



INNOVATIONS

R I V E R S I D E U N I V E R S I T Y
H E A L T H S Y S T E M

2020 Spring Edition

RUHS Innovations Workgroup

REVISED: June 1, 2020

Long-term Facilities
Community Testing Sites
OBGYN
Pediatrics
CHC Virtual Visits
Informatics
Surgery
Behavioral Health
Pharmacy
Marketing

COVID-19
Clinical
Innovations



During these unprecedented times, Riverside University Health System (RUHS) has responded quickly, creatively, and resourcefully in order to safely serve the changing needs of patients and the community. In learning about the rich and varied practices and programs developed at RUHS during the COVID-19 crisis, we decided that it was important to capture and catalogue these moments of inspiration and innovation in order to share and build upon the good work that has been accomplished by our teams during these difficult times. In this first edition, you will see examples of how our Pediatrics, Obstetrics and Gynecology, Surgery, and Pharmacy Services have redesigned and reimagined care in order to prioritize patient safety during a time of uncertainty and new risks. The Community Test Sites and Long-Term Care Facility Testing are examples of de novo services that were developed almost overnight in order to address new needs and serve the health of the greater community and Inland Empire region. Video Visits, Telephone Visits, Web-Based Chat, Remote ICU Monitoring, and Real-Time Dashboards provide a glimpse of how futuristic technology is being harnessed today to provide synchronous and convenient patient-centered care. And the summary on Tele-Town Halls and the Innovation Webinar Series are examples of how RUHS is committed to supporting knowledge sharing and education among community and community partners in order to advance the health of our county and our region.

Thank you for taking a moment to learn about some of the exciting and innovative work at RUHS. A special thanks to Dr. Edward Bacho and our Marketing Team for helping us capture and share this meaningful work. We hope that this will be the first of many editions to come!

A handwritten signature in black ink, reading "Geoffrey Leung".

Geoffrey Leung, MD, Ed.M.
Ambulatory Medical Director
Chief of Medical Staff
Riverside University Health System



C O N T E N T S

| Page | Section |
|------|---|
| 4 | Section 1: Long-term Care Facility COVID-19 Testing Team |
| 9 | Section 2: Community Test Sites |
| 15 | Section 3: Gynecology and Obstetrics |
| 18 | Section 4: Pediatric Care in Cars |
| 20 | Section 5: CHC Virtual Visits |
| 24 | Section 6: Informatics COVID-19 Projects |
| 29 | Section 7: Surgical Services in Times of COVID-19 |
| 32 | Section 8: Behavioral Health Take My Hand |
| 34 | Section 9: RUHS MC Pharmacy Frontline Support |
| 37 | Section 10: RUHS Marketing |



Section 1

Long-term Care Facility COVID-19 Testing Team

Frank Flowers, M.D.; Paula Guzman, R.N.; Mahbuba Khan, M.D.; Jonelle Morris; Shunling Tsang, M.D.

These are unprecedented times and long-term care facilities play a critical role in protecting the stability of our healthcare infrastructure. Now more than ever, our residents are relying on the expertise, training and compassion of front-line healthcare workers like the staff at the different facilities. As a facility that houses potentially vulnerable patients, we want to ensure that all of the staff are comfortable with the amount and type of training provided on caring for patients with COVID-19. Functioning as part of the County's Emergency Operations Center (EOC), teams have been activated to assist facilities in the following manner: 1. Provide Personal Protective Equipment [PPE] (quantities subject to availability), 2. Conduct training on appropriate donning and doffing of PPE, 3. Provide information on COVID-19 and lessons learned about containment measures, 4. Provide information on the process for resource ordering and disease control investigations, 5. Assess supply chain and operational needs. These teams are here to provide support and guidance as we navigate the COVID-19 response. The visits were not in any way meant to be regulatory or punitive in nature. We are all in this together; we are ONE TEAM, ONE FIGHT.



1.1 TESTING TEAM

- Lead: Paula Guzman (RN)
- Jennifer Gray (RN)
- Efrain Perez (LVN)
- Michael Wirz (LVN)
- Daniela Peralta (LVN)
- Isabel Cid de Benitez (LVN)
- Tristina McDowell (MA)
- Tara Guzman (volunteer)

1.2 SUPPLIES

- Personal Protective Equipment (PPE)
 - Gowns
 - N95 Masks
 - Gloves
 - Face Shields
- Specimen Collection Supplies
 - Collection tubes
 - Specimen bags
 - Ice chests for specimen storage
- Other Necessary Supplies
 - Alcohol-based hand sanitizer
 - Cleaning wipes
- Forms
 - Persons Under Investigation (PUI) Forms
 - Asymptomatic Forms

1.3 SCHEDULING AND ONSITE PROCEDURE

1. Public Health Nurse and EOC contacts COVID-19 Testing Team about the facilities of concern
2. COVID-19 Testing Team lead will contact the Administer or Director of Nursing (DON) of the facility to send us the list of residents (with date of birth) and employees (including date of birth and non-facility specific contact information) and schedule the date for testing
3. The resident and employee list go to Community Health Center (CHC) Operation Director
4. CHC Operation director assign CHC clinic team to register the residents and employee in Epic
5. COVID-19 Testing Team notified once the registration completed
6. COVID-19 Testing Team lead confirms the time of testing with the DON/Administer of the facility and coordinate PPE donning/ice for specimens and space for employee testing
7. On the day of testing, COVID-19 Testing Team will go to the nearest CHC clinic and work on required items needed for testing, assemble PUI form, lab requisition and patient labels to the CHC clinic early of the day of testing to assemble all labels and orders.
8. Once Complete COVID-19 Testing Team will meet outside the facility and sign in on a time log and all team member will put on PPE before the enter the facility.
9. COVID-19 Testing Team enters facility and follows facility protocol of signing in and having temperature checked. Once team is cleared, they meet with DON/Administrator on where team will set up and discuss team lead's plan for testing.
10. Team verifies with resident if residents can verbalize D.O.B or verifies residents D.O.B by arm band. Facility has already notified residents /CG/DOPA prior to our visit of the testing that SNF task force will be conducting.
11. Once team verifies patient/employee to be tested the specimen is obtained by team member and given to scribe to add to our resident/employee log and then lab requisition is placed in lab specimen bag. The specimen is placed on ice. (specimen will need label with residents/employee's name, PUI for Public Health and a lab requisition)

12. While this is being completed the COVID-19 Testing Team member has cleansed hands and puts new gloves on and continues with testing until all residents/employee testing is complete (task member cleanses hands after each specimen is obtained and changes gloves)
13. Once testing is all complete COVID-19 Testing Team list is verified with list sent by facility and if any residents /employees are not tested the team lead verifies with DON/Administrator the reason and the team lead reports to EOC team with an end of day report
14. COVID-19 Testing Team verifies number of specimens collected comparing list given by facility and with resident/employee log written as specimens are obtained. Counts will need to match if not team will compare all specimens collected to resident/employee log
15. Once specimen count is confirmed COVID-19 Testing Team will return to assigned space and remove PPE except mask and wash hands. Team lead will notify Kim Bowker that COVID-19 Testing Team will be taking specimens to nearest CHC location. Specimens are kept on ice until dropped off at CHC
16. Residents and employees not tested: Appointments and lab tests are cancelled from EPIC
17. COVID-19 Testing Team exits facility and signs out on time log. Team lead will notify EOC with an end of day report and will scan resident/employee specimen log and email to Dr. Tsang. Team lead will get direction from Barbara Cole on next testing site
18. COVID-19 Testing Team lead will notify CHC in Riverside with end of report with testing not conducted on a preplanned resident or staff and CHC will cancel appointment and order in EPIC

1.4 RESULTING PROCEDURES

Prior to testing, the EOC resulting team receives notification of:

- Skilled nursing facility (SNF) site location
- Contact person at SNF (SNF Administrator) including name, fax and email
- List of Residents to be tested
- List of Employees to be tested

After testing at the SNF is complete, the EOC resulting team receives the skilled nursing facility report including:

- List of residents tested and not tested (including reasons for not testing) List of employees tested and not tested (including reasons for not testing)
- Any additional relevant notes regarding testing including what CHC site specimens were taken to while awaiting pick up

EOC resulting team will complete the following activities for each SNF tested:

- Create a SNF specific LOG using excel to track and document results in the SNF folder in SharePoint
- Add SNF specific facility and summary of results to the Results Tracking Log under the SNF tab in SharePoint
- Missing or leaked results are communicated via the specified SNF LOG
- EOC resulting team will communicate all positive results to the individual SNF employee
- Resident results will be communicated to the facility administrator for internal communication (no results will be directly communicated to the patient's family unless explicitly asked to do so)
- Daily reports are given to Barbara Cole until completion of all found results
- Barbara Cole will communicate Resident and Staff Logs with results to the SNF Administration identified via fax or email



Section 2

COMMUNITY TEST SITES | DRIVE-THRU TESTING

Kimberly Bowker; Mahbuba Khan, M.D.; Jonelle Morris; Shunling Tsang, M.D.

Drive-through testing an important step toward curbing the pandemic. RUHS started with Indian Wells Church testing site on March 20th, currently we have 4 testing sites with capacity to test 2000 per day. The sites are operated by 100+ CHC staff members. There are 2-4 lanes currently operating for each site. Residents call 1-800 COVID line, schedule appointment, drive up in their cars, and medical staff (clad in full protective gear) comes to administer the swab test—the entire procedure takes about 15 minutes. After the test, the swabs are sent to a laboratory for testing, usually with results within 2-10 days, those who are tested are given written instructions (After Visit Summary) and asked to self-quarantine until they're aware of their results (if they're found to be positive, they'll be asked to take medical precautions and further self-isolate).

COMMUNITY TESTING SITES

2.1 Locations

| Dates | Hours | Location | Address |
|---|-----------------------|--------------------------------|--|
| 3/19 to Current Tuesday- Saturday | 6:30 am to 1:00 pm | Indio Fairgrounds | 46350 Arabia St. Indio Ca. 92201 |
| 3/21 to 3/23/20 Sunday- Thursday | 9:30 am to 3:00 pm | Lake Elsinore Storm Stadium | 500 Diamond Drive, Lake Elsinore, CA 92530 |
| 4/1/20 to Current Tuesday - Saturday | 9:30am to 3:00 pm | Harvest Christian Church | 6115 Arlington Ave. Riverside Ca. 92504 |
| 4/14/20 to Current Tuesday - Saturday | 9:30 am to 3:00 pm | Perris Fairgrounds | 18700 Lake Perris Dr. Perris, Ca. 92571 |
| 4/22/20- 04/25/20 Wednesday - Saturday | 8:00 am to 3:00 pm | Blythe Fairgrounds | 591 Olive Lake Blvd. Blythe, Ca. 92225 |

Table 2.1 List of community testing site information

2.2 Staffing mix for two lines

| # Staff | Position | Job Description |
|---------|---|--|
| 1 | Front entry & List verification | Can be non-clinical; Verification that pt. has appointment |
| 2 | Car directors & connect to registration | Need one for each line, will direct line traffic and manage line flow. |
| 4 | MA | Scribers non-clinical to complete paperwork when pt. drives up |
| 4 | Floater | Run the completed paperwork to the testing tent |
| 4 | Nursing teams | Collecting specimen (RN paired with an LVN OR a provider paired with an LVN) |
| 2 | LVN's or MA's | For processing specimens in tent. Make sure paperwork is in bags, etc. |
| 1 | Clinical Lead | Lead the clinical staff in both lines |

| | | |
|---|------------------------------|----------------------------------|
| 1 | Logistics manager/specialist | Logistics |
| 1 | Exit Guard | To direct patients out of event. |
| 4 | Security | For safety |

Table 2.2 Community Test Site staff roles

2.3 Staffing requirements

| | |
|--------------------|---|
| Huddle: | Role assignments, i.e.: assign leaders, testers, scribes, floats |
| Patients per Hour: | 27 patients in one (1) hour |
| Mid-Day Huddle: | Barriers, what worked, what did not work, etc. |
| End of day count: | Counts on testing supplies, PPEs, and specimens, at the end of the day. |
| Contact Lab Corp: | Contact LabCorp for pick up at site- Sara Lopez- 760-972-7314 (Desert) and Allon Hull- 213-259-7585 (Lake Elsinore) |
| LabCorp Pick-up: | End of day, Lab Corp to pick up specimens. |
| Dry Ice: | Team needs dry ice to keep specimen frozen. |
| Supplies: | Need supplies contact Melissa Palma 951-534-3760 at DOC |

Table 2.3 Staff performance requirements

2.4 EMD Resources: Coordinate Security/Signs

| | |
|-------------|----------------------|
| East County | Name: Contact Number |
| West County | Name: Contact Number |

Table 2.4 EMD contact information

2.5 External Security and People Management: Coordinate Security/Signs

Countywide GSSI- Gary 909-270-1187 (Specify they are calling for RUHS)

Table 2.5 External security contact information

Internal Clinic Operations

| | |
|-----------------|--|
| Goal: | Run 4 lines of cars Each line can do 27 tests per hour |
| Providers: | 1-2 Provider level people to assist with testing (NP, PA, or MD) |
| Staffing Needs: | How many staff to run each line of cars Total of 7 volunteers per day per line (full day shifts please) |

Figure 2.6 Goals and staffing needs

Process for Drive-Up Testing

| Step: | Process: |
|------------------------|---|
| Call in | 800-945-6171, patient calls number to be scheduled |
| Scheduling | When patient calls in appointment is booked for the drive up |
| Drive up | Patient arrives at drive up location |
| Verification | Non-clinical staff verifies that patient has appointment |
| Car Directions | Car director, directs the patient to the appropriate drive up line |
| Registration | The MA completes PUI and LabCorp requisition |
| Prep for testing | Provider/nurse presents to patients' vehicle, verifies patient demographics and date of birth. |
| Specimen Collection | Provider or nurse completes test |
| Processing of specimen | Provider or nurse hands off test to LVN for processing |
| End of day Process | Counts on testing supplies, PPEs, and specimens. Contact LabCorp for pick up at site- Sara Lopez- 760-972-7314 (Desert) and Allon Hull- 213-259-7585 (Lake Elsinore) Lab Corp to pick up specimens. |

Figure 2.7 Drive up testing process

Key Call Center Staff:

Key contacts for call center staff for appointments and for site Contact for questions, schedule changes, and problems.

| Name: | Contact Information: |
|--------------|----------------------|
| Hugo Alvarez | 951-438-0199 |

2.9 RESULTING

1. Patients are notified of negative results via the Inphonite phone system
2. Patients are notified of positive results via phone by a licensed staff member (MD, RN, LVN)
3. Positive results are required to be reported to the local public health jurisdiction
4. The local public health jurisdiction determines whether a case investigation is warranted
5. Instructions given for off work note/return to work/repeat testing

“Drive-through testing is an important step toward curbing the pandemic.”

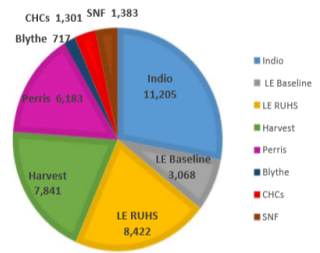


Figure 1 COVID-19 testing team

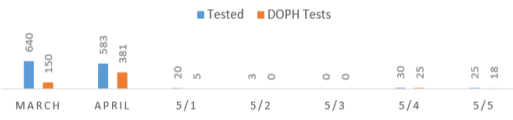
CHC COVID-19 Testing Dashboard

COVID-19 TESTING DASHBOARD 5.6.20

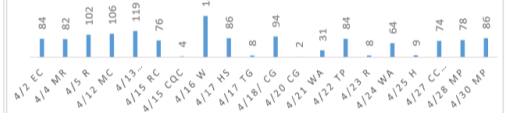
TOTAL TESTS DONE 3/20-5/5



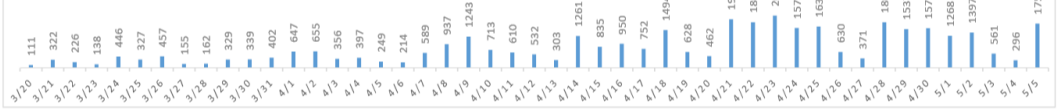
COMMUNITY HEALTH CENTERS TESTING



SNF FACILITY TESTING



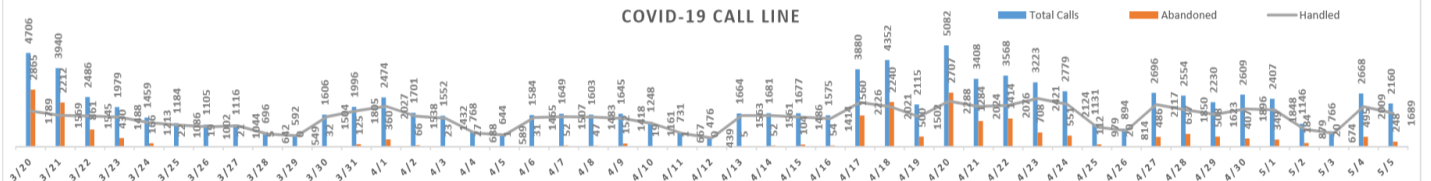
COMMUNITY EVENTS DAILY TOTAL TESTED



COMMUNITY EVENTS TESTED



COVID-19 CALL LINE



Graph 2.1 RUHS COVID-19 testing dashboard, Revised 5/6/2020



Section 3

GYNECOLOGY AND OBSTETRICS | COVID-19 PROJECTS

Ronald B. Johnson, M.D.

The obstetrics and gynecology group at Riverside University Health Systems was established on January 16, 2017. The goal was to have a Women's Health Center that could meet all of Riverside county's women's needs from birth to senescence. We are a Loma Linda University based group of faculty that is dedicated to serve the RUHS community. In addition to the clinics for general OB and GYN care, we have Gynecologic Oncology, Uro-gynecology, Maternal-Fetal Medicine and staff that are able to do Minimally Invasive Surgery with laparoscopic and robotic approaches.

3.1 E-Visits

We began using e-visits early on in the course of COVID. We started with telephone visits but rapidly transitioned to video visits when possible. The limiting factor was the tech sophistication of the patient population but, due to the prevalence of smart phones, was not as big a lift as we had imagined. Some of the lessons learned were:

- 1) Video trumps telephone as it is more personable. The patient is speaking to a visual presence.
- 2) Appointments are made for the patient to be available at the time of the connection.
- 3) We started with using MyChart in Epic but found that many patients had not signed up for it, so this group got pushed off video onto telephone.
- 4) We then progressed to Doximity, which originally had only telephone but quickly added video functionality. The provider sends a link to the patient to click on and it immediately opens up a web page for a communication portal.
- 5) We also solved a language barrier issue as the provider can send a link to the patient and the MA and it becomes a three-way call with the MA translating.
- 6) We are doing about 12 per half day per provider.
- 7) This can be done equally as well while sitting in the clinic or sitting at home.
- 8) A single MA is all that is needed to service 1 provider.
- 9) We hope to mimic this process with some revisions in the remote CHCs this coming year.

3.2 Remote Jail Visits

One of our other projects prior to COVID was doing remote visits in the jail system. It costs \$1500-2000 for the county to bring a patient in for a clinic visit. We are working with the nurse for the RCJ system to have the equipment not only to do video visits but also to be able to run an NST and send us the strip for review. RCJ will need to purchase an US and fetal monitor to make this happen. This would be doubly beneficial during the time of COVID.

3.3 Labor and Delivery

We have made plans for L&D that we will keep if there is ever a similar surge or infectious process.

- 1) We plastic zipped and isolated half of the unit for COVID pos and PUI and COVID neg patients. With a trail of barriers, we were able to separate the pathways for + and - patients if we need to bring them up from the ER for a room or take them to the OR for a C-section.
- 2) In the positive or PUI area we have providers and in room nurses wearing maximum PPE and when we need the NICU they arrive, we deliver the patient and immediately walk the infant to a bassinet at the door and place the baby in it. We avoid burning PPE by doing this and do not put the pediatric team at any risk.
- 3) We had at one point developed a complete barrier and treat plan to move L&D and the NICU to the outpatient surgery center in the MSC but fortunately did not have to deploy this. We have a detailed plan if ever needed in the future.

3.4 Covid-19 Testing in Pregnancy

We have also developed a screening algorithm for the purpose of testing all pregnant patients and a support person for a rapid test before admitting them. As these are just coming online, we have no experience with the process but have a reasonable idea that it will not be a problem. Our long-term plan is to have a larger L&D waiting area with a MUC sitting at a desk to verbally screen and direct patients to triage when they come in. This is a big remodel that we hope to do in the next year. We hope that this crisis also allows us to upgrade our laboratory facilities to be a leading reference lab for the county. We will start on the project later this year.

Our message to the county population isn't just that we can offer more services here than ever before but at the highest degree of safety and quality. We want to be a destination point for patients who need special care and services.



Section 4

PEDIATRICS | CARE IN CARS

Chad Vercio, M.D.

Cough, runny nose, sore throat and fevers. These are all things we commonly encounter in our pediatric clinic and the COVID 19 epidemic has presented significant challenges to evaluating our patients with these symptoms. Previously probably not a day went by without us seeing at least one patient with these symptoms and we had no concerns about seeing them. Given the current situation we have concerns these could represent COVID and present a risk to other patients, caregivers or our staff and so have had to find alternative ways to make sure that patients get the help they need in clinic. One of ways we have done this is through video visits with patients so we can evaluate the possibility for having a diagnosis that would require a prescription such as strep throat, an ear infection or pneumonia. If they are over age 1 and do not have severe symptoms, then video or telephone evaluation is often adequate. However, we needed the capability to evaluate patients in person as well. To do this we developed Care in Cars so that we could evaluate the patient in their car and perform a brief physical exam to assess their risk for the diagnoses which would necessitate treatment.

4.1 Pediatrics Care in Cars

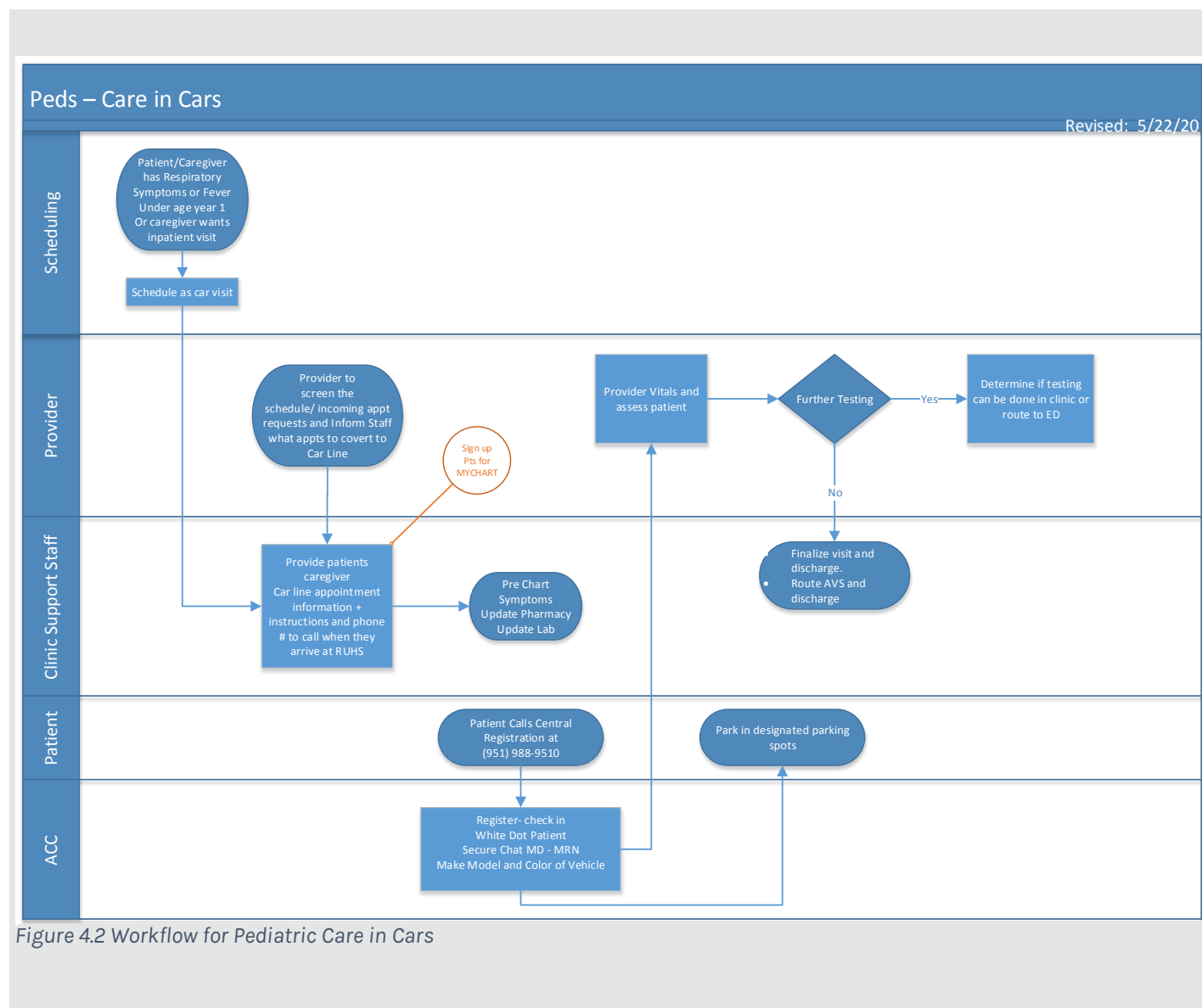
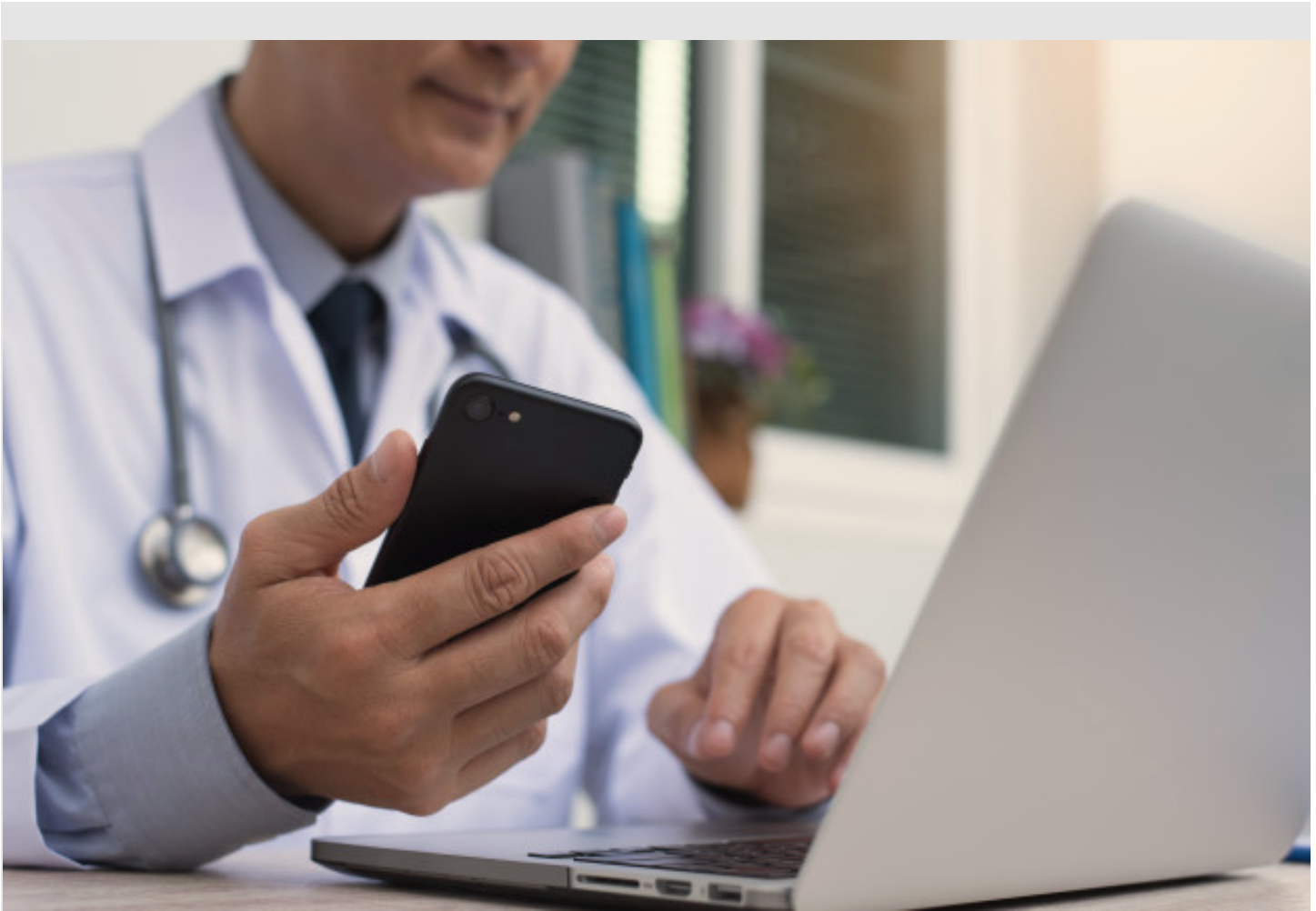


Figure 4.2 Workflow for Pediatric Care in Cars



Section 5

VIRTUAL VISITS | TELEPHONE AND VIDEO VISITS

Edward A. Bacho, M.D.

Telephone and video visits can go by many names: telemedicine, telehealth, e-visits, or in the case at RUHS – Virtual Visits. At the local onset of the COVID-19 pandemic, the RUHS Medical Center and Community Health Center (CHC) clinics needed a way to continue providing the high level of care that RUHS patients are accustomed to, all while decreasing the risk of exposure. This is where virtual visits found its natural fit as an option for patient care. The previous implementation of the telephone visit platform and workflow at RUHS starting in 2014 gave providers an advantage allowing a quick transition into providing patient care virtually. Video visits were in the planning phases prior to the pandemic. Recognizing the need for adding video visits as an option for patient care, the Informatics Department was able to fast-track the development of the platform which was made available for use near the local onset of the pandemic. The virtual visits platforms were enhanced with supporting progress note templates, training, remote work capabilities, and provision of mobile devices.

5.1 Phone Visits

The RUHS CHC clinics were at an advantage at the onset of the COVID-19 pandemic due to the prior implementation of provider phone visits with patients in 2014. Prior to the pandemic, phone visits were integrated into provider schedules, typically slotted in at the start and end of the day. The phone visits were structured as 10-minute encounters in which quick visits, such as delivery of important diagnostic results or outreach to prioritized patients, could be delivered. Providers also had the ability to add or overbook phone visits throughout the day. The phone visits added a complimentary visit type to increase patient access to the CHC clinics.

At the onset of the pandemic, operations, provider leadership, and scheduling collaborated on rapid cycle solutions to decrease exposure of our at-risk patients and staff to potential spread of infection by implementing schedules comprised of mostly virtual visits. These virtual visits include both phone and video visits. Initially the phone visits were continued to be scheduled at 10-minute intervals. Based on provider feedback, the initial 10-minute structure of the phone visits was converted to 20-minute visits to accommodate phone visits carrying an equivalent breadth and depth of work to a standard face-to-face in-person visit. Provider locations were also divided into a rotating work-from-home schedule and an in-clinic schedule to decrease risk of infection and to allow the physical space in clinics for recommended 6-foot distancing for those on site.

Off-site access was granted to providers through remote desktop, virtual desktop, and mobile platform solutions. Providers were issued county mobile devices (iPhones and iPads) to allow access to the mobile versions of the EHR (Epic Haiku and Canto) for chart review activities. Providers were also granted the ability to utilize other platforms outside of the Epic EHR to contact patients, including personal mobile devices in combination with apps such as Doximity Dialer.

Epic EHR phone visit progress note templates were developed to give providers access to tools that assist in maintaining appropriate quality of documentation to match the level of care provided. Virtual and elbow-to-elbow training efforts were implemented to support our providers. Daily Trifecta (Physician-In-Charge and Operations) meetings and daily informatics meetings are held to problem-solve, set goals, and act as a communications point where the teams can receive and deliver information to their clinics.

5.2 Video Visits

Prior to the pandemic, video visits were not being utilized within the CHC clinics. With the decision to transition to a majority virtual visits, the effort to develop a video visit platform for patient care was fast-tracked and available near the onset of the pandemic. Video visits are built into the provider schedule in using the same 20-minute intervals as in-person face-to-face visits to allow providers the same ability to meet the needs of the patients. Onsite providers utilize a standardized setup of desktop computer to access the EHR and iPad to access the video platform (Epic Canto). Providers working from home received County mobile devices (iPhones); the devices allow providers to access the mobile version of the EHR (Epic Haiku) for video to be used in combination with personal computers for documenting within the EHR. Providers were also

granted the ability to utilize other platforms outside of our EHR video platform to contact patients, such as HIPAA compliant versions of Zoom (Health license) and Doximity. Video-specific progress note templates were developed to give providers access to tools that assist in maintaining appropriate quality of documentation to match the level of care provided.

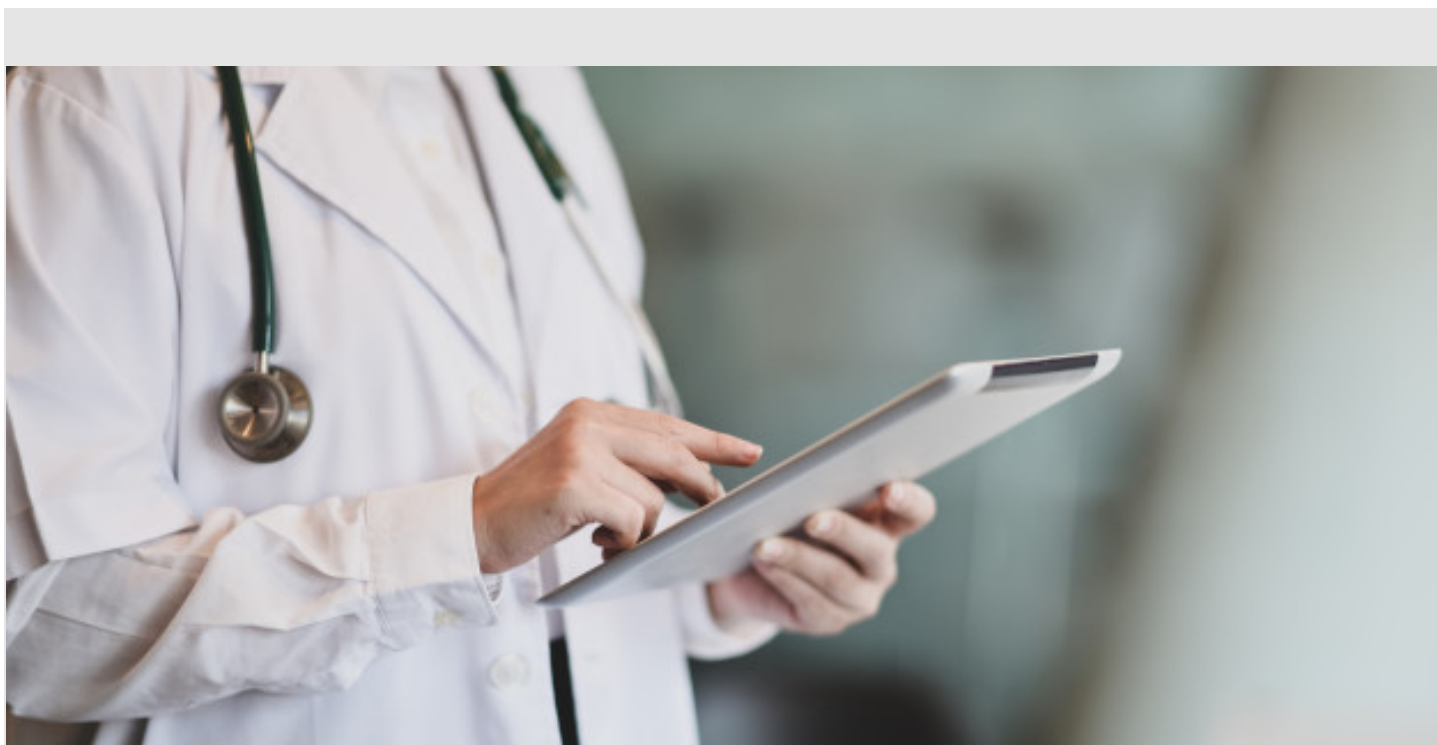
5.3 Challenges

- Widespread, rapid training of providers and staff
- Training the majority of providers to technically proficient levels in conducting video visits took approximately 2 weeks
- Increasing the ratio of video to phone visits
- A majority of patients opt for phone visits due to varying challenges with video:
 - Device: No possession of mobile device with video capabilities
 - Financial: No home internet or sufficient data plan to support video
 - Technical: Unable to complete necessary steps to connect to provider, despite hand-holding protocol from staff to walk patients through process
 - Language: A solution for adding an interpreter services via video has not been arrived at as of current - although a new workflow for adding clinic staff via video and another workflow for adding the interpreter service via phone audio only to a video visit has recently been developed
- Initially documentation was not to the level of service provided to the patient – Providers were delivering high-quality care without the appropriate level of documentation
- Initially, CPT coding was a challenge due to the misconception that virtual visits were not equivalent in the level of care provided as classic face-to-face visits
 - Collaboration with Compliance and Revenue Cycle departments to review DHCS, CMS, Medi-Cal documents to develop recommendations for coding to the standard E/M level codes
- Initially, providers were applying non-billable codes for patients that did not answer the video or phone call instead of “No-Showing” or “un-arriving” the patient, this inflated the numbers of visits
 - Report was distributed to direct providers to which non-billable visits required adjustment
- Home access to the EHR was a challenge
 - Collaboration with IS (Information Services) resulted in remote desktop access and virtual desktop access
- Opiate and other controlled prescriptions
 - DEA provided guidance on COVID-19 pandemic management of patients on chronic opioid medications
 - Allowed for virtual patient visits for evaluation and management of prescriptions
 - The 5-percent rule previously only allowing 5% of chronic opioid patients to be co-managed by other providers had a temporary hold put into place

- Distribution of prescriptions was modified to allow curbside prescription pickup, EPCS (Electronic Prescription of Controlled Substances), collaboration with onsite providers, and pharmacy prescription call-in
- Previous organizational guidance on the evaluation of patients and management of prescriptions was reviewed with providers in order to maintain the high-quality care previously established

5.4 Previous Efforts Enabling Current State

- The phone visit program had been piloted and previously established in 2014, this endeavor prepared providers and clinic staff for the technical and workflow-related pieces of phone visits, this knowledge also ported over well for components of video visits
- Some specialty clinics were utilizing video platforms prior to the onset of the pandemic – this experience likely was valuable for the informatics, IT, and information services departments in rapidly pushing the video visit platform out for primary care use



Section 6

INFORMATICS | COVID-19 PROJECTS

Vikram Kumar, M.D.

- Real-time Virtual ICU Platform
- Telehealth for Inmate Population
- Data and Dashboards

6.1 Advanced Clinical Guidance (ACG)-RemoteView ICU™

Riverside University Health System (RUHS) implemented a real-time virtual ICU platform, Advanced Clinical Guidance (ACG)-RemoteView ICU™, to support surging ICU services during COVID-19. Utilizing mobile technology, ACG-RemoteView™, is manufactured by Talis Clinical and facilitates seamless data capture of all patient monitoring equipment and data systems in an ICU, which allows for robust decision support to be made actionable to critical care teams.



Figure 6.1 Talis RemoteView ICU platform

Talis technology links ICU data capturing waveforms from patient monitors and ventilators with EMR data, including lab values, to better enable clinical decision making. Additionally, in a COVID environment, this mobile platform allows RUHS to quickly stand up a remote monitoring solution which reduces clinician virus exposure, preserves PPE, and optimizes our personnel resources.

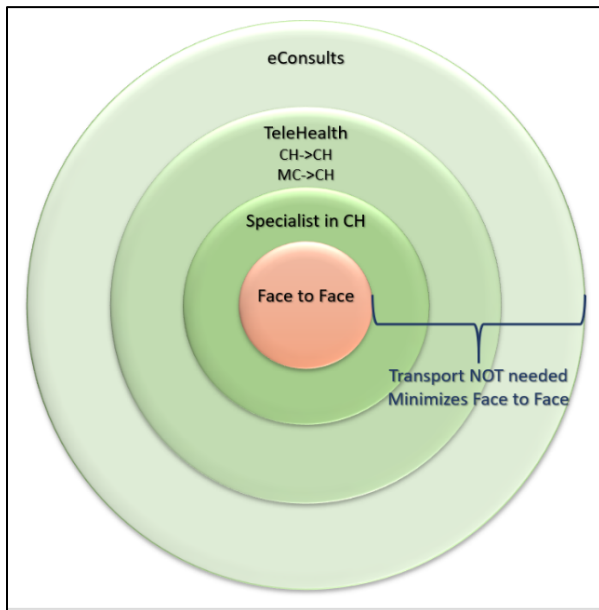
RUHS is among the first in the nation to implement this Talis solution that offers workflow orchestration and ensures patients on mechanical ventilation receive life-saving lung protective care.

While there are other technologies in the market that can connect some ICU devices, they are limited in the number of devices they can connect. They typically would also require a fixed command center operation, and do not help clinicians with process improvement. Talis is accessible through any mobile device and data can be analyzed from anywhere. Talis also helps clinicians ensure that every patient is always managed according to hospital best practice.

6.2 Telehealth for Inmates

RUHS has expanded the rollout of Telehealth to the inmate population both in the County Jails and State Prisons. What started out as pilots between Jail to Jail has now expanded to include both primary provider and specialists being able to provide care via a hierarchy of eConsults, Telehealth and Face to Face visits.

There are high financial, operational, and logistical burdens in transporting inmates to/from their primary care or specialists' appointments. There is also delay in access to care based on scheduling and transporting availabilities.



Inmates that need specialist care are vetted through an eConsults process where the primary provides the background patient information via an eConsults messaging process to the specialist. The specialist, after reviewing the clinical information provided by the primary provider, the electronic medical record and pertinent lab & study results, makes a decision on whether 1) the patient can be managed by the primary provider for the existing problem with expertise from the specialist or 2) if the patient needs to have an appointment with the specialist for further management. This appointment is prioritized via telehealth visit with only a limited number of patients needing to wait for an in-person appointment with the specialist.

The Telehealth visit workflow for the specialist starts with scheduling the visit. The patient is brought into the detention health care unit where a nurse 'rooms' the patient and collects vitals and intake information. This information is entered into the electronic medical record which can be reviewed by the specialist real-time from their office or remote location. As needed, the

nurse performs an exam on the patient with stethoscope, otoscope and ophthalmoscope as needed.

An electrocardiogram (ECG) can also be obtained as needed. This information too is relayed to the specialist real-time. Based on the clinical history, Telehealth exam, and study results the specialist is then able to create a management plan for the patient without needing to see the patient in person. This has resulted in significant improvement in access, decrease in wait times for access and decrease in transporting needs. The goal is to improve outcomes agnostic of the location of the specialist.

6.3 Data and Dashboards

With the onset of Covid19 there was an immediate need to track Covid19 information at the healthcare system, County and State levels. RUHS has developed several reports and dashboards to track Covid19. This includes datasets from RUHS and external sources. The external sources include Covid19 data from other healthcare systems in the County, data from Public Health lab and other labs that perform lab testing, community testing data, California Reportable Disease Information Exchange (CalREDIE) Covid19 data for the County, social determinants information, local hospitals' admission trends for Covid19 and state data from Amazon Web Services (AWS) with Covid19 data, drill down to County and hospital utilization. With the County dashboard this allows to trend different graphics on the incidence and prevalence, testing and set thresholds for reopening criteria.

Medical center specific dashboards allow for tracking inpatient and ED prevalence, volumes, length of stay and ventilator utilization

information. Additionally, utilization of medications, labs, and PPE is also tracked.

There are thresholds established for continuing with reopening, slowing progression, stopping, and reverting to a previous stage as needed.

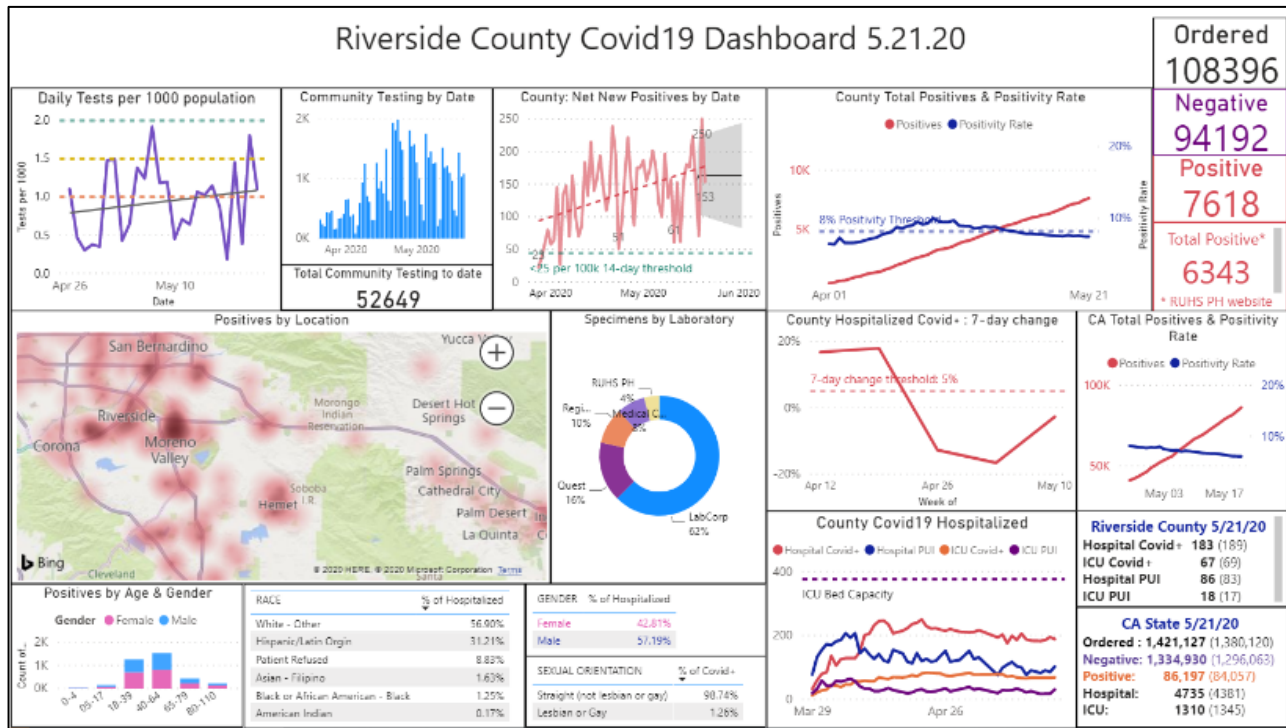


Figure 6.3 Riverside County COVID-19 Dashboard revised 5/21/2020

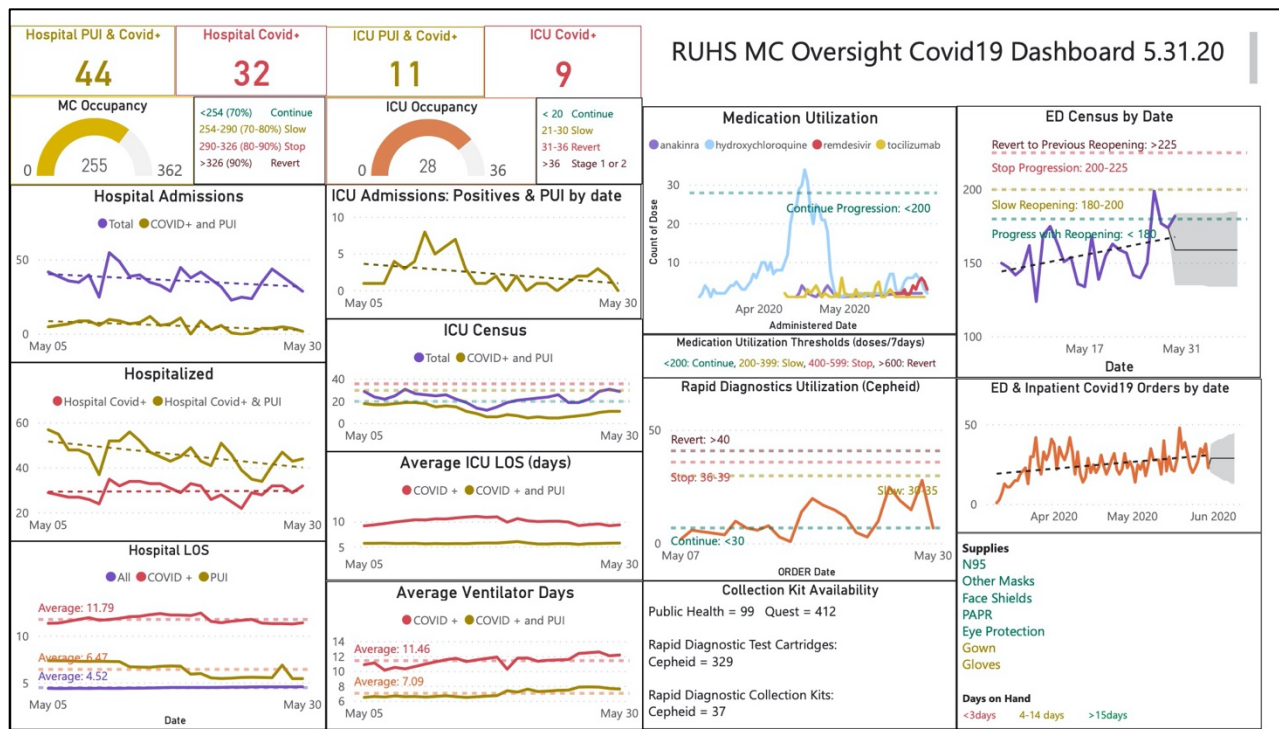


Figure 6.2 RUHS MC Oversight COVID-19 Dashboard revised 5/31/2020

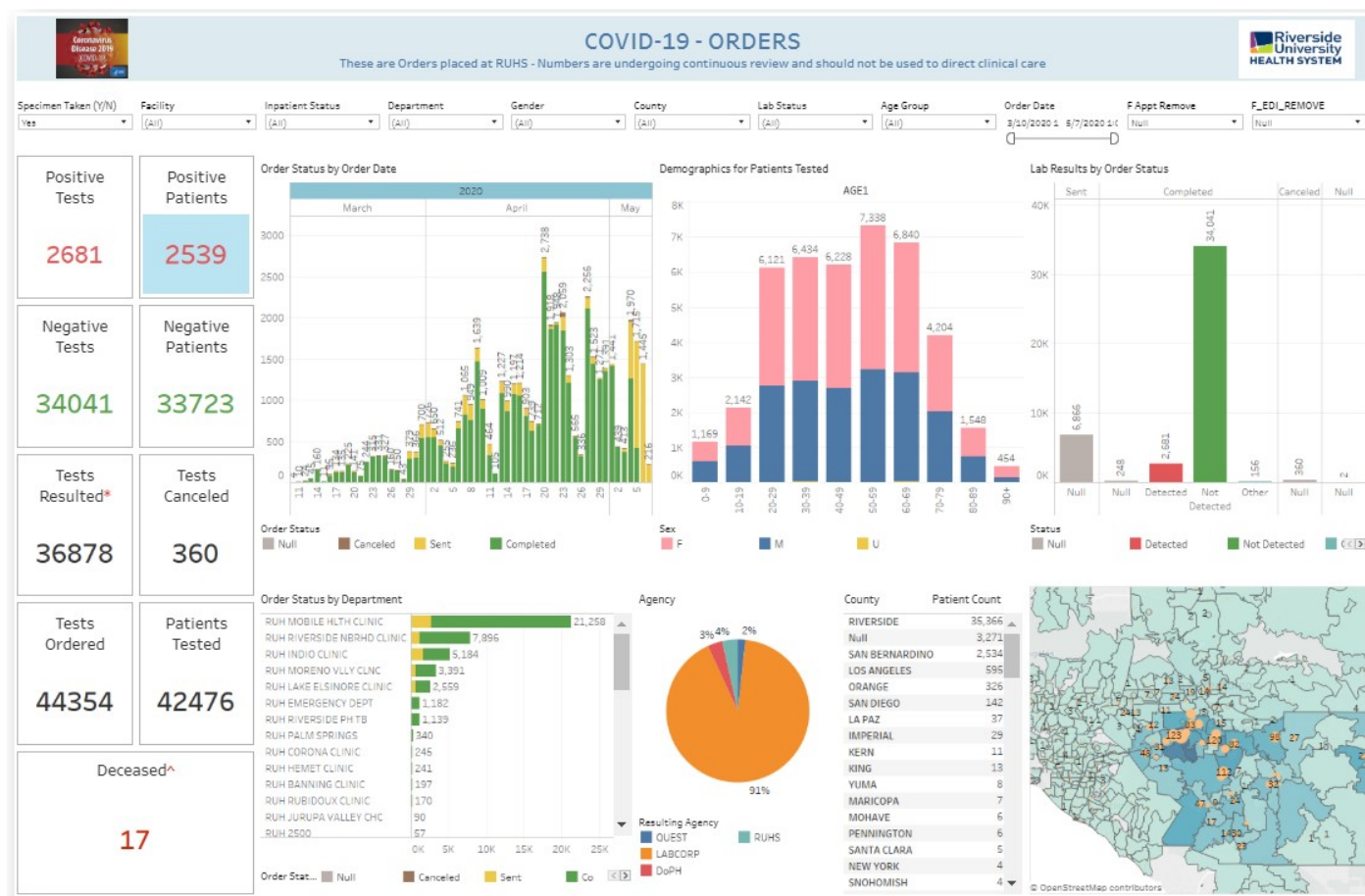


Figure 6. COVID-19 orders placed at RUHS



Section 7

SURGERY | SURGICAL SERVICES IN TIMES OF COVID-19

Raul Coimbra, M.D., PhD, FACS

The SARS-CoV-2 infection caught us all by surprise. The impact of the disease in the health care system in general, and in all surgical services in particular, have made us think about contingency plans never seen before. More importantly, the duration of these plans had to be in place, affecting the financial viability of many institutions. We, at RUHS, had the opportunity to use some of our past experiences in trauma surgery, mass casualty, and perioperative services administration, to adapt very quickly by limiting elective surgery procedures to those that would not cause harm to patients if postponed. The process is described in our first scientific publication. When the critical point of the pandemic passed and we saw indications that it was safe to resume surgical care we systematically, judiciously, and with patient safety and high quality of care always in the forefront, develop the strategies outlined in the second scientific publication.

RECOMMENDATION



European Society of Trauma and Emergency Surgery (ESTES) recommendations for trauma and emergency surgery preparation during times of COVID-19 infection

Raul Coimbra^{1,10} · Sara Edwards¹ · Hayato Kurihara² · Gary Alan Bass³ · Zsolt J. Balogh⁴ · Jonathan Tilsed⁵ · Roberto Faccincani⁶ · Michele Carlucci⁶ · Isidro Martínez Casas⁷ · Christine Gaarder⁸ · Arnold Tabuenca¹ · Bruno C. Coimbra¹ · Ingo Marzi⁹

Received: 1 April 2020 / Accepted: 2 April 2020
 © Springer-Verlag GmbH Germany, part of Springer Nature 2020

Abstract

A series of recommendations regarding hospital perioperative preparation for the COVID-19 pandemic were compiled to inform surgeons worldwide on how to provide emergency surgery and trauma care during enduring times. The recommendations are divided into eight domains: (1) General recommendation for surgical services; (2) Emergency Surgery for critically ill COVID-19 positive or suspected patients -Preoperative planning and case selection; (3) Operating Room setup; (4) patient transport to the OR; (5) Surgical staff preparation; (6) Anesthesia considerations; (7) Surgical approach; and (8) Case Completion. The European Society of Emergency Surgery board endorsed these recommendations.

Keywords COVID-19 · Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) · Trauma · Emergency surgery · Hospital preparation

Introduction

Never before has the current generation of health care providers seen the dissemination of an infectious disease so devastating and widespread as the COVID-19 caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Initially affecting residents of Wuhan, China, in late December 2019, COVID-19 rapidly spread to every country on the globe. The consequences of this rapid spread, leading to patients with significant symptoms (particularly respiratory dysfunction or failure) to seek medical care in hospitals which, in normal circumstances, were already functioning at capacity. This surge of acute ill patients put a significant stress on the already overwhelmed health care system globally [1].

Despite the fact that no health care system was prepared for an event of this magnitude, hospitals and health care systems have started implementing measures to increase capacity to triage, test, cohort, and provide critical care services following current local guidelines, specific for each country or region [2, 3]. As occurs in any other pandemic or mass casualty event, some patients with regular medical and surgical problems still require medical care. Many of those medical or surgical conditions may be treated at a later

✉ Raul Coimbra
 raulcoimbra62@yahoo.com

¹ Comparative Effectiveness and Clinical Outcomes Research Center-CECORC, Riverside University Health System Medical Center, Moreno Valley, CA, USA

² Emergency Surgery and Trauma Unit, Department of Surgery, Humanitas Research Hospital, Milan, Italy

³ Department of Surgery, Tallaght University Hospital, Dublin, Ireland

⁴ John Hunter Hospital and Hunter New England Health, University of Newcastle, Newcastle, NSW, Australia

⁵ Hull York Medical School, Heslington, England, UK

⁶ Emergency Department, IRCCS San Raffaele, Milan, Italy

⁷ Servicio de Cirugía General y Digestiva, Complejo Hospitalario de Jaén, Jaén, Spain

⁸ Department of Traumatology, Oslo University Hospital Ullevål, Oslo, Norway

⁹ Department of Trauma, Hand, and Reconstructive Surgery, University Hospital Frankfurt, Frankfurt, Germany

¹⁰ Loma Linda University School of Medicine, Loma Linda, USA

Published online: 17 April 2020

Springer

To read the entire journal article, visit

[https://rivcoca.sharepoint.com/sites/RUHSInnovations/SitePages/European-Society-of-Trauma-and-Emergency-Surgery-\(ESTES\)-European-Society-of-Trauma-and-Emergency-Surgery-\(ESTE.aspx](https://rivcoca.sharepoint.com/sites/RUHSInnovations/SitePages/European-Society-of-Trauma-and-Emergency-Surgery-(ESTES)-European-Society-of-Trauma-and-Emergency-Surgery-(ESTE.aspx)

Open access

Current opinion

Trauma Surgery
& Acute Care OpenResuming elective surgical services in times of
COVID-19 infectionRaul Coimbra^{1,2}, Sara Edwards^{3,4}, Bruno Cammarota Coimbra^{5,6}, Arnold Tabuenca^{4,7}¹Surgery, Riverside University Health System, Moreno Valley, California, USA²School of Medicine, Loma Linda University, Loma Linda, California, USA³Riverside University Health System, Moreno Valley, California, USA⁴Surgery, University of California Riverside School of Medicine, Riverside, California, USA⁵CECORC—Comparative Effectiveness and Clinical Outcomes Research Center, Riverside University Health System, Moreno Valley, California, USA⁶University of California Santa Barbara, Santa Barbara, California, USA⁷Surgery—Administration, Riverside University Health System, Moreno Valley, California, USACorrespondence to
Dr Raul Coimbra;
raulcoimbra62@yahoo.comReceived 11 May 2020
Accepted 11 May 2020

© Author(s) (or their employer(s)) 2020. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ.

To cite: Coimbra R, Edwards S, Coimbra BC, et al. *Trauma Surg Acute Care Open* 2020;0:e000511.

ABSTRACT

The consequences of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) virus have been devastating to the healthcare system.

As the positive effects of social distancing, mandatory masking, and societal lockdown on the spread of the disease and its incidence in the community were documented, societal and financial pressures mounted worldwide, prompting efforts to “re-open” countries, states, communities, businesses, and schools. The same happened with hospital, which had to start developing strategies to resume elective surgery activities. This manuscript describes the pre-requisites as well as the strategies for resuming surgical activity, be it in the outpatient or inpatient setting.

INTRODUCTION

In recent months, healthcare professionals worldwide have witnessed the devastating consequences of infection by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) virus. The impact has been felt in all sectors of society and it certainly was experienced firsthand by the healthcare system. Life has changed during this pandemic, and in most areas, changes are here to stay.

In the midst of this crisis, every country in the world has developed plans to contain and to mitigate the “silent enemy.” As in any pandemic, mass casualty, or disaster event, with a high number of victims, healthcare professionals do their best under difficult circumstances to save as many lives possible and to preserve the most life-years. During the COVID-19 pandemic, healthcare facilities entered into a “crisis mode.”

Although COVID-19 is primarily an infectious disease problem, the extended use of hospital resources and the scarcity of critical care specialists has led many physicians from different specialties to mobilize and provide care in the ICUs. Surgical intensivists have not been spared and also served on the front lines.

One of the measures used to allow hospitals to surge their capacity and serve the patient population with COVID-19 infection was the suspension of elective activity, most importantly elective surgery and other procedures.

At the beginning of the crisis period, when hospitals were preparing for a significant surge in the number of patients requiring hospitalization, several surgical professional organizations developed recommendations and guidelines regarding surgical and perioperative preparation, case selection, operating room setup, anesthesia considerations, staff

preparation, and postoperative care.^{1–3} Priority was given to emergency general surgery, trauma, and time-sensitive diseases, for which delay would compromise outcomes.^{4–6}The period of social distancing, mandatory masking, and societal lockdown was critical to change the prevalence and the incidence of the disease and to decrease its reproductive rate. Consequently, a reduction in hospital and ICU admissions, as well as in mortality occurred over time. After approximately 6–8 weeks of “crisis mode” management, societal and financial pressures mounted worldwide, prompting efforts to “re-open” countries, states, communities, businesses, and schools.^{7,8}The current dilemma now centers on the means by which to restore medical and surgical care to those who had care postponed. Guidance has been provided by the federal government, state agencies, professional organizations, and public health departments, each with its own focus.^{1,7,9–14}

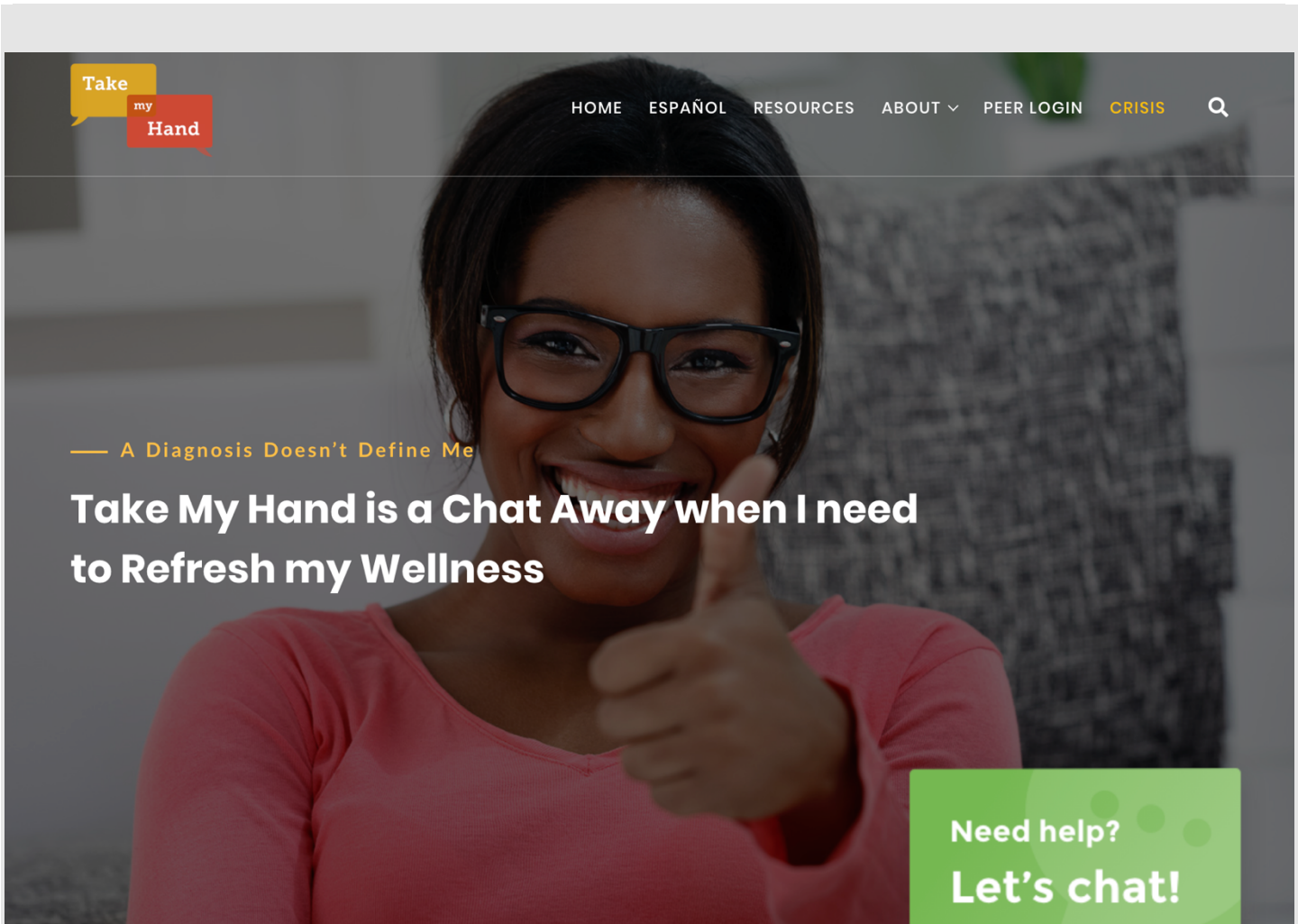
Since the impact of the pandemic on healthcare delivery has varied in different locations, with some being more affected than others, we aim to provide general and practical recommendations on several aspects involved in the decision to resume surgical care and how to do it.

CONSIDERATIONS AND BASIC PRINCIPLES
PRIOR TO RESUMING ELECTIVE SURGICAL CAREMost agree that adding additional burden to an already strained healthcare system dealing with COVID-19 infection should be avoided. Therefore, when considering resuming elective surgical care, the first step is to understand the COVID-19 infection prevalence and incidence in the community and the current impact in a hospital. An assessment of current occupancy and hospital bed utilization, ICU and ventilator availability, as well as other hospital resources such as nursing, ancillary personnel, blood bank, laboratory services, pharmacy, outpatient clinics, and hospital environmental services are critically important to the estimation of whether or not resources will be available to accommodate an increase in the number of surgical patients.¹⁵Most recommendations from public health officials have suggested that a steady decrease in the number of new COVID-19 cases over a period of 14 days (decreased incidence), associated with a similar trend in hospital and ICU admission, is necessary to consider resuming elective surgery (box 1).¹ As stated above, hospital resources must be available to support high-quality surgical care delivery. Although recommendations are not clearCoimbra R, et al. *Trauma Surg Acute Care Open* 2020;0:e000511. doi:10.1136/tsaco-2020-000511

1

To read the entire journal article, visit

<https://rivcoca.sharepoint.com/sites/RUHSInnovations/SitePages/Resuming-Elective-Surgical-Services-in-Times-of-COVID-19-Infection.aspx>



Section 8

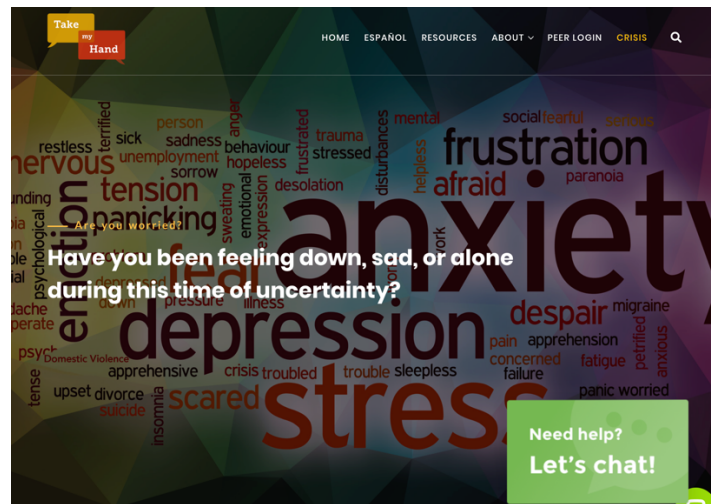
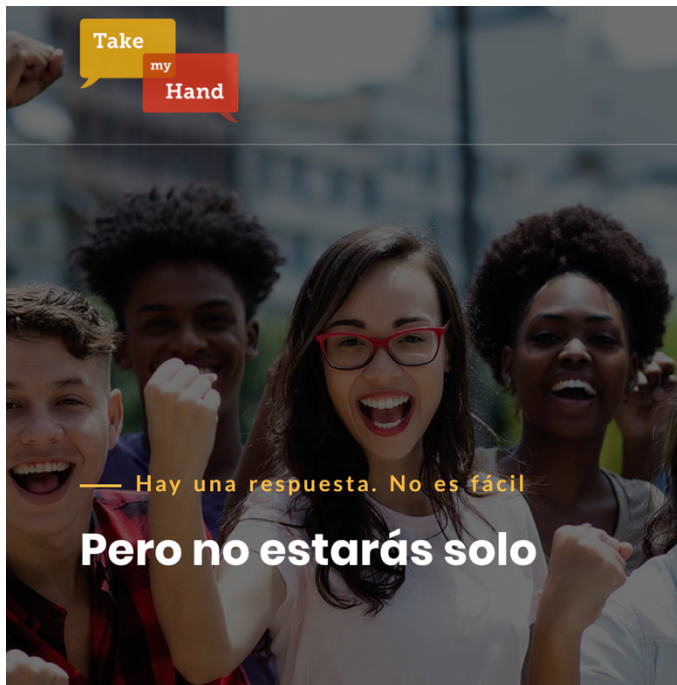
BEHAVIORAL HEALTH | TAKE MY HAND

Matthew Chang, M.D., MMM

The Take My Hand™ Live Peer Chat, is Riverside University Health System – Behavioral Health's response to stakeholder interest in Peer Support Services delivered via web-based Chat. This project was part of an ongoing Statewide Collaborative "Help@Hand", an MHSA Innovations Tech Suite Project with 14 other counties and cities in the State. RUHS-BH intended this platform to transform the service system for better outcomes. Take My Hand™ is one application in a whole "suite" of web-based and smartphone applications being introduced to integrate technologies into behavioral health support to the community.

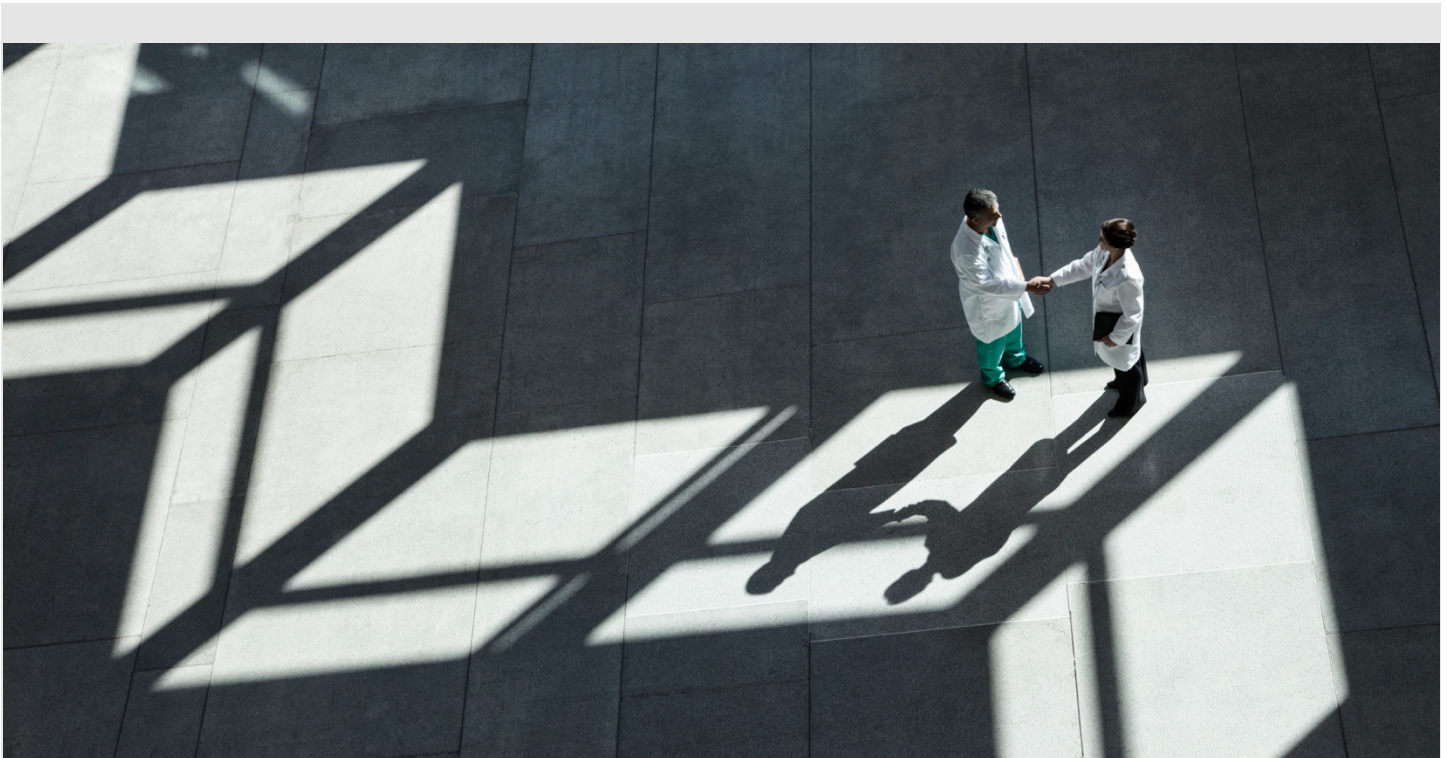
8.1 Take My Hand

Take My Hand™ introduces a live Certified Peer Support Specialist, a person with lived experience in recovery from a behavioral health condition, trained to interact with others mutually and without judgement. They are skilled coaches that support a person's wellness, responding to questions, providing assistance and connecting them to resources. More importantly, Take My Hand™ allows the user to remain anonymous if they choose. Peer Support Specialists operating Take My Hand™ have the unique abilities to navigate conversations in a text modality, exercising the ability to clarify potentially confusing interactions due to lack of visual and paraverbal communication cues. Take My Hand™ is the first web-based service uniquely “Live” with a real person on the other end of the conversation, to be there for a person who may not be open to in-person, Skype-style or telephone verbal communication.



This innovative service was rapidly deployed County wide in response to the COVID-19 pandemic, allowing any member of the community to reach out for support while sheltering in place. The current COVID-19 crisis required that public service agencies respond flexibly in a rapidly changing world. With that in mind, RUHS-BH is proud to present free, live Peer Support service via the Take My Hand™ website in its testing phase. Peer Support Specialists are available for chat Monday through Friday 8:00am – 10:30pm PST.

Visit <https://takemyhand.co> to receive confidential assistance and support. The Take My Hand™ smartphone app is currently in development.



Section 9

RUHS MC PHARMACY | FRONTLINE SUPPORT

Nikita Patel, PharmD

Pharmacy played an active role in supporting frontline staff during the pandemic in addition to active clinical pharmacists' involvement in providing direct patient care. One of the most significant challenges we faced were the extensive national drug shortages that impacted our critical care patients including sedatives, analgesics, paralytics, Metered dose inhalers (MDIs), and potential treatments for COVID-19.

Medical Center Pharmacy needed to leverage the diverse centralized resources, services, and expertise in ways not seen before. In order to meet the rapidly changing needs of our patients and health system as a whole, we had to work across pharmacy divisions to gather input and utilize expertise. Goal 1) Clinical expertise - Provide up to date treatment information and create the hospital COVID-19 treatment algorithm in addition to treatment strategies to mitigate our drug shortages. Inpatient - provide medications as close to the point of patient care and administration understanding the need to conserve PPE. Pharmacy Informatics was essential to relocate hardware, automated dispensing cabinets, change programming and logic, and to aid in software installation and deployment across devices. Goal 2) Ambulatory/Outpatient - continue to provide patients with medications and access, keep patients and our employees as safe as possible. Staff was moved from other divisions to aid the retail pharmacy in expanding the mail order operation. Pharmacy moved to a curbside kiosk model including curbside delivery. Correctional Health robotic packagers were re-configured to prepare for SNF and surge planning.

Pharmacy played an active role in supporting frontline staff during the pandemic in addition to active clinical pharmacists' involvement in providing direct patient care. One of the most significant challenges we faced were the extensive drug shortages that impacted our critical care patients including sedatives, analgesics, paralytics, Metered dose inhalers (MDIs), and potential treatments for COVID-19.

Below are the different areas and their responsibilities:

9.1 Pharmacy Liaison

- Assistant pharmacy director served as pharmacy liaison on the COVID-19 clinical strategy and mitigation hospital leadership group

9.2 Clinical Expertise

- Pharmacy COVID-19 critical care taskforce - established a phased treatment algorithm for sedation, analgesia, intubation and use of paralytics to conserve our limited supply of medications and continue to meet ongoing patient care needs, and anticipated needs during a surge.
- Infectious Diseases clinical pharmacists served as subject matter experts and created the COVID-19 treatment algorithm by collaborating with the ID physicians and Rheumatologists. They were instrumental in providing up to date treatment information and staying on top of the literature/studies which were changing very frequently.
- Once specific rheumatology medications and IL-6 inhibitors were identified as potential treatments pharmacy ensured adequate supplies for existing rheumatology patients and for COVID-19 infected patients. Also continued to change our treatment algorithm once additional data became available for medications like hydroxychloroquine.
- Worked with ID physicians in reviewing patients daily for eligibility for Remdesivir treatment.
- Pharmacy worked closely with rheumatologist attending physicians on treatment guidelines for the use of IL-6 inhibitors for COVID-19 patients with ARDS.

9.3 Retail Pharmacy

- Switched most of our retail business to mail order
- Proactively authorized 90-day prescription fills/deliveries to ensure patients had adequate supplies of medications during the shutdown.
- Curbside drop-off/delivery model at main medical center pharmacy to reduce patients entering the hospital
- Once the hospital established a no visitor policy, we converted our medical center retail pharmacy to address hospital/ED discharges only and MSC retail pharmacy took over retail patient care needs.
- Installed sneeze-guards at new MSC retail pharmacy

9.4 Ambulatory Clinical Pharmacists

- Continued essential pharmacy run clinics in person (oncology and anticoagulation)
- All other ambulatory clinical pharmacist visits done via telehealth
- Also assisted in telephone discharge counseling of patients

9.5 Inpatient Services

- Redistributed unit clinical pharmacists' duties to assist with increased clinical needs of COVID-19 patients
- Created critical care competency and trained pharmacists in preparation of the surge
- Telephone counseling/interviews in COVID units to preserve PPE
- Created code blue starter kits to avoid contamination of crash carts in COVID units

9.6 COVID-19 testing

Microbiology Laboratory assistance with COVID-19 testing – Assistant pharmacy director was involved with the COVID-19 testing taskforce and helped justify adding additional testing platforms and oversaw the operationalization of inhouse COVID-19 testing.

9.7 Information Technology

IT staff worked to reconfigure Pyxis machines to different units and outfit them for COVID patient needs.

9.8 Procurement

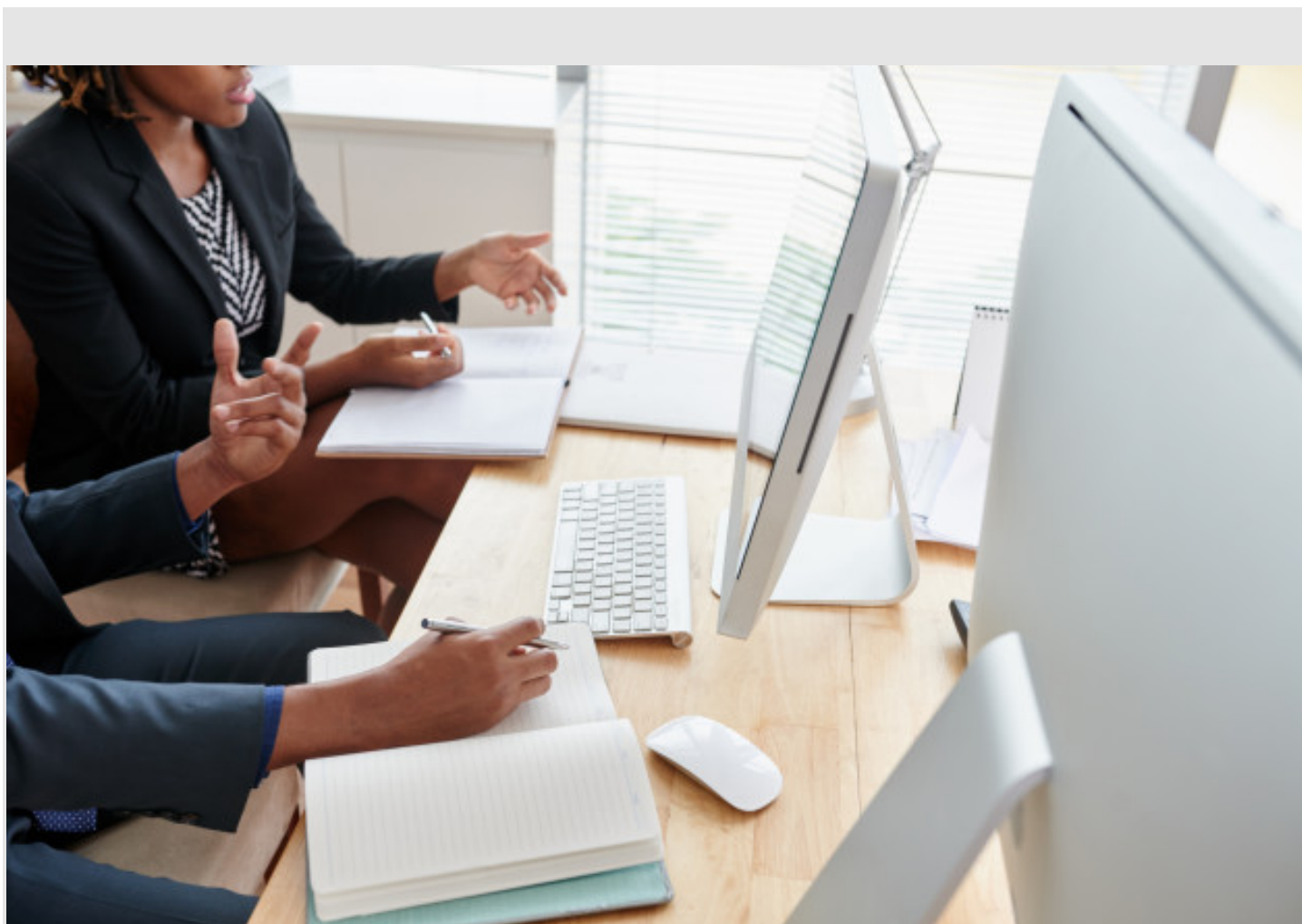
Worked 7 days a week to procure medications from our wholesalers to meet the demands of a surge.

9.9 Addressing staff concerns

Early on it was evident the staff had many questions and concerns about putting themselves and family members at risk. We instituted daily huddles 7 days a week to address staff concerns. Also established ID pharmacist rounding to answer any COVID-19 specific questions/concerns the staff had.

9.10 Skilled Nursing Facility

SNF – Provided pharmacy services to SNF patients at Rancho Bellagio facility including clinical review of medications. Relied on our correctional health pharmacy medication dispensing platforms to safely deliver medications to SNF facility



Section 10

MARKETING AND COMMUNICATIONS | WEBINARS

Christine Ramsey

RUHS is heroically responding to the COVID-19 pandemic through saving lives and serving the community. Yet in the midst of the crisis, we are leading, innovating and sharing to help others.

As things quickly evolved, we began sharing clinical best practices with other healthcare practitioners through our Innovations Webinar series.

We are also working on targeted and effective communication strategies to personally connect with our patients through telephone “ask the expert” type format seminars that will be focused on how we are keeping patient safe and the importance of seeking care when needed during this unprecedented time.

10.1 Tele-Town Halls

Ask the Expert Tele Town Halls

Live Telephone Town Hall Strategy Synopsis

Use a live Telephone Town Hall concept to connect with patients and encourage them to visit their primary care physician. For this purpose, the focus of the call would be to link unseen IEHP RUHS assigned lives with a clear call to action (i.e., visiting their primary care doctor in the coming weeks for a customized blueprint to improving their health—focus on preventative measures). Please note, we can brainstorm what we actually call the “hook.” Essentially, it is to provide education and connection point for the patient to schedule their annual health visit.

What is a Telephone Town Hall?

A telephone town hall allows us to communicate with thousands of patients instantly. It's a live interactive format, which allows us to share important information, educate and train, answer live questions and ask participants questions with multiple choices. Participants on the call can ask questions or just listen.

Telephone Town Hall Summary:

Live telephone town hall lasts 20-30 minutes in length

Announcement call is made a day or two in advance of live telephone town hall

Simulcast in Spanish

Open up for questions and answers from patient attendees; bilingual screeners to screen the callers

Clear call to action provided

Moderator and speakers format

Touchtone data entry polling for instant feedback and metrics

Canned questions and answers that we develop

Ask the Expert Tele Town Halls

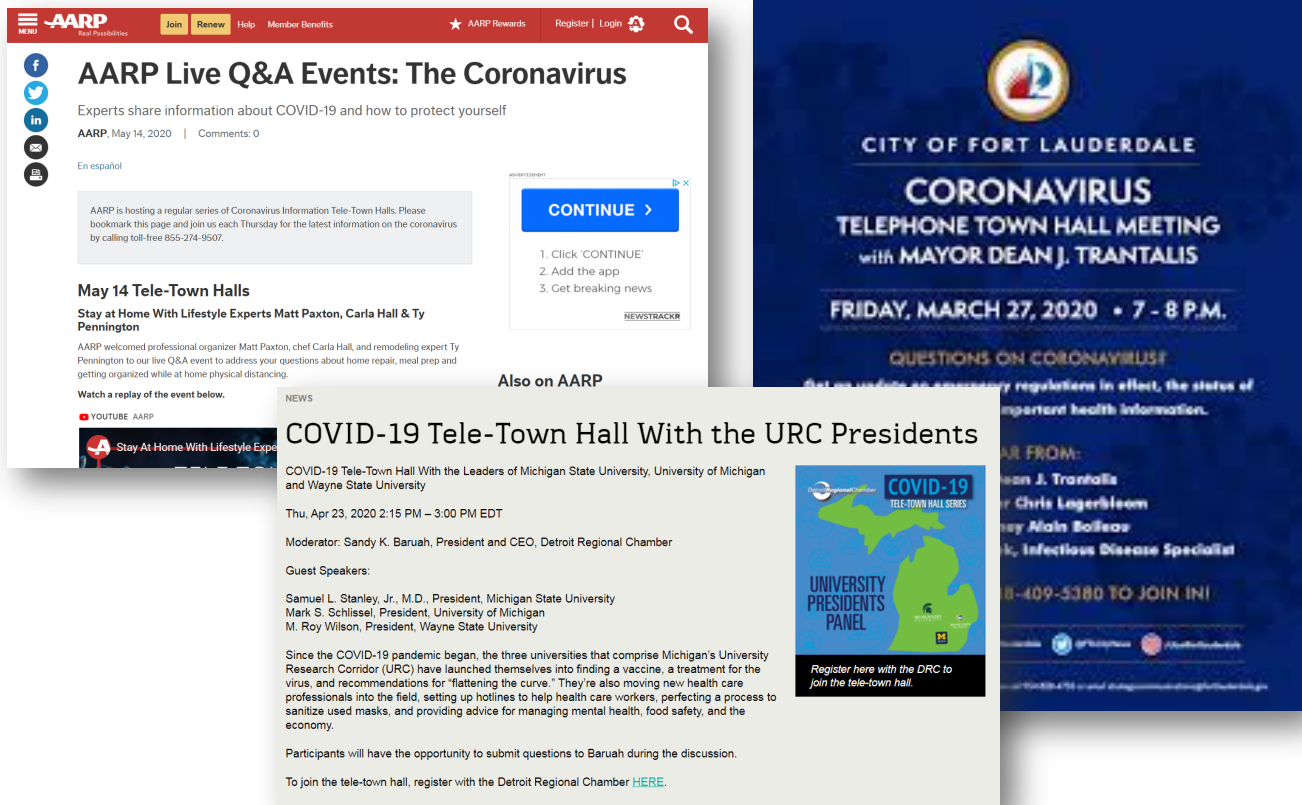


Figure 10.3 Examples of Tele-town hall events

10.2 RUHS Innovations Webinar Series

Innovations Webinar Series Overview

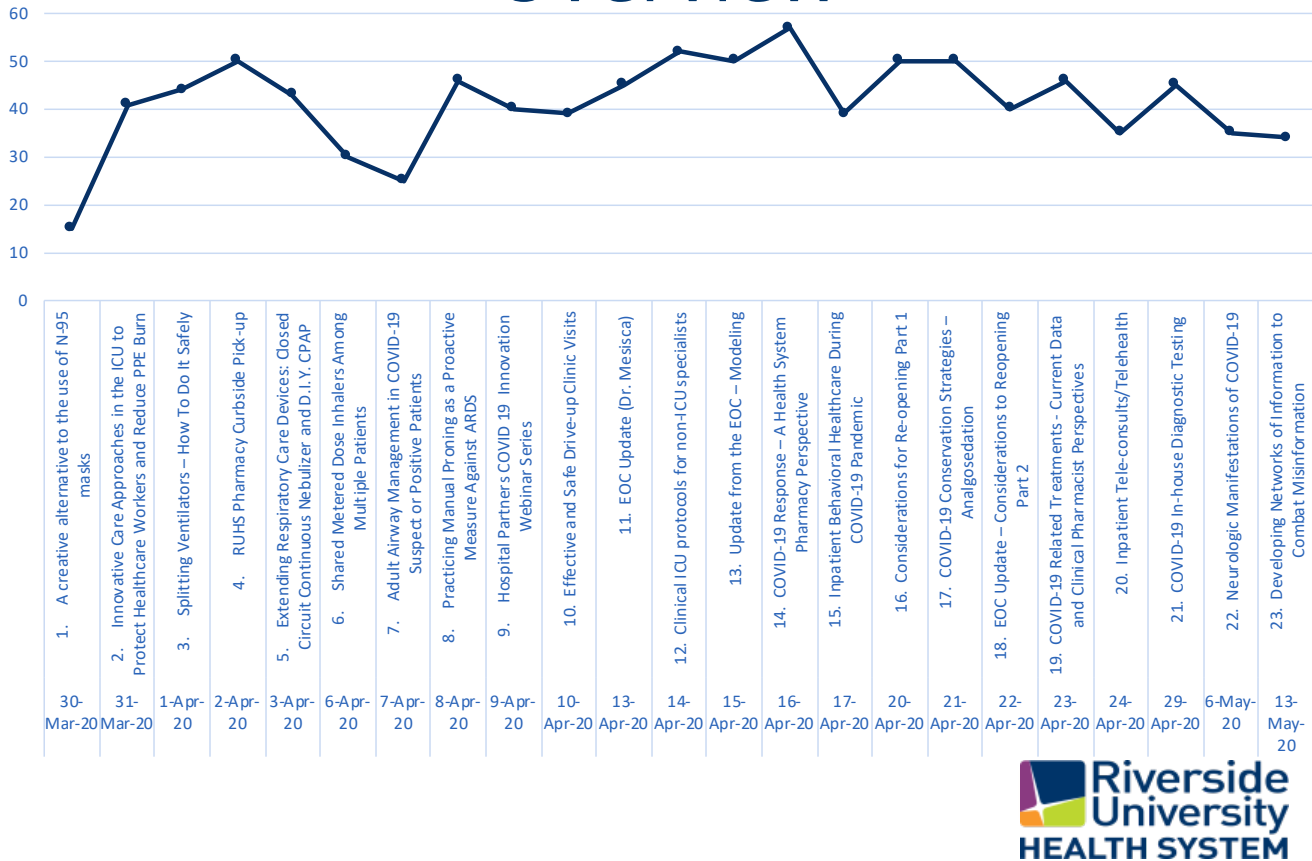


Figure 10.1 RUHS webinar viewer participation

| Date | Episode/Topic | Viewers | Description |
|----------------|--|---------|---|
| March 30, 2020 | 1. A creative alternative to the use of N-95 masks | 15 | RUHS respiratory therapy staff have found creative ways to find alternatives to N-95 masks during an extreme shortage. |
| March 31, 2020 | 2. Innovative Care Approaches in the ICU to Protect Healthcare Workers and Reduce PPE Burn | 41 | This video discusses some of the approaches RUHS is taking to expand ICU beds, while also adopting care techniques that keep our healthcare workers and patients safe, as we reduce our personal protective equipment |

| | | | |
|---------------|--|----|--|
| | | | (PPE) burn rates during the pandemic and PPE shortage. |
| April 1, 2020 | 3. Splitting Ventilators – How to Do It Safely | 44 | RUHS respiratory therapy staff have devised a way to split a ventilator to support up to four patients. This is to be used only as a last resort in emergency and disaster circumstances. |
| April 2, 2020 | 4. RUHS Pharmacy Curbside Pick-up | 50 | In order to limit foot traffic through the hospital and Medical Center, RUHS pharmacy staff have developed a process for curbside pick-up and prescription delivery by mail. |
| April 3, 2020 | 5. Extending Respiratory Care Devices: Closed Circuit Continuous Nebulizer and D.I.Y. CPAP | 43 | At RUHS, our respiratory therapist team has come up with creative methods to extend respiratory care devices to allow safe use during a global pandemic or times of emergency. |
| April 6, 2020 | 6. Shared Metered Dose Inhalers Among Multiple Patients | 30 | RUHS is implementing a commonplace technique by which a common canister is used to administer doses from an inhaler to multiple patients. This technique helps assist more patients in receiving their necessary medicine during a time of shortage. |
| April 7, 2020 | 7. Adult Airway Management in COVID-19 Suspect or Positive Patients | 25 | As RUHS prepares to handle more COVID-19 patients, our plant operations group and team of clinicians worked together to design an acrylic box that helps healthcare workers manage patient airways safely. |
| April 8, 2020 | 8. Practicing Manual Proning as a Proactive Measure Against ARDS | 46 | At RUHS, we are training nurses, physicians and other clinical staff on the procedures for manual proning. This allows our teams the ability to extend proning therapy to anyone who needs it. |
| April 9, 2020 | 9. Hospital Partners COVID-19 Innovation Webinar Series | 40 | Our physician leads discuss updates and happenings at the Emergency Operations Center in Riverside County and current data trends |

| | | | |
|----------------|--|----|--|
| April 10, 2020 | 10. Effective and Safe Drive-up Clinic Visits | 39 | To reduce patient risk, and foot traffic on the grounds of the Medical Center, RUHS is implementing new ways to see patients—this includes setting up clinic visits for families, without having to leave their car. |
| April 13, 2020 | 11. EOC Update (Dr. Mesisca) | 45 | RUHS physicians discuss updates and happenings at the Emergency Operations Center in Riverside County and current data trends. |
| April 14, 2020 | 12. Clinical ICU protocols for non-ICU specialists | 52 | Dr. Mittal provides a cheat sheet and clinical care guidelines for the critical COVID-19 patient. She also discusses what is it like dealing with critical patients and gives helpful information regarding treatment and medications. |
| April 15, 2020 | 13. Update from the EOC – Modeling | 50 | Our physician leads discuss updates and happenings at the Emergency Operations Center in Riverside County and current data trends. |
| April 16, 2020 | 14. COVID-19 Response – A Health System Pharmacy Perspective | 57 | Dr. Patel, an infectious disease clinical pharmacist, presents best practices and lessons learned from COVID-19 emergency preparedness. |
| April 17, 2020 | 15. Inpatient Behavioral Healthcare During COVID-19 Pandemic | 39 | As a provider of behavioral health throughout Riverside County, RUHS has taken a unique approach to decompressing load throughout our facilities. |
| April 20, 2020 | 16. Considerations for Re-opening Part 1 | 50 | Dr. Johnson speaks about current thoughts regarding the reopening of our healthcare facilities across the county. |
| April 21, 2020 | 17. COVID-19 Conservation Strategies – Analgosedation | 50 | In this episode, RUHS pharmacy discusses conservation strategies regarding Analgosedation. We discuss combatting causes of shortage and alternatives and techniques to implement. |

| | | | |
|----------------|---|----|---|
| April 22, 2020 | 18. EOC Update – Considerations to Reopening Part 2 | 40 | Dr. Leung and Dr. Mesisca further discuss considerations for reopening. They discuss the federal guidelines, and current Riverside County data. |
| April 23, 2020 | 19. COVID-19 Related Treatments - Current Data and Clinical Pharmacist Perspectives | 46 | |
| April 24, 2020 | 20. Inpatient Tele-consults/Telehealth | 35 | |
| April 29, 2020 | 21. COVID-19 In-house Diagnostic Testing | 45 | RUHS laboratory specialists are working towards developing a real time rapid testing system. They share some of the recent strides they have made in acquiring machines with PCR based testing. |
| May 6, 2020 | 22. Neurologic Manifestations of COVID-19 | 35 | This video discusses the neurological manifestations of COVID-19 and what to look for and recognize in patients. |
| May 13, 2020 | 23. Developing Networks of Information to Combat Misinformation | 34 | Dr. Leung discusses techniques to combat current misinformation and helpful tips to create networks of information. |

Figure 10.2 RUHS Innovations webinar series schedule