

May 21, 2020

COVID-19 vs Influenza – what are the key differences?

- Higher mortality (particularly in older, chronically ill, example in the >85yrs → 10% mortality)
- Higher hospitalization rate
- Higher contagion – average COVID-19 patient infects 2-2.5 more. (R_0)
- Result – potential to severely stress health system quickly

Testing is key (followed by Contact Tracing and Quarantine)

1. Public health reasons:
 - identifies hot spots and where to apply resources; and
 - understand disease better.
2. Individual patient reasons:
 - helps make better decisions in high risk groups:
 - Health care workers and first responders going back to work
 - Better use of personal protective equipment (PPE) burn
 - Triage those who can proceed with surgeries/procedures
 - helps determine how to handle mild to moderate illness;
 - helps determine who to isolate and for how long; and
 - greater test availability leads to testing for even minor symptoms.
3. How much testing should we be doing?
 - Tests per capita – best indicator but best number is unknown
 - Almost all public health experts agree we have not had an adequate number of tests
 - No consensus about what that adequate number might be
 - Jha et al (May 2020) – recommended for South Carolina 172 per 100K
4. Why can't more testing be done?
 - Specimen collection → Specimens collection kits – nationwide shortage
 - Test (each one of these can be a challenge)
 - Hardware; software; reagent; technicians to run tests
5. What is MUSC's capacity?
 - Clinical lab – ramped up consistently in past two months; currently ~1500 / day
 - Research lab – obtained an early FDA waiver; potentially on line this week; ~1000 / day
 - By end of June, likely in 3000-4000 range / day
6. Cost of test
 - Diagnostic PCR ~\$50
 - Antibody ~\$20
7. Specimen collection sites
 - MUSC will continue nasopharyngeal aspirate collection
 - These sites require workers to be in PPE
 - Can be set up rapidly and large numbers tested in a day
 - Automating process which will improve test turn around

8. Statewide testing plan

Sites we have visited:

- a. Columbia: Richland Northeast High School
- b. Columbia: Forest Heights Elementary
- c. Columbia: Eau Claire High School
- d. Columbia: Rice Creek Elementary
- e. Kingstree
- f. Swansea
- g. Hollywood
- h. Sumter
- i. Holly Hill
- j. Mayesville
- k. Hartsville
- l. Santee
- m. Spartanburg
- n. Continue to test in Charleston
- o. Continue to test in Florence
- p. Continue to test in Lancaster

Appendix A

MUSC Health Recommended Approach to COVID-19 Testing for Organizations (version May 20, 2020)

Why?

- Evidenced based approach
- Ensures for rapid screening of large populations
- Updates as necessary to incorporate the technology

Steps*

1. All employees take the MUSC Health COVID-19 symptom checker
2. If any symptoms in last 14 days → proceed to COVID-19 diagnostic test
3. If no symptoms in last 14 days → proceed to COVID-19 antibody test

Frequency

1. Every 30 days if activity remains moderate to high;
2. Reduce to every 60 days after that and then perhaps to every 90 days; and
3. Frequency has additional variable and these are general guidelines.

* Organizations may elect to pursue a different approach. MUSC Health will only endorse alternative approaches if the organization is part of the MUSC Health Back to Business (B2B) program as modifications to the recommended approach require careful discussion and potential additional accommodations.

As of May 20, 2020 (this will change based on latest evidence and technology)

COVID-19 diagnostic test:

- Nasopharyngeal (NP) specimen collected by a health care professional via a nasopharyngeal swab.
- PCR test:
 - MUSC Clinical Lab: Abbott RealTime SARS-CoV-2 assay (molecular)
 - MUSC Research Lab methodology – in progress

COVID-19 antibody test:

- Blood specimen collected by a health care professional via phlebotomy
- Antibody test:
 - MUSC Clinical Lab: Abbott Laboratories SARS-CoV-2 IgG assay (serology IgG)
 - MUSC Research Lab methodology: in progress

Appendix B

MUSC Health COVID-19 Response in Rural and At-Risk Communities

Background:

Rural and underserved communities experience disparities in access to COVID-19 screening, testing, prevention, and treatment in South Carolina and nationally. Fortunately, South Carolina has in place many pieces of a technology-assisted response plan that can be rapidly utilized to identify and care for at-risk individuals in rural areas.

MUSC will work with statewide partners to leverage technology, mobile, and onsite testing units to expand access to COVID-19 education, screening, testing, monitoring, and treatment for patients in rural and underserved areas, slowing the spread of disease and enhancing public health in South Carolina.

Continuum of Care for COVID-19 Patients:

MUSC is implementing a comprehensive, population health approach in order to meet patient needs. We aim to provide a continuum of services for COVID-19 patients, from education and outreach, to the initial screening encounter, through testing and care, and finally, to a safe return to work. We have identified seven key elements of a response, including:

1. **Community Outreach:** Communication is a critical but challenging component to reaching rural and underserved communities, given disparities in access to reliable internet and transportation. For this reason, MUSC will work with statewide partners to identify gaps in existing outreach and bring information and care directly to rural patients. This will involve collaboration with Clemson University through the *Healthy Me – Healthy SC* partnership, community health centers, federally qualified health centers (FQHC), the South Carolina Telehealth Alliance, and others.
2. **Screening of Symptomatic Individuals:** We propose to use the MUSC Health Virtual Urgent Care platform to evaluate patients, determine if the patient needs diagnostic testing, make a referral to specimen collection center, and then follow up on results. Virtual urgent care is the safest way to screen and triage patients who are symptomatic or believe they have been exposed to COVID-19. While smartphones and connected devices are the preferred virtual urgent care platform, MUSC has set up a hotline for those patients without access to a smartphone or internet. A Spanish version is also active.
3. **Mobile Specimen Collection:** MUSC will use existing specimen collection centers around the state and if there is no collection center nearby, we will deploy a mobile team to do specimen collections on a regular basis in the area. Logistical information will be communicated to patients by virtual urgent care providers, health extension agents, community health centers, and other statewide partners. Mobile testing units could also be deployed to reach high population at-risk communities. This would allow us to collect specimens from both the rural community and at-risk individuals in urban areas.

The vans will be used to transport supplies and staff, and tents will be set up outside the vans to collect respiratory or blood specimens from those patients identified as needing testing for active infection or immunity, based on clinical determination. For areas without reliable internet, mobile vans may serve as internet hotspots to enhance connectivity and access. Technology services and education will also be available.

4. **Diagnostic Testing:** MUSC Health has sufficient capacity to conduct diagnostic testing at existing specimen collection centers and future mobile sites. MUSC can expand this capability in rural areas and at-risk communities. The turnaround time for this test is less than 24 hours.
5. **Antibody Testing:** MUSC Health has antibody testing availability and is poised to work with organizations in deploying this test to large populations groups. This test helps to determine if an individual has been exposed to COVID-19 and potentially immune to the COVID-19 virus. Repeat antibody testing is key to determining if individuals can be exposed to others with COVID-19 as well as “certifying” if individuals can work in high risk areas. MUSC can expand this capability in rural areas and at-risk communities.
6. **Community Engagement:**
 - a. **Health Extension Agents:** MUSC and Clemson have partnered to deploy the *Healthy Me – Healthy SC* program, which utilizes community health extension agents to enhance access to health screening, education, and prevention resources. This program has the infrastructure, nonclinical staff, and longstanding relationships in place in rural communities throughout the state to help identify and “spread the word” on testing sites and logistics.
 - b. **DHEC / Hospitals & Health Systems / Community Health Centers:** MUSC will partner with multiple groups to enhance engagement. MUSC has wide connections across multiple rural and at-risk communities and can leverage these relationships to facilitate community engagement in this effort.
7. **Safe Quarantine:** Underserved and minority populations sometimes live in multi-generational homes or multi-family housing units that can increase risk for families and communities. MUSC proposes to work communities to identify the best approaches to safe quarantining. In some instances, the SC National Guard and Army Corps of Engineers have helped to develop a Tier 1 unit for individuals that can self-care yet need to be isolated to prevent the spread of disease. In other areas, this initiative might utilize hotels and other unoccupied facilities throughout the state. As part of the safe quarantine effort, MUSC will incorporate Remote Patient Monitoring to ensure that COVID-positive patients are safely quarantined for the duration of their illness.

Timeline:

Given the trajectory of the virus and the necessity of a rapid response, MUSC has piloted existing COVID-19 services within several days. Similarly, the activities outlined above could be expanded and piloted on a regional basis within one week and implemented more broadly in several weeks’ time. We plan to track and disseminate these activities to serve as a model for others across the country.