

BRIEF REPORT

RAPID DEVELOPMENT AND DEPLOYMENT OF RESPIRATORY EVALUATION CLINICS IN RESPONSE TO THE COVID-19 PANDEMIC TO KEEP STAFF AND PATIENTS SAFE

Charles Haddad, MD¹; Christopher Scuderi, DO¹; Judelle Haddad-Lacle, MD¹; Reetu Grewal, MD¹; Jeffery Jacqmein, MD¹; Pradeep Kadambi, MD, MBA, FASN²

¹University of Florida Department of Community Health and Family Medicine, Jacksonville, FL

²The University of Florida, Jacksonville, FL

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ABSTRACT:

The world as we knew it changed at the beginning of 2020 with the explosion of the global pandemic caused by SARS-CoV-2, a.k.a. COVID-19. As of January 10, 2021, the novel coronavirus has infected over 89 million people worldwide and killed over 1.9 million. In the U.S., there have been 22 million people infected and 373,000 deaths. It has never been more important to protect our vulnerable patients and staff from infectious disease, especially during the time they spend in our offices and clinics. It quickly became apparent that there was a need for a dedicated location where patients could be seen that were too ill to be evaluated via telemedicine, but not ill enough to be sent to the Emergency Department (ED). To fill this need, our primary care network developed the Respiratory Evaluation Clinic (REC) concept. These were two geographical locations where the outlying clinics could send potentially infectious patients to evaluate and test COVID-19. Some recommendations, adaptations, lessons learned and the REC clinics' expansions to other locations throughout our network are discussed.

INTRODUCTION

The world as we knew it changed at the beginning of 2020 with the explosion of the global pandemic caused by SARS-CoV-2, a.k.a. COVID-19. As of January 10, 2021, the novel coronavirus has infected over 89 million people worldwide and killed over 1.9 million. In the U.S., there have been 22 million people infected and 373,000 deaths.¹

It has never been more important to protect our vulnerable patients and staff from infections, especially during the time they spend in our offices and clinics. At the beginning of this pandemic, there was a great deal of focus on procedures and protocols to protect staff and patients in the hospital setting, especially as hospital Emergency Department (ED) were overwhelmed in some areas.²

As clinic access to patients became restricted, there was an immediate shift to telemedicine. Virtual visits increased exponentially for most outpatient care providers. It quickly became apparent that there was a need for a location where

patients could be seen that were too ill to be evaluated via telemedicine but not ill enough to send to the ED.

When evaluating the outpatient medical centers' infectious disease practices, it became very clear that we needed improved precautions to protect the staff and our vulnerable patients from this highly infectious disease. These precautions included staff selection and training using a team-based approach, adaptation of workflow to decrease the likelihood of cross-contamination, coordination with the laboratory and clinic administration to ensure availability of proper testing supplies and personal protection equipment. There was also a great need to conserve Personal Protective Equipment (PPE) such as N95 masks, gowns, face shields and other resources such as testing kits and cleaning supplies early on during the pandemic in the U.S.

Our department has 30 satellite outpatient clinics spread over five counties and two states. These clinics range in size from solo physician practices to large medical centers. The patient population in the clinics varies from those who live in affluent coastal communities to some of Northeast Florida's most at-risk patients in Jacksonville's urban core. It was important to design a relatively easy system for patients to access regardless of the demographics.

Most physician offices were not prepared to safely have patients with a potential active infection come to the clinic for evaluation. To fill this need, our team developed a Respiratory Evaluation Clinic (REC). These were two geographical locations with specific

CORRESPONDENCE:

Christopher Scuderi, DO | christopher.scuderi@jax.ufl.edu

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protocols in place to evaluate patients with potentially infectious diseases. The outlying clinics were able to send suspect patients to the RECs for evaluation and testing for COVID-19. These protocols were later expanded to additional clinics so they could safely perform testing for their patients.

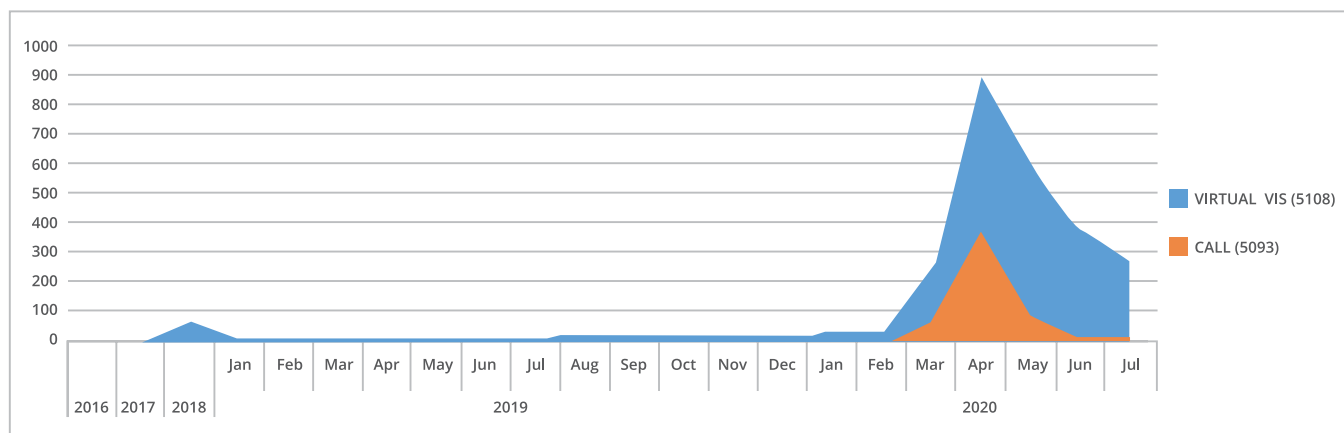
SHIFT TO TELEMEDICINE

For both patient and provider safety and comfort, there has been a significant shift across the nation to providing care through telemedicine due to COVID-19.³ Telemedicine is a useful tool in primary care to provide convenient care for patients using live synchronous video, ideally through a HIPAA secure platform. A wide variety of conditions can be managed easily via telemedicine, including upper respiratory infections, mental health conditions, simple urinary tract infections, etc. In Florida, patients on non-opiate controlled substances who are presenting for refills can be seen via telemedicine. During the COVID-19 pandemic, established patients who take chronic opiates for a chronic condition can also be seen via telemedicine.⁴ There are times when a provider may see a patient via telemedicine and decide that an in-person evaluation may be needed, for example, to perform a cardiorespiratory examination. Before the pandemic, these patients were seen in the clinic within 24 hours of their virtual visit. During the pandemic, patients needing additional in-person evaluation are directed to the REC. For clinics designated as a REC, telemedicine offers the ability to evaluate patients' history and need for COVID-19 testing while minimizing clinic staff and other patients' exposure time.

Before COVID-19, our institution utilized another application of telemedicine by performing a virtual hospital consult service. This allowed primary care providers to connect via telemedicine with their patients hospitalized at our institution. This virtual check-in provides a smoother transition of care as patients are discharged home. Since COVID-19, this service is even more important as hospitals are limiting in-person visitors and have been expanded to allow family members to do virtual "check-ins" with their loved ones.

FIGURE 1.

Total of visits utilizing telemedicine conducted in the family medicine department, 2016–2020



To have a telemedicine visit at our organization, where EPIC is the electronic medical record system used, patients must have:

- 1) An account set up for the patient portal, which is called "MyChart®."
- 2) Access to a telemedicine capable device such as a smartphone, tablet or computer.
- 3) Access to Zoom on that device.

Our visits are carried out on a HIPAA compliant version of Zoom, with the meeting link sent to patients through their MyChart® account. During the COVID-19 pandemic, our organization has liberalized the technical requirements for patients, allowing those who have access only to Zoom but not MyChart® to participate in telemedicine visits. Patients are sent a link directly allowing those with non-telemedicine capable devices to have telemedicine visits utilizing the Doximity Dialer that allows non-smartphone users to have a telemedicine visit.⁵

Adopting telemedicine across our department and organization before COVID-19 was slow due to provider hesitation to embrace technology and/or concern about limited physical exam capability via telemedicine and due to lack of parity laws in Florida for telemedicine visits. From the time that the telemedicine program first started in the family medicine department in 2016 until March of 2020, it conducted a total of 3,383 visits utilizing telemedicine (Figure 1). COVID-19 necessitated a paradigm shift in how medicine is practiced from traditional in-person clinic visits to telemedicine. Providers who were initially hesitant to use telemedicine were trained quickly to continue caring for patients. Additionally, since COVID-19 first broke, virtually all payors have allowed telemedicine visits to be paid on par with in-person visits. The U.S. Centers for Medicare and Medicaid Services have also allowed payment for telephone calls that are well documented and based on time.⁶ Between March 1, 2020 and July 24, 2020, our institution's family medicine department conducted a total of 26,044 telemedicine visits.

DEVELOPING A RESPIRATORY EVALUATION CLINIC

Cluster concept

In clinic systems where several facilities spread out throughout a wide geographical area, using a cluster concept of care can improve patients' access and availability. The cluster concept refers to having geographically located "sister clinics" that can care for patients from nearby clinics in case of emergency closures or disaster. Our system has used this approach during hurricanes, power outages and most recently when one clinic closed because several caregivers in the facility tested positive for COVID-19.

The cluster clinics are set up proactively by having insurance agreements in place so that care provided by sister clinics are properly reimbursed, that call centers are aware of the potential shift in the location of care for the patients and that advanced practitioner protocols are in place so that these providers can be supervised remotely from another location. Care can be routed to the sister clinic for evaluation and treatment in case of the emergency closure of a facility or for clinics that are not prepared to evaluate potentially infectious patients.

Team selection

Developing a timely, aggressive and collaborative strategy to care for our moderately ill patients and staff, while protecting our medical team, required input from administration, hospital infection control and microbiology, laboratory medicine, nurse educators, purchasing and providers. Using the Centers for Disease Control and Prevention (CDC) resources as our guide, equipment, staff selection, training and workflows were established with a team-based approach, which provided safeguards from cross-contamination, reliable test results and expeditious care.⁷

The team should be all volunteers if possible, especially for those who are providing direct patient care. Those personnel should also be vaccinated for COVID-19 before starting to provide care to potentially infectious patients. Choosing an inclusive team is instrumental in the setup and workflow of the clinic.

The front staff helps maintain the patient schedule, assist the patient with the virtual visit technology, collect copays and provide patient instructions about the upcoming visit. The MAs provide supportive patient care, coordinate patient flow and handle test processing. They ensure the rooms are cleaned and sanitized to health care standards between patient visits. The back-office lead coordinates MAs and is the on-site problem solver. The office manager/administrator coordinates providers' schedules, manages equipment supply, notifies the call center of the availability of the REC clinic and assists with billing and facility adaptation. In addition to direct patient care, the providers should remain current with ever-changing updates and guidelines for evaluating and treating COVID-19 patients. This includes the use and limitations of antibody testing as it becomes available.

Periodic team meetings to assess the problems as they arise, address the availability of PPE and testing supplies and evaluate and adapt work flow are recommended. These meetings should include members of the rest of the clinic to discuss any positive or

negative effects the REC has on the rest of the clinic operations. During this emotionally charged time, the staff may have an increased stress level both at work and at home. Some of the staff felt more reassured that their potential infectious risk at work was decreased because of the safety precautions that were put in place.

Workflow

Providers, staff and the call center are made aware of the availability of the REC through emails, video and zoom meetings by our institutional leadership. Patients that call for an appointment are pre-screened by the office staff or the call center for symptoms of, or exposure to, COVID-19. Those that are considered to need an evaluation are scheduled for a telemedicine visit with either a physician or advanced practice provider (APP). Patients that have mild symptoms are recommended to stay home and given instructions for home care, self-isolation and advised of warning signs that may escalate their need for in-person care. Those patients with severe symptoms, including progressive worsening of shortness of breath, chest pain, dyspnea or unremitting cough, are directed to the ED and advised to wear a mask.

The need for a face-to-face visit is determined clinically with a low threshold for those over 65 or with an underlying health condition such as COPD, diabetes, heart failure, active cancer or recent hospitalization for cardiovascular disease. Patients with moderate symptoms, especially with exposure to COVID-19, such as shortness of breath, fever or dry cough, are scheduled to be evaluated in the REC clinic.

Staff members responsible for screening the patients are located outside the facility or at the entry. Symptomatic patients at risk because of age and coexisting conditions may be considered for Bamlanivimab therapy. Well patients and REC patients use a separate entry and hallway if possible. Well patients screened at the entry who have a temperature of greater than 100.4°F, are directed to the REC clinic. Some REC patients can be fully evaluated in their vehicle. Those who need more extensive evaluation such as EKG and pulse oximetry reading should be evaluated inside the clinic. While the REC is established for evaluating COVID-19 patients, it is important to remember that patients with Coronavirus symptoms may have additional disease states, including asthma, COPD exacerbation, angina, pneumonia or bronchitis.

REC patients are asked to wear a mask and stay in their vehicle and notify the staff of their arrival. Patients without a vehicle should remain outside or in areas designated for potentially infected patients. They should maintain a minimum of social distancing at least six feet from any other person. These patients are not seated in the waiting room and are brought immediately into a designated exam room by MA or nurse in PPE. Some of the patient's history can be gathered via telephone, while the patient is in the vehicle or exam room, to limit the time of direct exposure to others.

All equipment needed, including stethoscopes or pulse oximetry instruments, are prepped by wiping down with an approved cleaning solution and placed at the door or in the exam room

along with the testing equipment. Having donned PPE, the provider enters the room and evaluates the patient and leaves all equipment and supplies in the room. At the completion of the visit, the PPE is doffed by the provider using the doff protocol. The MA or nurse in PPE then escorts the patient out of the clinic. The testing equipment is collected and the room is then sanitized and the MA or nurse wipes down all surfaces and equipment. Results of tests, including COVID-19, are communicated to the patient and their primary care provider via the electronic portal or telephone. Some patients who are more ill may require future telemedicine or in-person visit for follow up.

After successfully implementing the REC concept at the two initial clinics, the model was duplicated at several of our other outlying clinics. The lessons learned by developing and implementing the REC was presented to the new clinics. We conducted a team-based educational sessions involving the office leadership and staff, to tailor the concepts to the clinic's personnel and individual clinic layout.

Donning and doffing

The concept of don and doff refers to the sequence for putting on and how to remove PPE safely. This is a very important work practice to master to protect oneself and limit the spread of contamination. There are several types of PPE based on the level of precaution and the doffing and donning should be tailored to the specific type of PPE. The CDC requires strict adherence to standard, airborne and contact precautions, plus eye protection for the care of patients with or under investigation for COVID-19.⁸

The ideal necessary PPE required for the appropriate care of patients with or under investigation for COVID-19 includes:

1. Isolation gown
2. Fit tested N95 mask
3. Face shield or goggles for eye protection
4. Gloves

The donning of PPE should take place in a safe, decontaminated area. All PPE items are ideally placed in one area outside the patient room. When entering the patient room provider should don all PPE. The donning sequence includes: Perform hand hygiene, don gown, don mask, don face shield or goggles, perform hand hygiene and don gloves. Some providers may elect to double glove.

The doffing of PPE is critical in preventing contamination of clothing, skin or mucous membranes with potentially infectious material. It is important to perform hand hygiene between doffing steps. The doffing begins at the exit of the patient room and should not be in the donning area. Sequence for doffing includes: Perform hand hygiene over gloves, doff gown and doff gloves if double gloves, hand hygiene over gloves. If wearing single gloves, doff gloves, perform hand hygiene, then don clean gloves. Use a disinfectant wipe to clean the face shield or goggles' surface, remove face shield, disinfect face shield, perform hand hygiene on gloves, remove the mask, remove gloves and perform hand hygiene. Other CDC recommendations to protect and limit the

spread of contamination include keep hands away from the face, limit surfaces touched, change gloves when torn or heavily contaminated and perform frequent hand hygiene.

CONCLUSION

The COVID-19 pandemic has impacted millions of people from all walks of life worldwide. The response from the medical community at all levels was remarkably swift. It brought generational changes in medical practices, especially our approach to treat potentially infectious patients. Telemedicine quickly became a preferred and safe option for many patients and providers. The expansion of telemedicine will certainly carry forward even when this pandemic is better controlled. The innovation and development of the REC was an essential service offered to provide safe medical care to well and ill patients. For an REC to be successful, collaboration and buy-in from all stakeholders are vital and the location should be in an optimal geographic location. The team should be a volunteer and help identify the safest area in the clinic for patient evaluation and testing. Huddles and team meetings help keep communications open and provide emotional support, to maintain a strong and confident team in their ability to deliver health care during these unprecedented times. The lessons learned, and the adaptations we have undergone, will shape the future of medicine for years to come and will ensure that we will be much better prepared for the next challenge that is sure to come.

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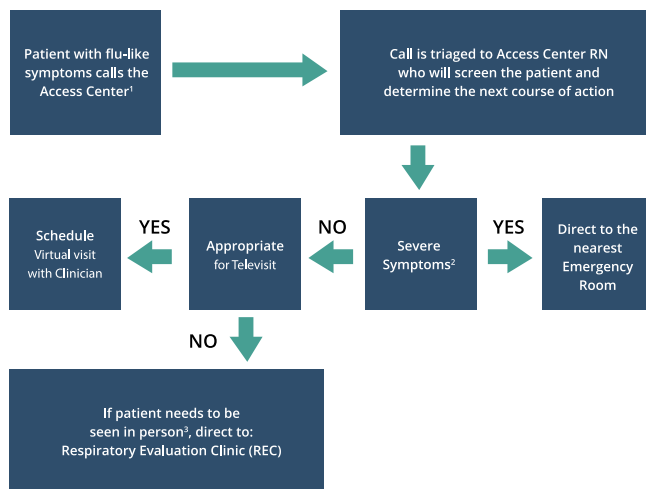
TABLE 1.

REC clinic recommendation

TEAM SELECTION
<ul style="list-style-type: none"> • Team members should be all volunteer. • From the beginning involve key personnel: front staff, MA's, back office lead, office manager and administrator.
VACCINATION
<ul style="list-style-type: none"> • All team members should be vaccinated for Covid-19 before beginning work in the REC.
CLARIFY MISSION/ CRITERIA FOR PATIENT SELECTION
<ul style="list-style-type: none"> • Patients suspected of Covid-19 with moderate symptoms. • Ill patients needing an in person visit. • Patients under investigation for Covid-19, especially those at high risk. • The preferred evaluation for mildly ill patients is telemedicine. • Patients with severe symptoms or red flag symptoms such as worsening shortness of breath, chest pain are directed to ED. • Well patients screened at the entry and found to have a temperature greater than 100.4 F.
NOTIFICATION
<ul style="list-style-type: none"> • Inform referral sources of the availability of the REC. • Include the call center staff members and providers.
CLUSTER CONCEPT
<ul style="list-style-type: none"> • Have agreements in place between clinics for APPs and insurance coverage so patients can be seen and insurance can be billed at various primary care locations in the network.
LOCATION/FACILITY
<ul style="list-style-type: none"> • Make sure to have a specific area away from well patients for evaluation, entry and exit. • Consider designated parking areas just outside the exit. • Staff and well patients will enter the main lobby and be tested for temperature. No touch thermometer preferable. • REC patients will be evaluated in the car or directed to the REC exam rooms without stopping in the waiting room or lobby.
DOFFING AND DONNING
<ul style="list-style-type: none"> • Have an assigned area that is recognized by all staff. • Have a posted list of correct order for doff and donn.
EXAM ROOMS
<ul style="list-style-type: none"> • Have at least two exam rooms dedicated for potentially infected patients. • Consider testing outside, weather and other conditions permitting.
SUPPLIES
<ul style="list-style-type: none"> • Have adequate PPE and tests kits/swabs. • Do daily or weekly inventory.
WIPE DOWN AND SANITATION
<ul style="list-style-type: none"> • Have a wipe down schedule and protocol.

TABLE 2.

Algorithm for patients with flu-like symptoms



1. Lower respiratory tract-like flu symptoms typically include some combination of fever, new cough, myalgia, and shortness of breath, isolated sore throat, nasal congestion, sneezing and sinus congestion typically represent URI rather than LRI symptoms. Anosmia may point to COVID-19.
2. Severe symptoms are judged clinically, but include severe cough, shortness of breath or, for patients over 65, a temperature greater than 100.4F°.
3. Need for face-to-face visits when patients are older than 65; have co-morbid conditions such as COPD requiring treatment, diabetes, heart failure, or active cancer; are immunosuppressed; or had a hospitalization due to cardiovascular disease in the past year.

Unscheduled Walk-in Patient with Flu-like symptoms

1. Provide patient (and family) with surgical mask.
2. Politely ask patient to back to their car or wait outside.
3. A clinical person will call or meet the patient and follow the above algorithm as it pertains to Televisit or in-person visit.

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