

**Webinar Title:** [COVID-19 in the United States: Insights from Healthcare Systems](#)

**Overview:**

During this COCA Call, presenters will discuss the current impact of the COVID-19 pandemic on healthcare systems in the U.S., including key successes and challenges from the hospital response perspective.

**Date:** Friday, April 17, 2020

**Time:** 2 p.m. to 3 p.m. (Eastern Time)

**Aaron Harris, MD, MPH**

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**Nancy Foster**

Vice President, Quality and Patient Safety Policy  
American Hospital Association

**David Reich, MD**

President, Mount Sinai Hospital, NY

**Amy Compton-Phillips, MD**

Executive Vice President, Chief Clinical Officer  
Providence St. Joseph Health, WA

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Special guest: Dr. Robert Redfield, CDC, Agency for Toxic Substances and Disease Registry

- Greatest public health challenge in over a century. Declining in many parts of the country. CDC is grateful for all that you do.
- Advising how to keep safe during this crisis. Updating guidance and practical tools.
- Learning more and more about this virus and how it is spread.
- Last month report of 10K HCP positive --- most did not require hospitalization. Now is closer to 16K infected.
- From January to late February, only 14 cases. 11 were diagnosed on epidemiological links. Community transmission has exploded since then. Public health strategies weren't able to contain.
- Opening up America strategy. Containment is dependent on early diagnosis. Comprehensive contact tracing. New diagnosis. Isolation.
- Important that we build this team together. We may be back again against this virus.

Dr. Harris

- Learning early lessons.
- Acceleration phase of pandemic.
- 30 states reporting widespread covid spread
- 12.3 per 100,000 persons with highest rate 38.7 per 100K for 65+
- Modifying surveillance systems to track covid19 impact on health systems.
- Hospitals that are pre-crisis can learn from those on the frontlines.

Foster

- AHA has been pleased to push out guidance.
- We constantly hear from members that they want more from CDC.
- Healthcare systems are highly varied. Some are multi state, regional. Some with core hospitals. Academic medical centers. Some that are smaller coalitions of hospitals to share information and resources.
- Strengths of a health system are many:
  - Data teams. Data drives decisions and is shared. Gains consensus from the literature about what they can do.
  - Move resources as needed. More purchasing power. Access to capital. PPE, vents, etc. Many hospitals are under tremendous financial stress. Systems able to sustain. Deeper set of resources. Critically worried about standalone critical access hospitals and standalones that are experiencing stress and don't have the same depth of financial resource to turn to. Bankruptcy or other severe steps.
  - Staff with requisite expertise. Innovative strategies.
  - Existing telehealth platforms. Able to augment and ramp up to do virtual visits. Sets a template for future.
  - Centralized system. Sharing data and resources and think strategically.
- Those that cross state lines have had some particular challenges during outbreak.
  - Keeping up with statewide decisions. Can take time and resources away from patient care. Moving forward want to work more effectively across states and with the fed gov.
  - Coordinating force in a community. Largest provider. Some hospitals are so busy preparing themselves to care for covid patients that it is a challenge to help others in their preparation. Nursing homes and smaller hospitals and private practice. Need to think about that for the future.
  - For larger hospital systems, harder to maintain link to community. Maintain trust. Engage with local communities. On the minds of many.

Dr. Reich (Rich), Mount Sinai

## COVID-19 Response: Major Challenges



Personal Protective Equipment	Workforce Management	Physical Plant and Increase Capacity	Testing and Therapeutics
<ul style="list-style-type: none"><li>• Supply chain</li><li>• Staff training</li><li>• Contingency planning</li><li>• Extended use and limited reuse of PPE</li></ul>	<ul style="list-style-type: none"><li>• Communication</li><li>• Employee engagement</li><li>• Leadership redeployment</li><li>• Increasing the workforce</li><li>• Team-based care model</li></ul>	<ul style="list-style-type: none"><li>• Expansion of Critical Care capacity</li><li>• Increase number of negative pressure rooms</li><li>• Non-traditional patient care spaces</li><li>• Telemedicine</li></ul>	<ul style="list-style-type: none"><li>• In-house testing</li><li>• Ventilator acquisition and management</li><li>• Convalescent plasma program</li><li>• Clinical Trials</li><li>• Anticoagulation Protocol</li></ul>

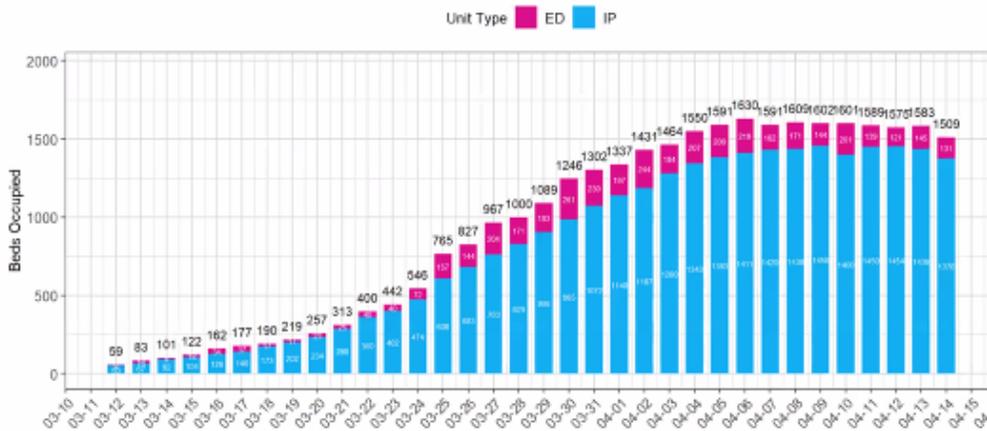
- Equipment is changing each day

- Leadership redeployment – some locations overrun. Two of the key leaders became ill. Key message is that when you have to send substitute leaders in, we sent in a team. COO, CNO and a delegation from multiple departments. Swarmed in with the new leadership team and acted as a system to decant patients.
- 4 times the normal number of patients on vents.
- Telemedicine increased 1000-fold. 25 in January to 2500 in March.
- For Mount Sinai’s hospitals:

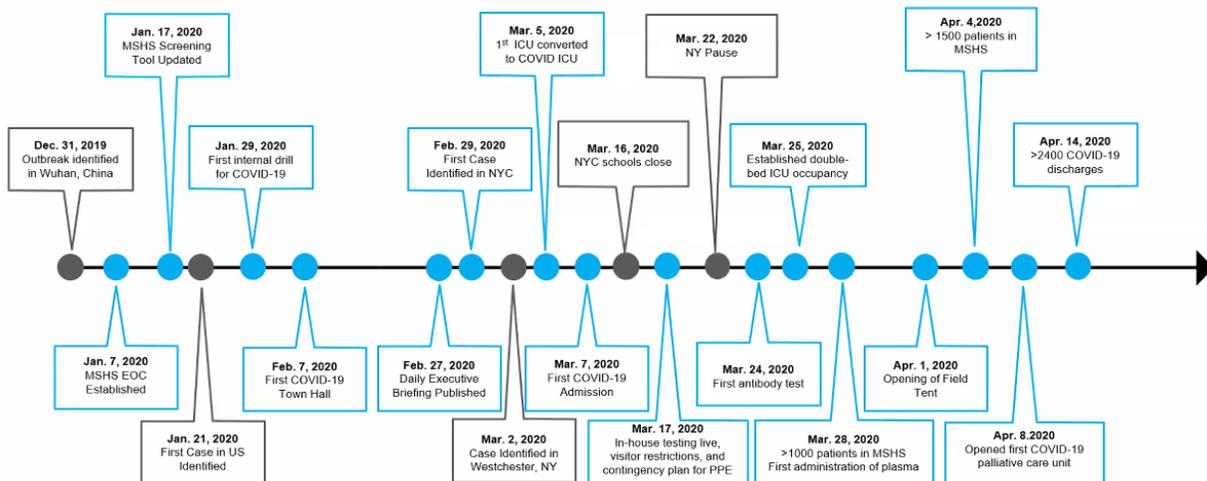
## MSHS Hospitalizations COVID-19



MSHS Hospitalized COVID-19 Patients Census by ED vs. IP



## MSHS COVID-19 Timeline



- Worked with Roche for diagnostic testing to get quicker results.
- EUA from FDA on serological test to begin convalescent plasma study. Qualitative testing. Also doing titers.
- March 26<sup>th</sup> – two patients in ICU rooms. Over 30.

- Psychological benefit to N95s.

## Contingency Standards for PPE



- ▣ Limited reuse and extended use of N95-respirators
- ▣ Several units are “extended use PPE” units
  - Extended use of isolation gowns
    - The patient is not on contact precautions for another pathogen
    - The gown is not ripped, torn or soiled
    - Gloves are removed and hand hygiene is performed



NYC DOHMH Alert # 8 - COVID-19 Updates for New York City published 20Mar20. published 20Mar20  
<https://www.cdc.gov/coronavirus/2019-ncov/hcp/respirators-strategy/contingency-capacity-strategies.html> published 29Feb20

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- Contingency standards for PPE – extended use PPE units – used colored zone markers
- Redeployment of staff and leadership. Educational materials on respiratory care.
- Pay crisis pay to everyone other than physicians. Admin, nurses, support services, etc.
- Crisis hotlines for staff wellness
- Negative pressure rooms

## Critical Care and Negative Pressure Capacity (MSH)



- ▣ Transitioned 10 adult units to COVID-19 ICUs
  - 94 licensed beds to 240 adult ICU beds
  - Doubled occupancy in ICUs by placing two patients in a single occupancy room
- ▣ Converted 260 patient rooms to negative pressure using HEPA exhaust fans
- ▣ Incorporated remote patient monitoring and point of care monitoring
- ▣ Expanded inpatient telehealth and consultation

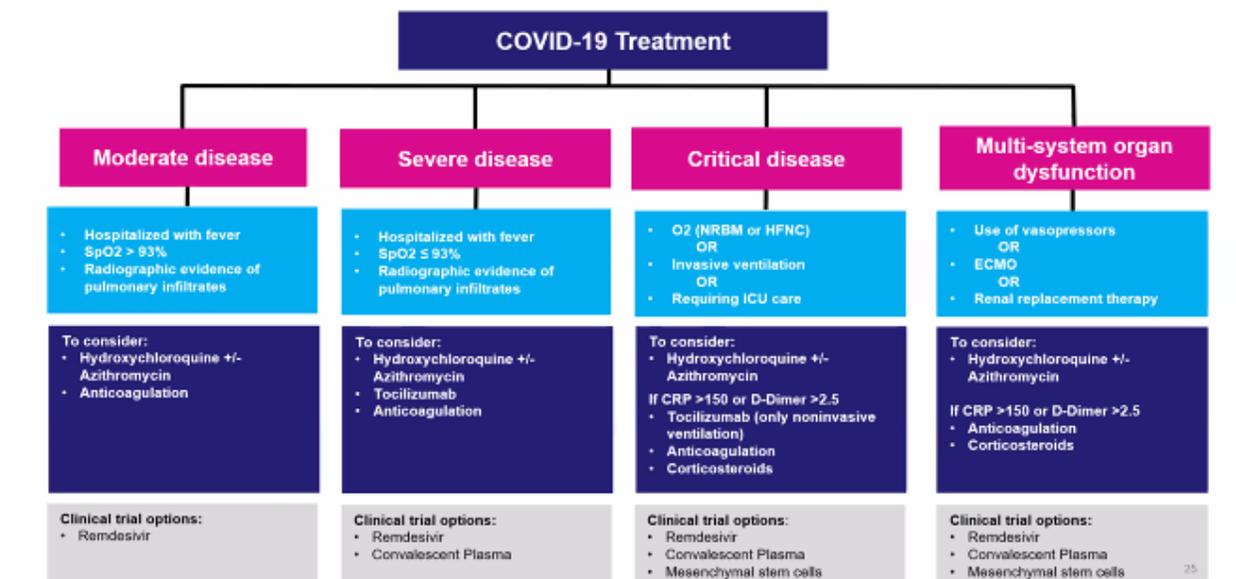


## COVID-19 Antibody Testing



- ▣ Adapted a research laboratory-based serum antibody assay to the CLIA-certified clinical microbiology laboratory
- ▣ Began screening high-risk healthcare workers and MSHS COVID-19 PCR positive patients on March 24, 2020
- ▣ Offered plasma donation to individuals with antibody titers > 1:320
- ▣ Adjusted timing to better define optimal eligibility for donation
  - Over 21 days since symptom onset and full resolution of symptoms for over 14 days
  - Prioritized known positive COVID-19 recovered patients interested in plasma donation in partnership with New York Blood Center

## COVID-19 Therapeutics and Trials



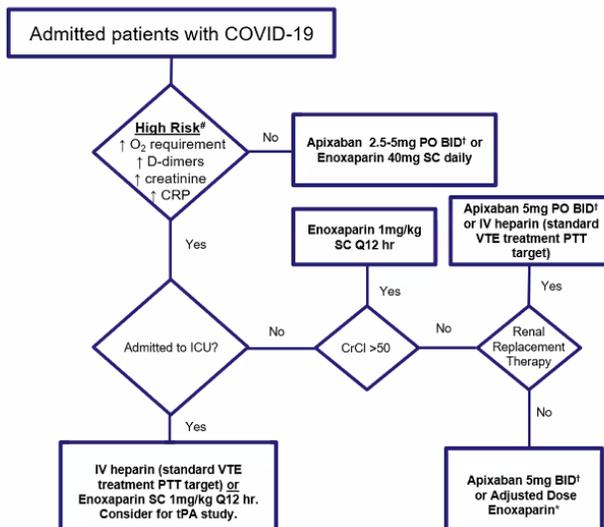
- Stratifying was very critical to staff.
- Plasma donation program – 91 patients have received convalescent plasma as of today.
- Heavy lift.

# MSHS Convalescent Plasma Program



Plasma Donation	Patient Selection	Consent & Enrollment	Transfusion	Monitoring
<ul style="list-style-type: none"> <li>NY Blood Center</li> <li>Recovered patients with COVID+ test</li> <li>Symptom-free for 14 days</li> <li>High levels of COVID-19 antibodies</li> </ul>	<ul style="list-style-type: none"> <li>Infectious disease physicians screening</li> <li>Inclusion Criteria:                             <ul style="list-style-type: none"> <li>&gt;18 years old</li> <li>Lab-confirmed</li> <li>Hospitalized for severe or life-threatening illness</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Mount Sinai Hospital</li> <li>eIND and EAP protocols with the FDA</li> <li>Blood type matching</li> <li>Phone consent with patients</li> <li>Expansion to other MSHS sites with EAP</li> </ul>	<ul style="list-style-type: none"> <li>Inpatient</li> <li>Coordination of research team and primary clinical team</li> <li>Streamlined order set and transfusion process</li> <li>Nursing education</li> </ul>	<ul style="list-style-type: none"> <li>Continued clinical monitoring</li> <li>EHR reports of oxygen requirements, lab values, clinical status</li> <li>Medical student chart review</li> <li>Artificial intelligence automation and modeling</li> </ul>

# Mount Sinai COVID-19 Anticoagulation Algorithm



- Inclusion:** All admitted patients with COVID-19
- Exclusion:** High risk of bleeding as judged by treating physician
- Obtain:** Baseline CBC, PT/PTT, D-dimer and daily CBC, D-dimer
- Anticoagulant:** Rivaroxaban may be used in place of Apixaban if CrCl >50.
- Consider treatment-dose AC** (Apixaban 5mg PO BID)† for 2 weeks post-discharge for patients on therapeutic anticoagulation while hospitalized
- High-risk for bleeding, consider:**
  - Platelet count <50,000
  - INR >1.5
  - Current or recent bleeding

# High Risk: No precise metrics exist. Consider exam (eg, O<sub>2</sub> sat<90%, RR >24), ↑O<sub>2</sub> requirement (eg, ≥4L NC), labs (eg, ↑d-dimers, C-reactive protein)

† Efficacy and dose not established; prophylactic or treatment dose acceptable

‡ If 2 of 3 reduce apixaban to 2.5 mg BID: ≥80 years, wt ≤60 kg, creatinine >1.5.

\* If CrCl <50: 1 mg/kg daily or 0.5mg/kg BID, anti-Xa level after 3rd dose

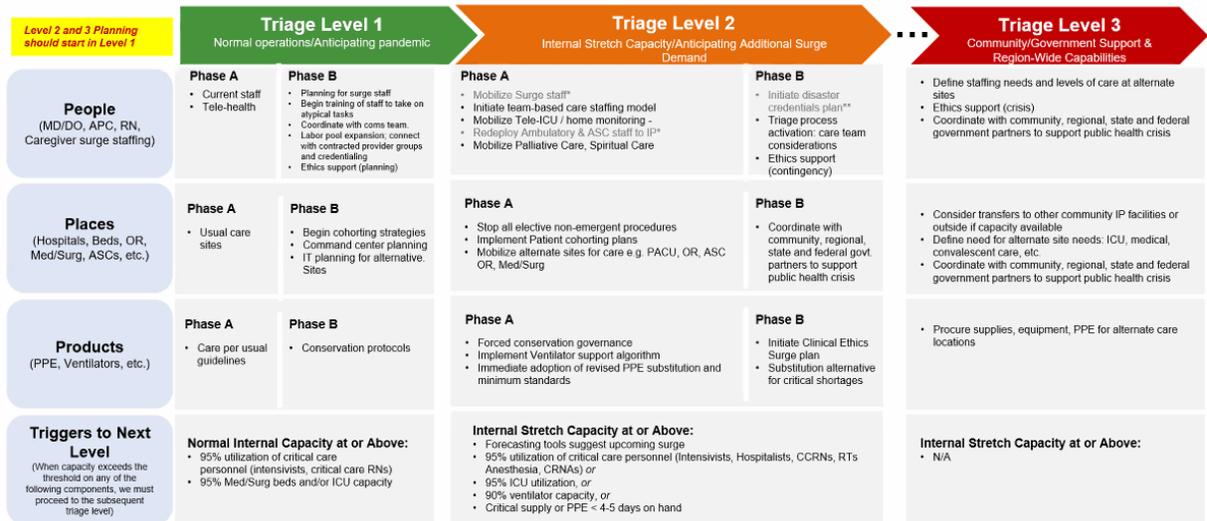
- ^not yet evidence based, but feeling strongly

Dr. Compton Phillips

- Large multistate system
- Had the first patient with COVID in the US.
- Created a pandemic playbook across the system. Approaching “post-crisis”.
- Realized early on that this was going to be bad. Wanted to try to get ahead of the curve.
- Triage Test Treat
- Create simplicity, leverage technology, anticipate community needs

- Leveraged their telehealth infrastructure. Built a chat bot to submit symptoms. Drive through testing.
- Virtual visits.
- Built a home monitoring program for high risk patients. When testing still had a long turnaround, we'd send home/keep home and have them monitor with provided thermometers, etc.
- Remote ICU monitoring. Will be helping some in NYS with this capability.
- 70000 in a year in 2019, 70K per week now for telehealth visits.

## Clinical Disaster Planning Framework

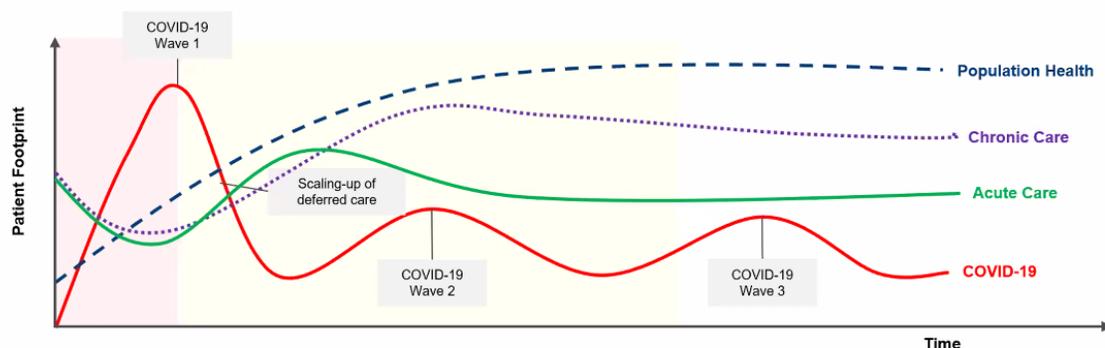


\*This content is covered in Triage Level 1, Planning for Surge Staff  
 \*\*Not included in this version of the playbook or included in alternate Triage level (content remains the same)

- Skills assessment and redeployment
- Ambulatory to inpatient
- Vent conversions
- Working with PPE manufacturers that are US based.
- We're phasing N95 protection back in now that supply lines have improved.
- Heart attack and strokes went down during height. Fear is keeping people away. For those that survive the treatment options are limited due to the time lapse.
- Use data to drive decisions.
- COVID data registry. Where they are in the moment and where we think we are going. Capacity planning.
- Tool helps us also look at outcomes. Of people who have been discharged who use EPIC. Operational learning and population level dynamics for research. 25% admitted die. 75% live. At the moment haven't had the racial demographic differences, but people of color tend to be younger than caucasian patients.
- Need syndromic surveillance. Could compare against previous years based on symptoms.

# Future of Clinical Care

As an effect of the COVID-19 pandemic, many patients deferred care. In the upcoming months, we expect the return of these patients, as well as anticipate new patient groups, to need care:



Care & Planning for all in age of COVID-19	Deferred Care		Community Needs
	Acute	Chronic	Population Health
	<ul style="list-style-type: none"> <li>During COVID-19 outbreak, hospitals experienced a reduction in standard acute care patients.</li> <li>Hospitals must develop and implement plans to address patients' concerns of infection to encourage patients to return.</li> </ul>	<ul style="list-style-type: none"> <li>Chronic conditions of patients may worsen during infection waves, which may result in increased need of care once waves subside.</li> <li>Potential for increase in elective surgeries due to mandatory deferrals during infection waves.</li> </ul>	<ul style="list-style-type: none"> <li>Anticipated increase of new patients resulting from the unintended consequences of the pandemic, like:               <ul style="list-style-type: none"> <li>Increased behavior-induced consequences, such as drug problems and alcoholism; and</li> <li>Deterioration of mental health, such as increased</li> </ul> </li> </ul>

- Looking to restart non covid clinical care on May 1<sup>st</sup>.
- Want to leverage telehealth visits.
- Talking to insurance and other payers about virtual care. Primary care capitation.
- Thinking of this moment with covid.
- Revamp the health care system.
- Expect more waves to prepare.
- Getting good Patient evaluation scores on their telehealth services.
- Having a reliable communication cadence has been helpful for staff. These reliable touch points in the chaos have been helpful.

## Q&A

- Q: Telemedicine strategies already in place and how scaled up?
- CP: On demand urgent care platform. 50-70 visits a day. Express Care Virtual. Also a telehealth program supporting 110 hospitals for telehospitalist, telebehavioral health, telestroke, etc. We could expand very rapidly. Turned on 7K primary care sites in one day. Zoom for primary care. InTouch for inpatient.
- R: 25 to 2500 overnight. Majority of that technology through EPIC. EPIC telephonic, video, etc. Dramatic number of covid19 new patient assessments. Mount Sinai NOW. Ramped up from 4 to 9 visits to 200 visits per day.
- Q: Have you quantified those who have avoided hospital care?
- R: Shocking how empty our ED is. 25 in ED. Number usually 4 times that. For whatever reason people are hiding at home with their chronic conditions. Unknown what will happen once people feel comfortable coming out again. 98% reduction in elective surgery.
- CP: Really interesting to look back to the rate of strokes, etc. Seeing anecdotes. Ours are down by half. Anecdotes from our ERs ... patient loss vision and didn't want to bother daughter for 3 days. He had a completed stroke.

- Q: PPE – how did providence optimize PPE and vents?
- CP: Ebola level PPE at first. Rapidly went down to contact airborne protection. Required 6 changes of PPE per shift, up to 22 when in the ICU. Started early ordering PPE and conserving. Had some grace. Went down to droplet precautions early in March. Large shipments finally are getting through. Starting to go back to CDC recommendations re: respirators.
- Because suppliers are different, staff challenges. Staff unfamiliar with the changes, have to convince that alternatives are just as good. Not sure that we have everyone's full trust. Part of why trying to go back to respirators as soon as we can. Mentally and physically. Want to keep staff healthy and whole.
  
- Q: Strategies to move patients between facilities.
- R: Mount Sinai transport system has saved lives. Nothing short of miraculous.
- CP: Never hit the point where we were totally overwhelmed. Started cohorting to one facility and that didn't work – then reverse cohorting. Non covid patients into one facility for urgent acute needs.
  
- Q: Ill HCPs – paid leave? CDC guidance for returning to work helpful?
- R: Advanced public health department, state DOH and CDC. Slight deviance in terms of number of days. Healthcare system was overwhelmed. We are bringing people back to work after 72 hrs of resolving symptoms. 7 days after diagnosis. A little different from CDC, but the expediency of maintaining a workforce led to the different interpretation.
- CP: Used CDC guidance. Lots of HR policies. Continued pay. ASCs and primary care offices that stopped doing work, but we continued their pay even if we couldn't repurpose their skills. 80 hours of time off. Added short term disability for those who were new. Backup child care. Contracted with an agency for drop in childcare. Gave 100 a day to find their own when drop in not available. Life circumstances. Worked closely with HR.
  
- Q: Lessons learned so far. Any new strategies that you'll continue using even after crisis?
- R: Learned how to bring together 5 committees to establish something new in two days. Anticoagulation protocol. It's possible. Bureaucratic arguing ended quickly.
- CP: Same here. Also that listening is great but decisions are critical. Even if you don't know something, communicating that you don't know is important.
- Foster: AHA – Amazed at the number of novel organizations not normally part of health care have stepped up. Federal agencies can move swiftly when needed. CDC, CMS, FDA.