent patients
- Communicate consistently and transparently
- Invest appropriately in services and improvement efforts

Ambulatory Recovery Challenges and Plan

Providing Best Care While Living with COVID-19

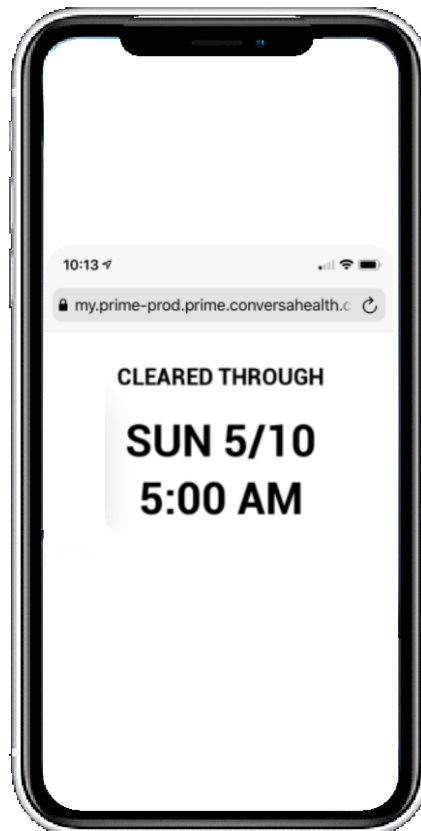


Physical Distancing & Safety Guidelines

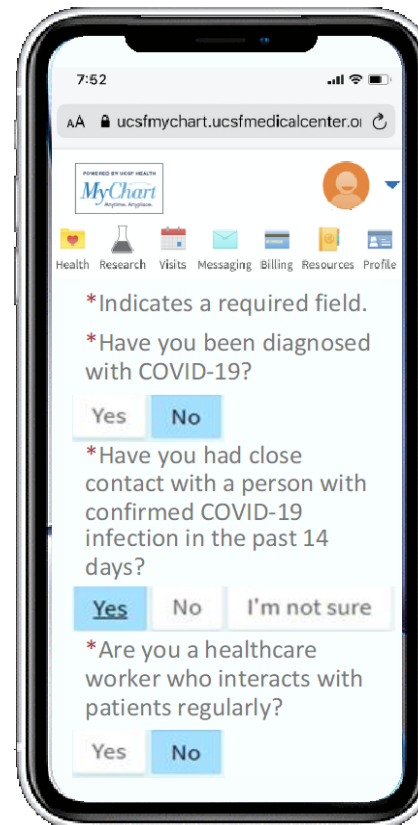


Innovation and Improving Operations

Conversa Employee
Screening



Mychart Screener



Apex texting for patients in
nearby waiting areas



Gradual Re-entry of Liver Patients in the Ambulatory Setting

LIVER TRANSPLANT EVALUATION DURING COVID-19 WORKFLOW

yes

Patient will be scheduled for **ON-SITE evaluation (One care-giver allowed)**

**MELD >24 or HCC/Exception? or
MELD 20-24 and any of the complications below:**

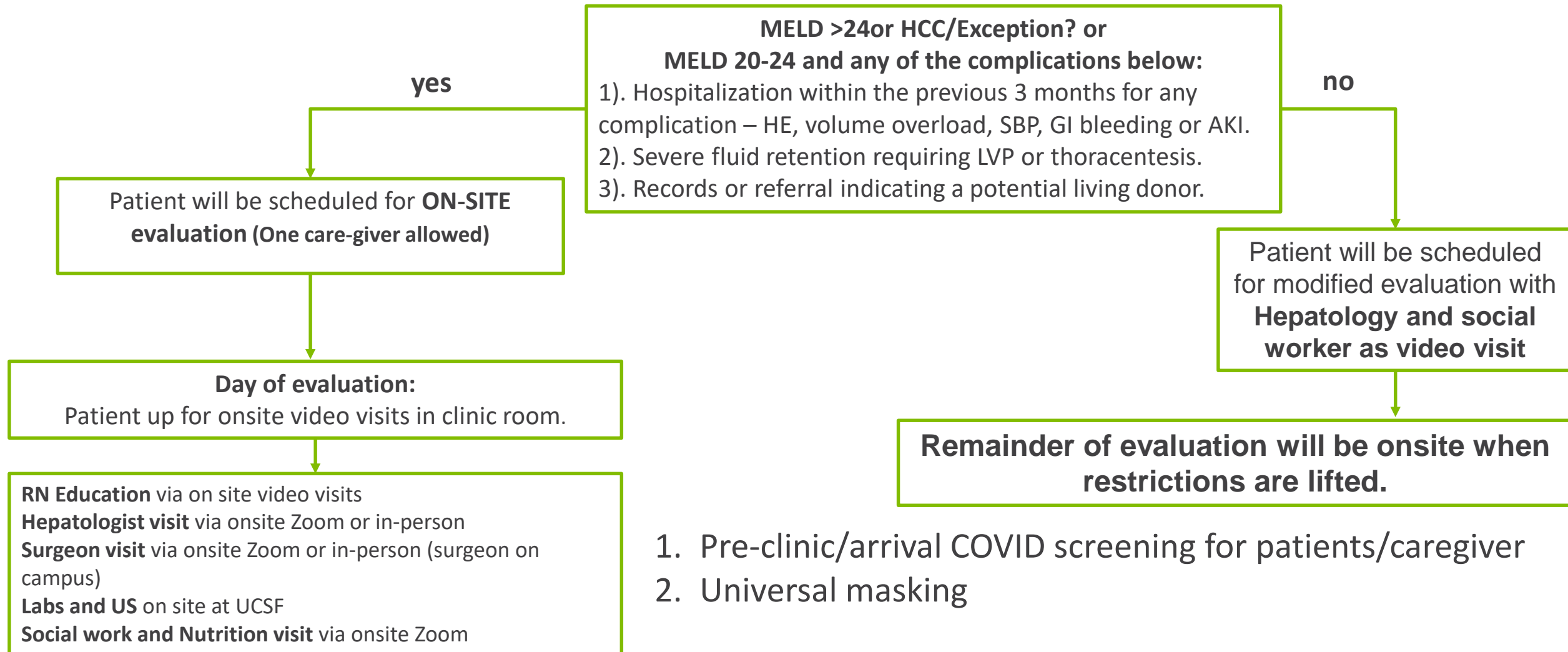
- 1). Hospitalization within the previous 3 months for any complication – HE, volume overload, SBP, GI bleeding or AKI.
- 2). Severe fluid retention requiring LVP or thoracentesis.
- 3). Records or referral indicating a potential living donor.

Day of evaluation:

Patient up for onsite video visits in clinic room.

RN Education via on site video visits
Hepatologist visit via onsite Zoom or in-person
Surgeon visit via onsite Zoom or in-person (surgeon on campus)
Labs and US on site at UCSF
Social work and Nutrition visit via onsite Zoom

LIVER TRANSPLANT EVALUATION DURING COVID-19 WORKFLOW



Re-entry of Liver Patients in Clinic: June 2020

- All new liver transplant evaluations and HCC diagnosis
- New decompensation or worsening symptoms
- Listed patients for transplant with decompensated cirrhosis
- Acute hepatitis or liver injury
- Early post transplant
- Patients with difficulty with telehealth

Re-entry of Liver Patients: HCC Surveillance

- HCC surveillance should continue as close to schedule (an arbitrary delay of 2 months were acceptable)
- Working on list of all delayed imaging and prioritizing them by risk categories
 - Known HCC, surveillance for treatment response, elevated AFP
- Key is working with Radiology (Options of imaging locally)
- Communication with patients and documentation is important
- No delay in HCC treatment (risk/benefits discussion)

Re-entry of Liver Patients: Procedures

Liver Biopsies

- Rule out rejection or autoimmune hepatitis diagnosis
- Going over the back log and prioritizing biopsies (June 2020)
- Updating radiology protocols
- No COVID testing for outpatient biopsies (standard PPE)

Re-entry of Liver Patients: Procedures

Liver Biopsies

- Rule out rejection or autoimmune hepatitis diagnosis
- Going over the back log and prioritizing biopsies (June 2020)
- Updating radiology protocols
- No COVID testing for outpatient biopsies (standard PPE)

Fibroscan

- Not urgent but planning to start June-July 2020
- Huge back log
- Using radiology US protocol for PPE (mask/goggles and gown)
- Flexible schedules based on safety guidelines

NURSES

MAKE A DIFFERENCE EVERY DAY!



Reentry and Return to a Pre-Pandemic State

Inpatient Setting

Patricia Harren, DNP, DCC
Clinical Director of Transplant Services
Columbia University Medical Center

- Institutions are under major financial constraints due to the lack of operative and ambulatory services
- Increased cost of supplies and overtime staffing
- Increase need for expensive equipment: Beds/ventilators
- Increase in laboratory expenses for testing

○ Over Capacity Struggles:

- Emergency Department
- ICU (NYP 422 to 970 beds in 19 days)
 - OR suites still needed for ICU patients
 - Entire units still a mix of ICU and Step down patients
 - COVID Free ICU needed
- Dialysis both CVVH and HD staffing and supply issues.
- Beds
 - Still high volume of COVID patients admitted
 - Step down need for trached patients
 - Increased need for rehab beds
 - “Field Hospital” patients need disposition

- PPE improving but still shortages

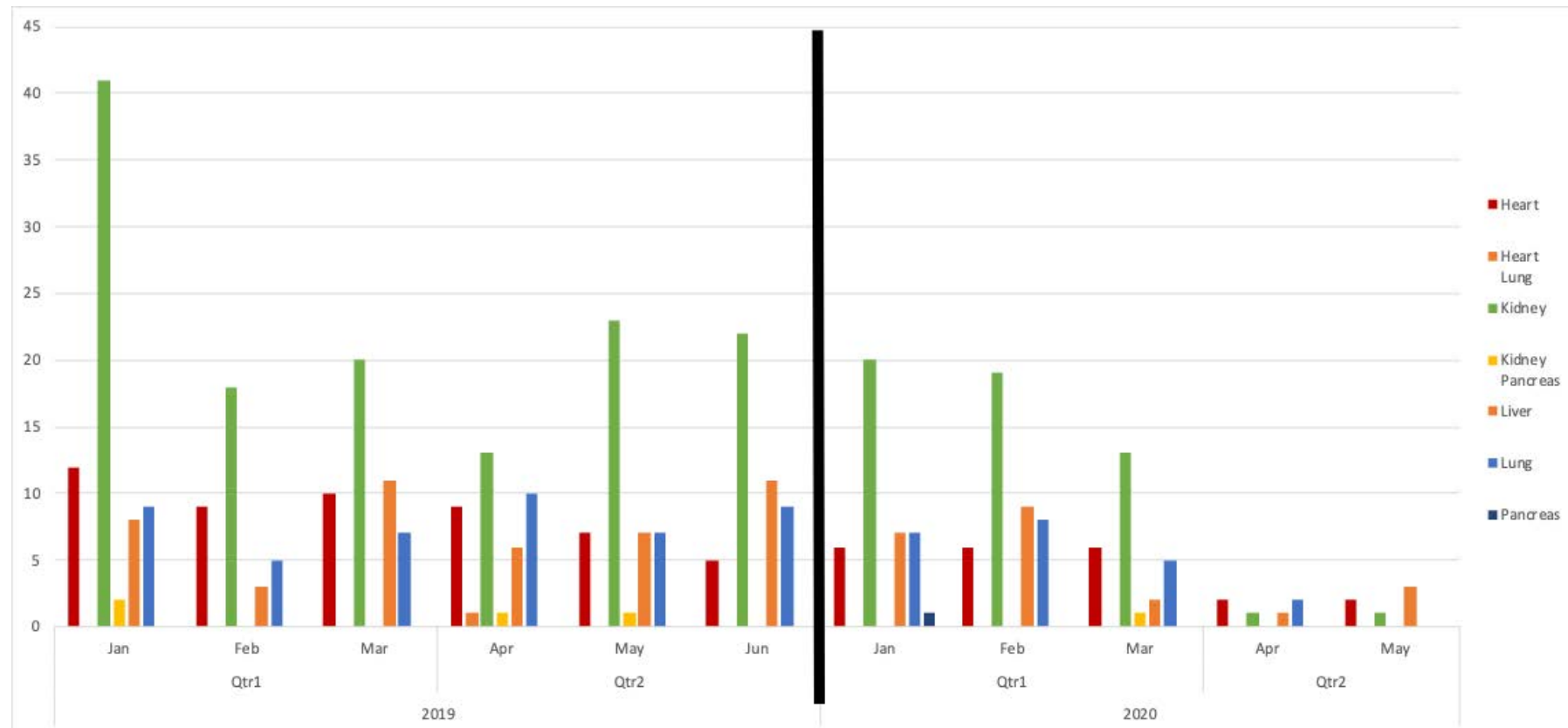
- NYS Governor “suggestion/mandate”:

- Institutions need a stockpile of 90 supply of all PPE equal to the amount used at PEAK:

- Masks: $100,000/\text{day} = 9,000,000$ in reserve PLUS current needs met.

- *This is compounded by increased prices and low availability.

○ Transplant Cases 2019-2020



○ OR Schedule Restart:

- OR suites converted back from ICU to OR
- COVID Free ICU and Units
- Rapid COVID testing needed for aerosolized procedures
- Operational Radiology Department
- Operational Interventional Radiology
- Operational Cardiac Catheterization Lab

○ COVID Testing

- Currently COVID negative needed within 48 hours
- Rapid PCR Test (2 hours) prior to procedures regardless of if aerosolized
- Consider Rapid testing for all elective admissions and transfers (hold in ED until testing results)
- Broader testing in the coming weeks to months needed to monitor for outbreaks

○ Staffing:

- Many redeployed employees from outpatient areas staffing units due to increased acuity still needed.
- Increase number of travel staff
- Units no longer specialized
- Employee PCR & Antibody testing.. When and how often?

○ Visitation Policy

- Current State: No visitors permitted unless on Palliative Care unit for end of life visit.
 - Patients hesitating to come to ED or Admission
 - Struggles with staff contacting families
 - Discharge coordination sometimes difficult

○ Lessons Learned:

- Start with more restrictions and more protection and reduce as data indicates
 - Limited Visitors
 - More testing of staff
 - More testing not just with symptoms
 - Testing non COVID inpatients periodically especially prior to procedures
 - Secure your valuable PPE
 - Increase of Telemedicine is valuable and needed



Doctors worry the coronavirus is keeping patients away from US hospitals as ER visits drop: 'Heart attacks don't stop'

PUBLISHED TUE, APR 14 2020•3:40 PM EDT | UPDATED TUE, APR 14 2020•5:55 PM EDT



William Feuer
@WILLFOIA

SHARE    

Published: May 4, 2020

Is it safe to go to the hospital during COVID-19 pandemic? Doctors say yes

By American Heart Association News

○ How to make patients feel safe to return?

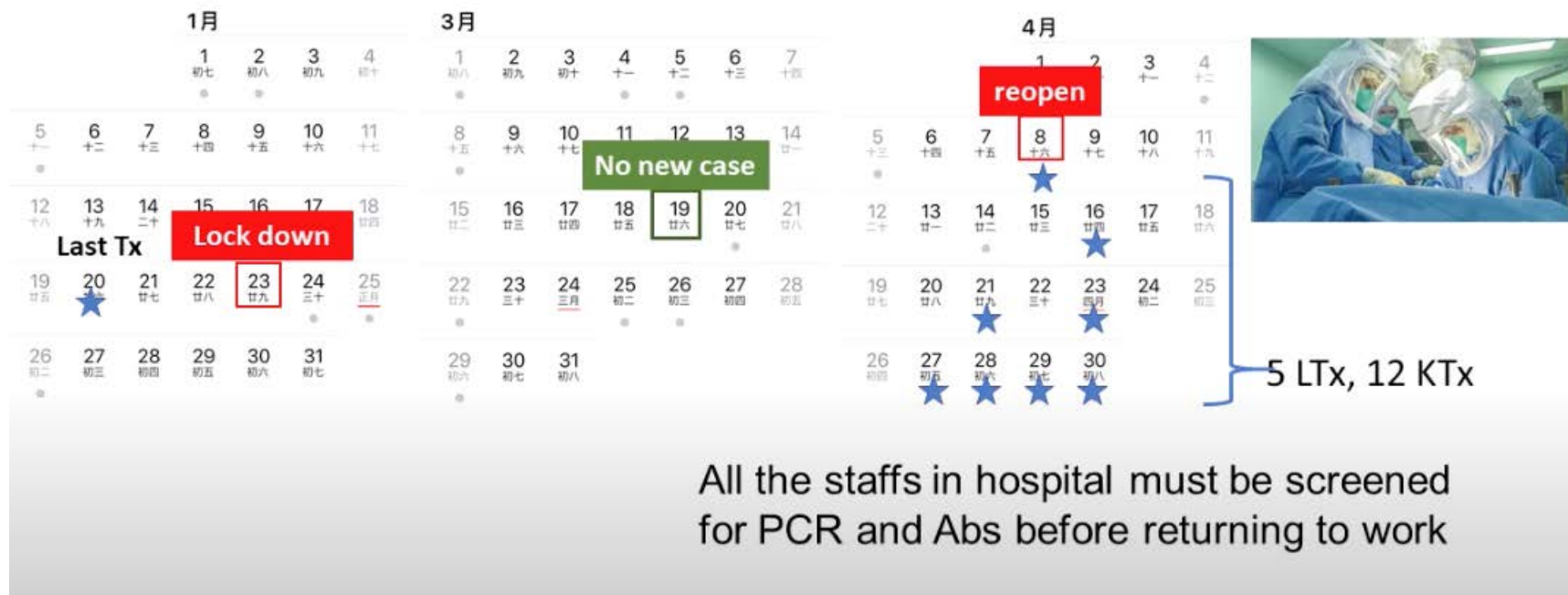
- Project confidence
- People respond to tangibles:
 - Screening at entrances
 - Wearing masks - every one all the time.
 - Doing testing pre admission/pre procedures
 - Observing good hand hygiene
 - Being consistent

Impact of COVID-19 on Liver Transplantation: Creating Safe Plans For Re- Entry

David C. Mulligan, MD, FACS, FAASLD, FAST
Professor and Chair, Transplantation and Immunology
Yale University/Yale New Haven Health System

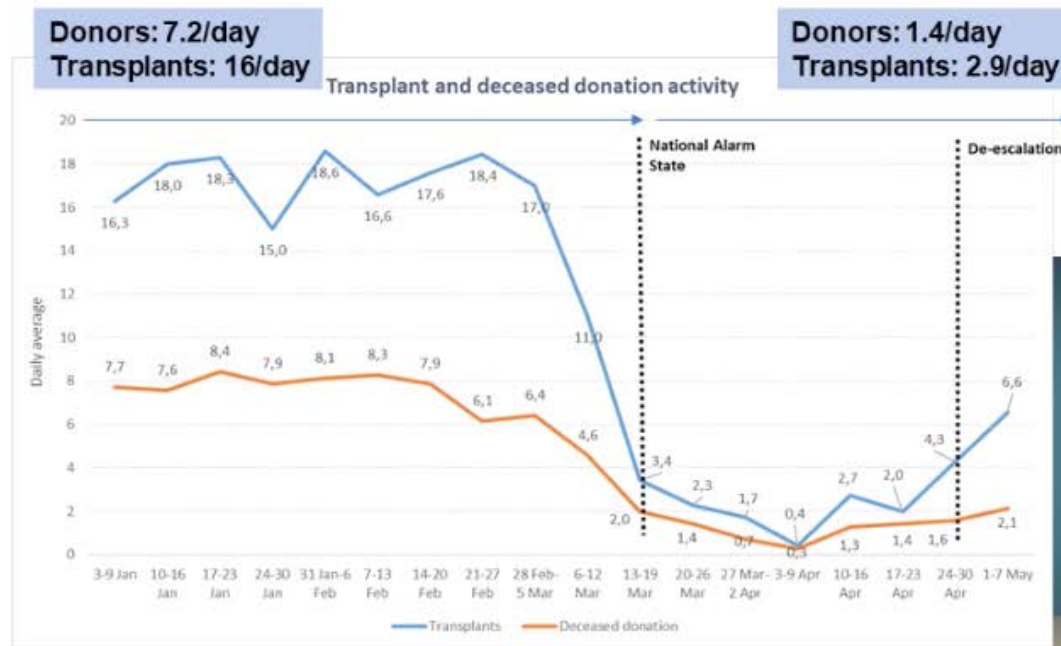
Impact of COVID-19 on Transplant

2020 Transplants in Tongji Hospital

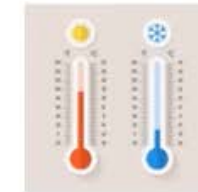


Courtesy of Lan Zhu, MD, Tongji Hospital of Tongji Medical College

D&T ACTIVITIES IN SPAIN 2020

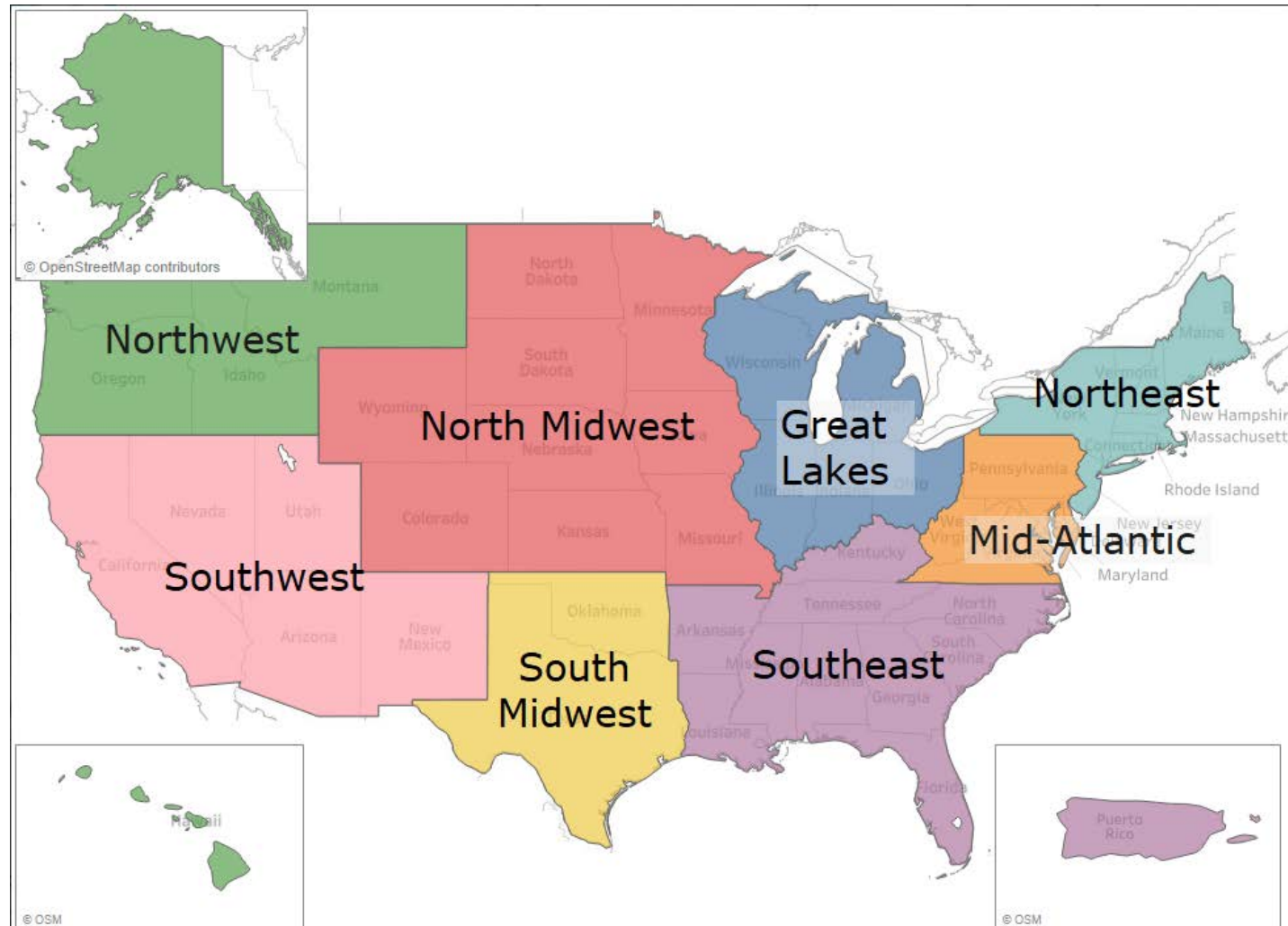


...an excellent thermometer of what happens in the hospital

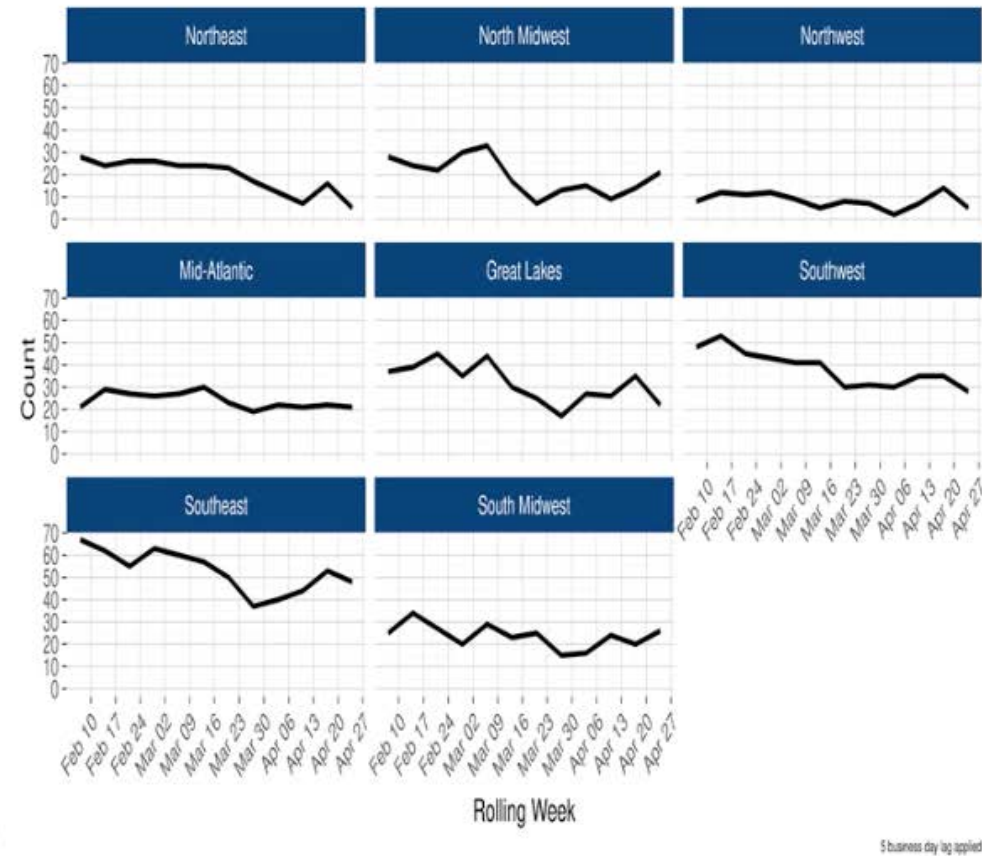
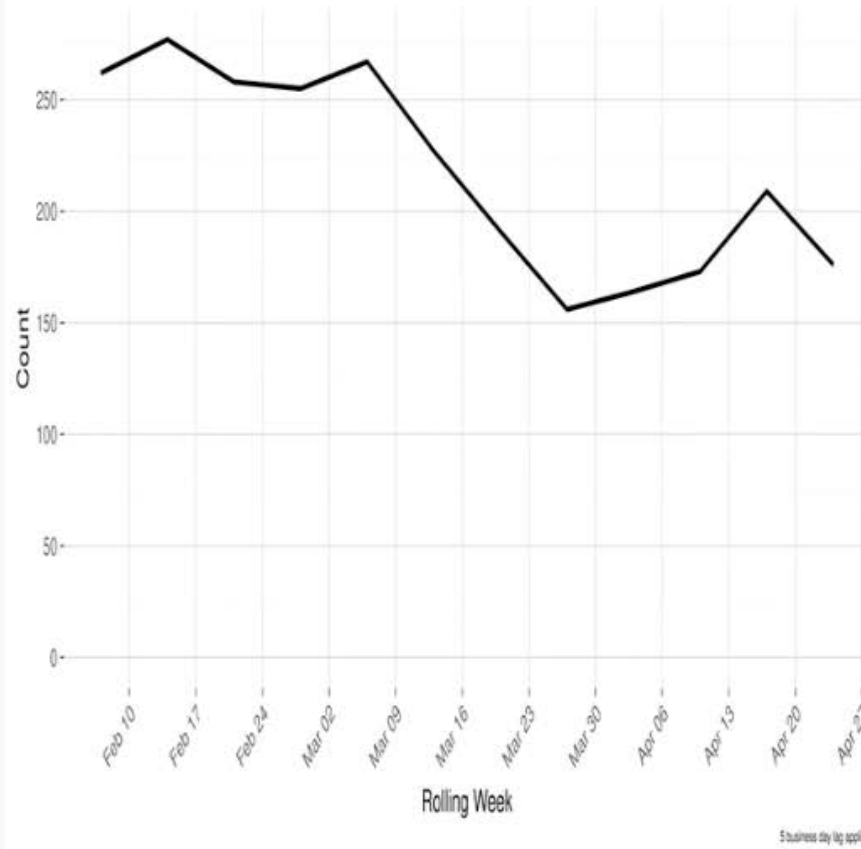


Courtesy of Beatriz Dominguez-Gil, Organizacion Nacional de Trasplantes

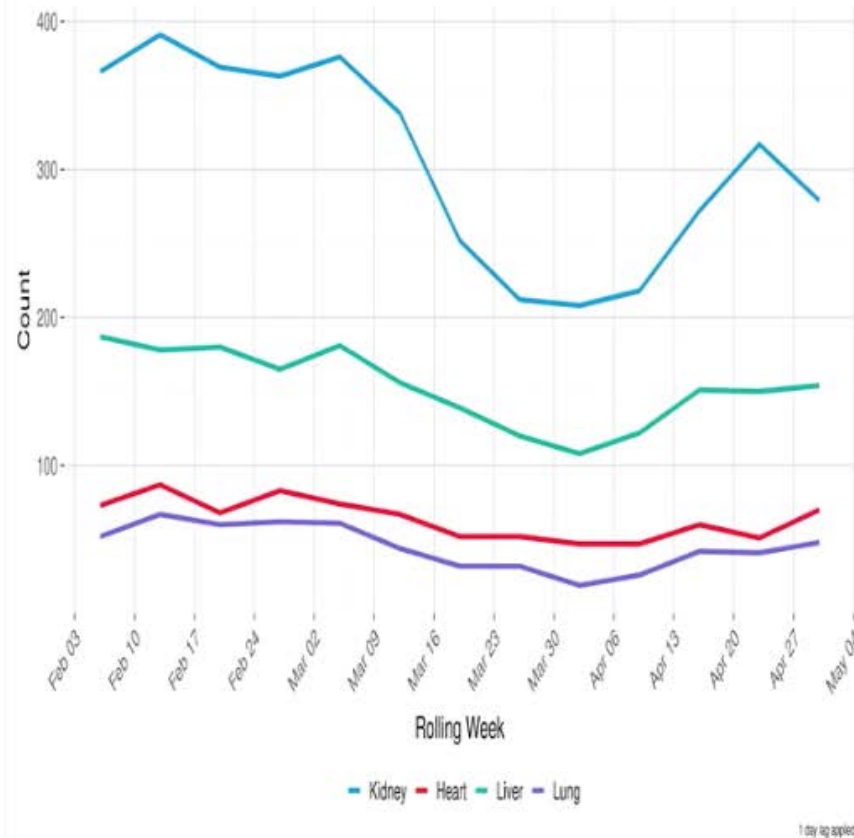
Impact of COVID-19 on Organ Donation



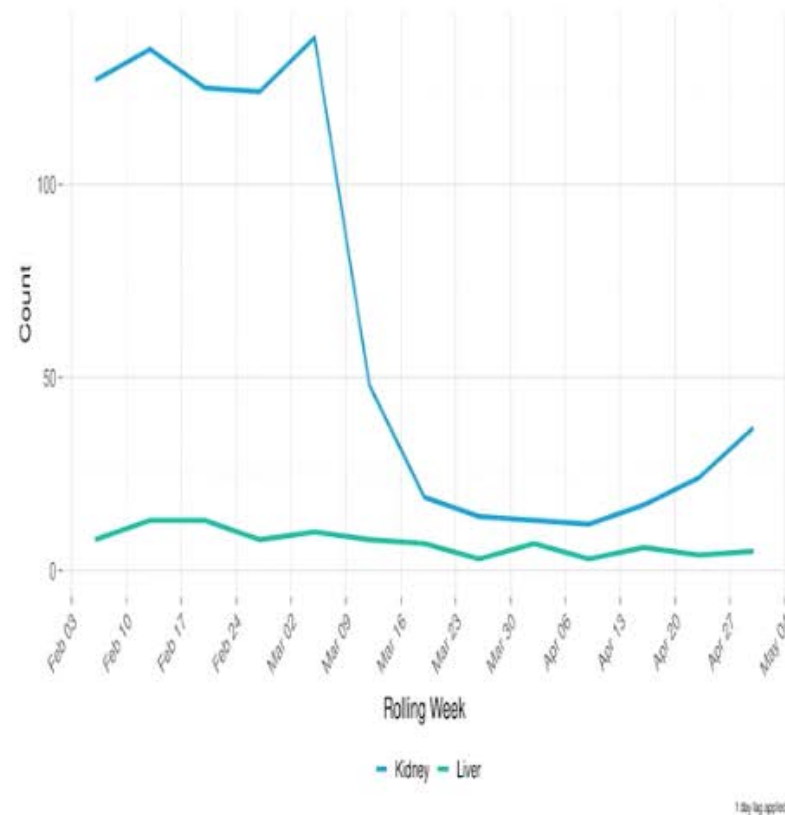
Deceased Donors Recovered by Week



Deceased Donor Transplants by Week, Geography, and Organ Type



Living Donor Transplants by Week, Geography, and Organ Type



Variable Liver Transplant Activity

- Not all transplant centers decreased liver transplants
- Centers in COVID spared geographies and those with resources to minimize exposure to patients continued to transplant

**Liver
Transplantation**



Letters From The Frontline | [Free Access](#)

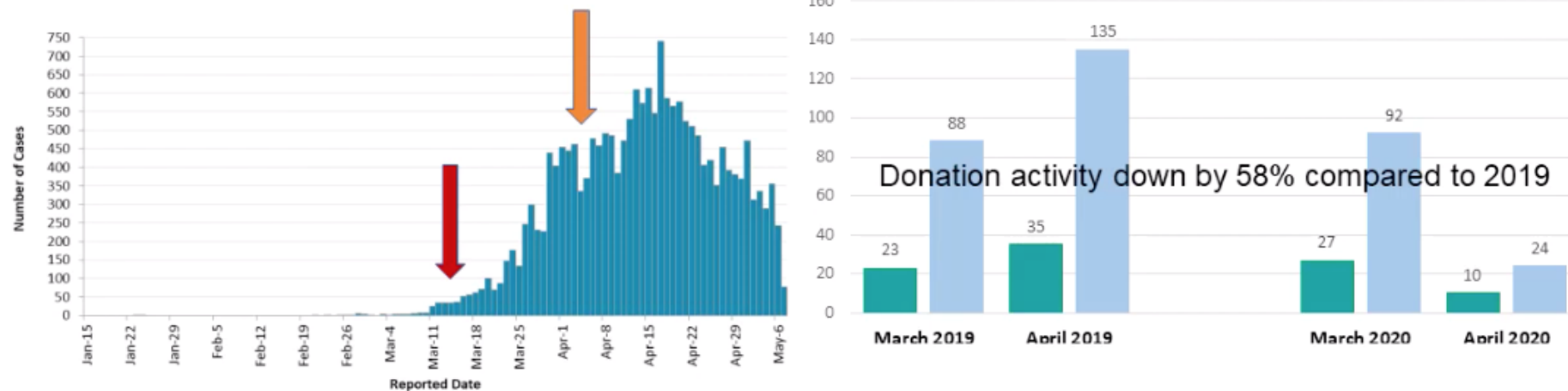
Changes in liver transplant center practice in response to COVID-19: Unmasking dramatic center-level variability

Vatche Agopian, Elizabeth Verna, David Goldberg [✉](#)

First published: 05 May 2020 | <https://doi.org/10.1002/lt.25789>

Impact of COVID-19 on Transplant in Ontario, Canada

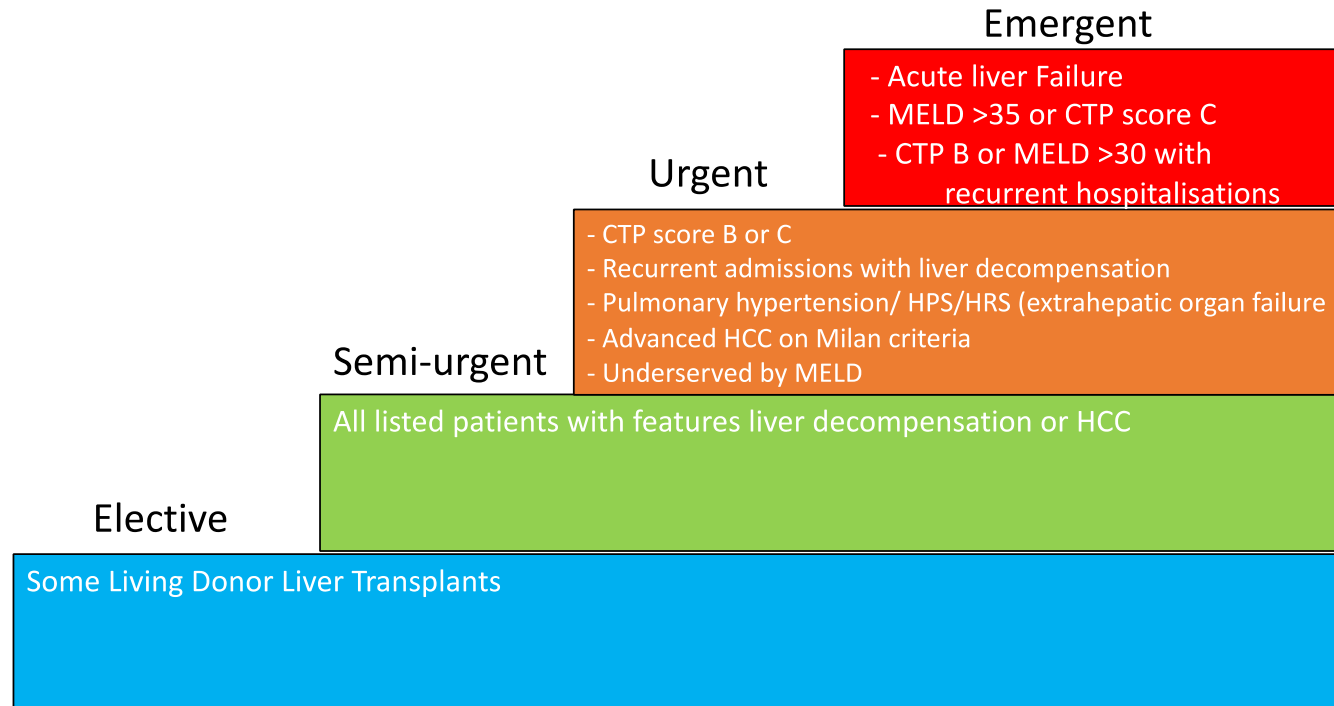
Figure 1. Confirmed cases (n=19,598) of COVID-19 by reported date: Ontario, January 15, 2020 to May 7, 2020¹



- Ontario is Canada's [most populous province](#), with 38.3 percent of the country's population
- 8 transplant programs: adult, pediatric, heart, lung, liver, pancreas, kidney and small bowel
- COVID Management System: Daily calls supported by OPO (TGLN)
- All programs participated, incl crit care, ID, TGLN leadership
- Mar 15: unanimous decision to limit transplant activity
 - High status: heart, liver, lung
 - cPRA 99/100, medically urgent

Courtesy of Darin Treleaven, MD, MSc, McMaster University

Liver Transplant C-19 Triage

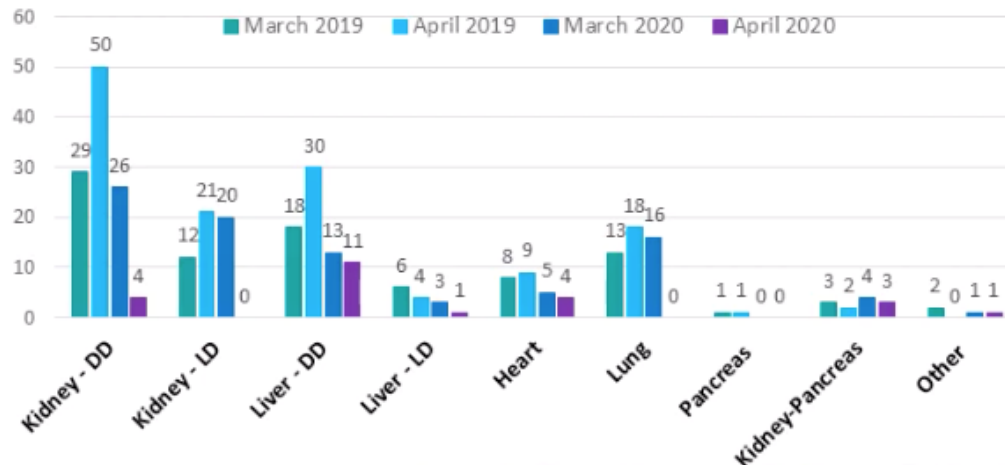


[Gastroenterology](#). 2020 May 3. pii: S0016-5085(20)30585-0. doi: 10.1053/j.gastro.2020.04.064. [Epub ahead of print]
Clinical Characteristics and Outcomes of COVID-19 Among Patients with Pre-Existing Liver Disease in United States: A Multi-Center Research Network Study. [Singh S1](#), [Khan A2](#).

Transplant Program	Kidney	Pancreas and KP	Liver	Heart	Lung	Small Bowel
University Health Network	●	●	●	●	●	●
London Health Sciences Centre	●	●	●	●		
Hospital for Sick Children	●	●	●	●	●	●
Ottawa Heart Institute				●		
The Ottawa Hospital	●					
St. Michael's Hospital	●					
Kingston General Hospital	●					
St. Joseph's Healthcare - Hamilton	●					

LEGEND Description of Transplant Activity

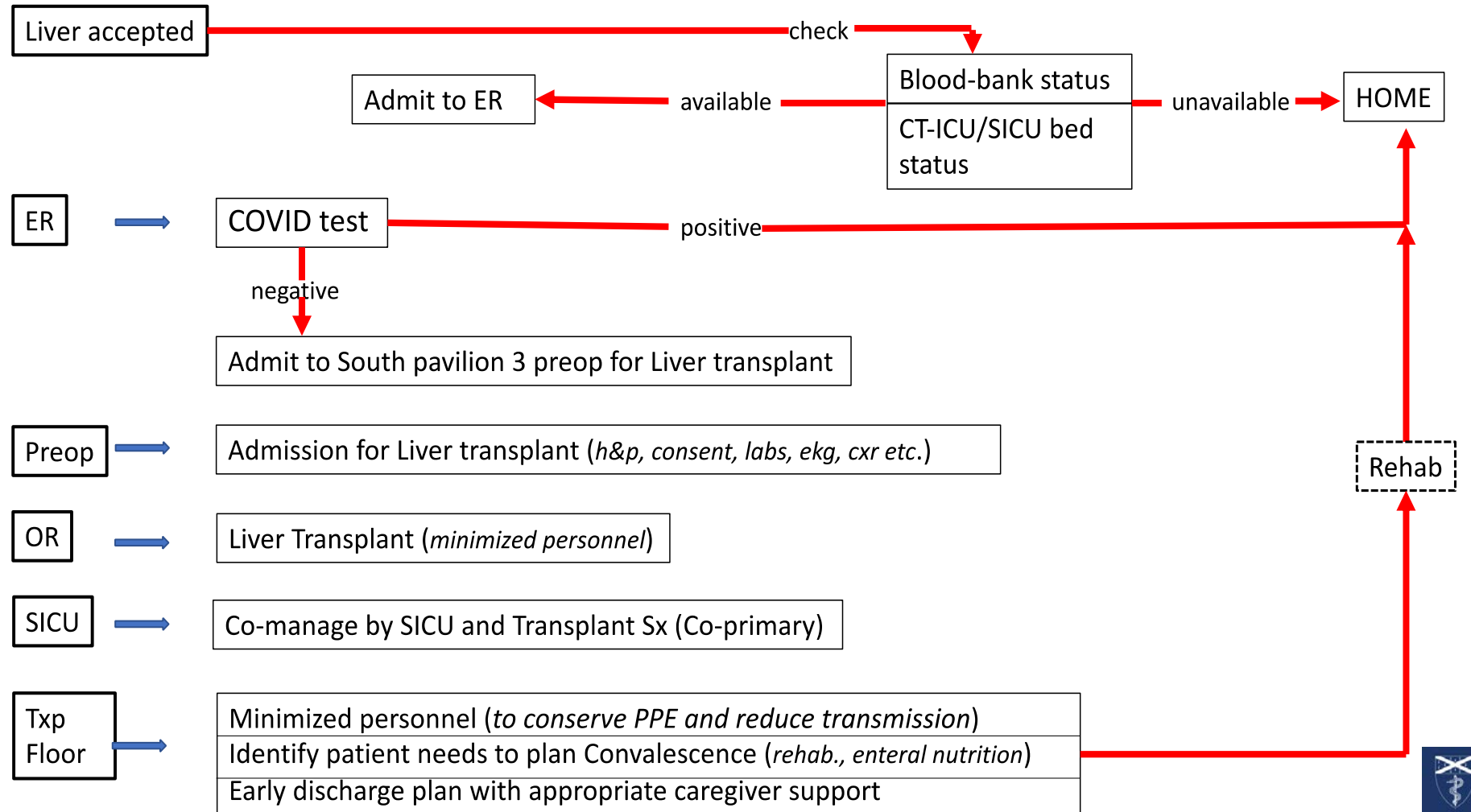
- Moderate to near normal transplant activity
- Limited to moderate increase in transplant activity
- Very limited increase in activity
- Limited transplant activity



1. Speeding up is harder than slowing down
2. Implementation requires multi-level (local and provincial) coordination of surgical services
3. Local hospital and dialysis unit outbreaks have moved programs between stages already
4. It has helped immensely to have guiding principles and key considerations from other jurisdictions
5. Monitoring: COVID, WL deaths, WL impact

Courtesy of Darin Treleaven, MD, MSc, McMaster University

Liver Transplant Covid-19 (C-19) Pathway



Additional Considerations

Recipient testing strategies

- Immediately prior to transplant
- Upon discharge?
- Need for direct vs. Telehealth visits postop
- Testing of caregiver(s) and quarantine?

Timing to restart living donation

- Testing of donor with quarantine prior to surgery
- Testing at discharge and quarantine for 2 weeks

Conclusions:

- Re-Entry is complex and difficult
- Effort to determine correct timing depending on:
 - COVID-19 prevalence
 - Hospital staff, space, supplies
 - Blood product supplies
 - Adequate pre- and post- testing
- Ability to be flexible on rebound to minimize COVID exposure

- **Chair: K. Rajender Reddy, MD, FAASLD;** University of Pennsylvania Medical Center
- **Chair: Raymond T. Chung, MD, FAASLD;** Massachusetts General Hospital
- **Emily Blumberg, MD;** University of Pennsylvania Medical Center
- **Robert S. Brown, MD, MPH, FAASLD;** Weill Cornell Medical Center
- **Jaime Chu, MD;** Icahn School of Medicine at Mount Sinai
- **David E. Cohen, MD, PhD, FAASLD;** Weill Cornell Medical Center
- **Oren K. Fix, MD, MSc, FAASLD;** Swedish Medical Center
- **Robert J. Fontana, MD, FAASLD;** University of Michigan Hospitals and Health Centers
- **Elizabeth K. Goacher, PA-C, MHS;** Duke University
- **Bilal Hameed, MD;** University of California, San Francisco
- **Laura M. Kulik, MD;** Northwestern Medical Faculty Foundation
- **John R. Lake, MD, FAASLD;** University of Minnesota
- **Rohit Loomba, MD;** University of California, San Diego
- **David C. Mulligan, MD, VACS, FAASLD;** Yale University
- **Mark W. Russo, MD, MPH, FAASLD;** Carolinas Medical Center
- **Michael Schilsky, MD, FAASLD;** Yale-New Haven Hospital
- **Norah Terrault, MD, MPH, FAASLD;** Keck Medical Center of USC
- **David L. Thomas, MD;** Johns Hopkins Medicine
- **Elizabeth C. Verna, MD;** Columbia University
- **Karen Hoyt;** Patient Advocate

Panel Discussion

**Please submit your questions to the
Q&A Chat now.**



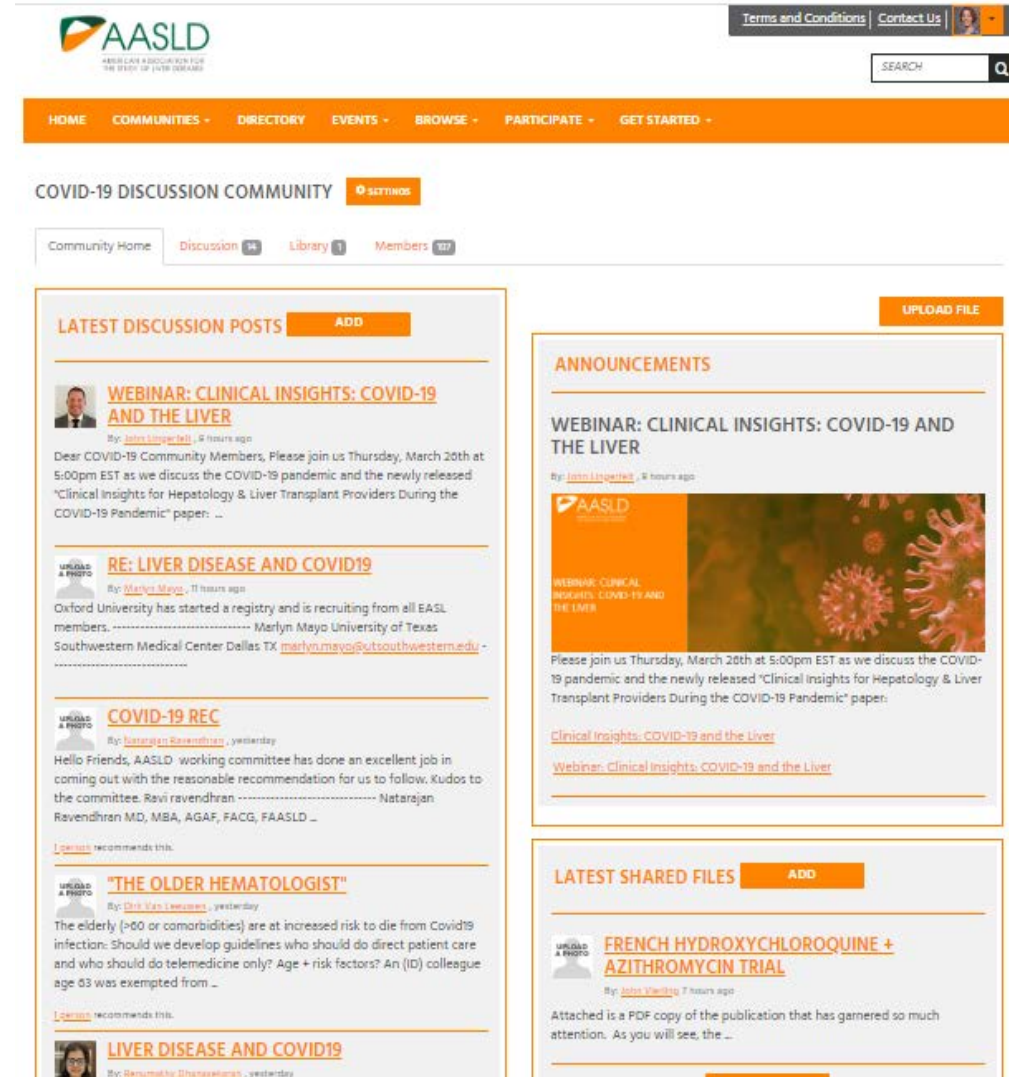
AASLD's COVID-19 Resources

Follow/Share: COVID-19 Resources

Webpage: www.aasld.org/covid19

Join/Engage: COVID-19 Care Community on AASLD's online community, Engage. Open to all members. Log in to Engage with your AASLD user name and password:
engage.aasld.org/covid19

Submit: *Hepatology, Liver Transplantation, Hep Commun* all accepting and fast tracking review of COVID-19 original articles, case reports



The screenshot shows the AASLD COVID-19 Discussion Community webpage. At the top, there is a navigation bar with links for HOME, COMMUNITIES, DIRECTORY, EVENTS, BROWSE, PARTICIPATE, and GET STARTED. Below this is a search bar and a settings button. The main content area is titled "COVID-19 DISCUSSION COMMUNITY" and includes tabs for Community Home, Discussion, Library, and Members. The "LATEST DISCUSSION POSTS" section features three posts: "WEBINAR: CLINICAL INSIGHTS: COVID-19 AND THE LIVER" by John Invernizzi, "RE: LIVER DISEASE AND COVID19" by Marilyn Mayo, and "COVID-19 REC" by Ravi Ravendhran. The "ANNOUNCEMENTS" section also features the webinar announcement. The "LATEST SHARED FILES" section includes a file titled "FRENCH HYDROXYCHLOROQUINE + AZITHROMYCIN TRIAL" by John Invernizzi.