



MEDICAL CONTROL BOARD

Chad Borin, DO, FACOEP, Chair
St. Anthony Hospital

Russell Anderson, DO, Vice Chair
Hillcrest Hospital South

David Smith, MD, Secretary
Baptist Medical Center

Roxie Albrecht, MD, FACS
OU Medical Center – Trauma

Barrett Bradt, MD
St. Francis Hospital

Jeffrey Dixon, MD, FACEP
Hillcrest Medical Center

David Gearhart, DO, FACOEP
OSU Medical Center

Karyn Koller, MD
OU Medical Center

John Nalagan, MD, FACEP
Mercy Health Center

Keri Smith, DO
Integris Southwest Hospital

Michael Smith, MD, FACEP
St. John Medical Center

OFFICE OF THE MEDICAL DIRECTOR

David Howerton, NRP
Division Chief – Medical Oversight - West

Duffy McAnallen, NRP
Division Chief – Medical Oversight - East

Matt Cox, NRP
Division Chief - Critical Care Analytics

Kimberly Hale
Administrative Assistant

Curtis Knoles, MD, FAAP
Assistant Chief Medical Officer

Jeffrey M. Goodloe, MD, NRP, FACEP, FAEMS
Chief Medical Officer

Update 14 - COVID-19 – From Office of the Medical Director 14 APR2020 1500

To All EMS Personnel in the EMS System for Metropolitan Oklahoma City & Tulsa

Key Content:

- **Testing for SARS-CoV-2/COVID-19**
- **Educational Resource – COVID-19 - CIDRAP**

“I never saw no miracle of science

That didn't go from a blessing to a curse”

Gordon Matthew Thomas Sumner, CBE

Testing. What everyone wants and what most currently believe will be THE answer to save us all. I like testing. I like ACCURATE testing and therein lies the problem. So let's make this Update 14 about what's on most minds right now.

Testing for SARS-CoV-2

Although our world is anything but simple, we often prefer (and sometimes need) stark differences presented to us to make informed decisions: yes/no, up/down, positive/negative. This is the basis for many medical testing platforms, not so much a “number” on a scale, but a “positive” or “negative” result. Spend any time in consuming network news today and you'll be hit with a staggering quantity of quantities about all things COVID-19. On an individual level, remember that a person either 0% doesn't have COVID-19 or they 100% do have COVID-19.

So there's no 15% COVID-19 positive in you and me. Though, as of last Friday, April 10th, 15% of the known COVID-19 positive cases in Oklahoma so far? Yes, affecting health care professionals. As if you needed any further warning about how we are at risk for this illness. That said, remember the carefully thought actions we have collectively taken so far and the ones we will make ahead are all designed to reduce your risk of acquiring COVID-19.

When somebody goes from 0% (not having COVID-19) to 100% (having COVID-19), that's an important change to recognize as soon as possible (especially if the “somebody” is you or someone in your family, correct?) so it's understandable we want testing and we want it NOW.

Testing Outcomes

There's a very important point that is getting so lost in most conversations about testing it isn't even first found (discussed) to then get “lost.” That point is the accuracy of these tests. For any test, especially those in medical care – let's say for a disease we'll call X, there are basically four possible outcomes:

I have disease X. The test is “positive” for disease X. = True (accurate) positive.

I don't have disease X. The test is “negative” for disease X. = True (accurate) negative.

Perfect! Just what we need. Okay, sign me up for the test, you and everybody would understandably say. Hold on, though. We have two more of the four possible outcomes of this test:

I don't have disease X. The test is "positive" for disease X. = False (inaccurate) positive.

I have disease X. The test is "negative" for disease X. = False (inaccurate) negative.

Now we have problems, don't we? Neither of those inaccuracies are good, are they? What are the consequences of having a test that isn't reliable?

If you don't really have the disease, but the test says you do, then you could suffer 1) physically, such as experiencing nasty side effects of medications or other therapies trying to cure you of what you don't really have; 2) mentally, through the anxiety related to an infectious disease and its impact on those around you, your spouse, your kids, etc.; and 3) economically, through the loss of work in forced quarantine time, understandably trying to keep you from spreading this illness – again that you don't actually have – in the workplace and to patients. Not good.

What's even worse though is the false negative. Now you really do have the disease, but because the test is inaccurate, you've been given false reassurance. You don't take precautions that you would if the result was accurate, and in the case of an infectious disease? You guessed it. You aren't receiving supportive treatment and you are unknowingly infecting others – your family, your co-workers, and your patients. Really, really not good.

Here's a sobering article from the April 12th Sacramento (California) Bee, their local newspaper:

<https://www.sacbee.com/news/coronavirus/article241953031.html>

Today's Tough Testing Realities

Just today on an update web conference with the EMS physician medical directors of the 50 largest US cities and key international cities, is this latest about testing:

There are now 106 tests listed on the FDA website related to coronavirus testing. Think about the whole timeline for SARS-CoV-2. It starts with its first illnesses in China in late 2019, likely as late as December, then its identification on January 5th as the causative organism for the pandemic we are experiencing today. January 5th. First identification. And today is just 100 days exactly from then. So in 100 days from even figuring out what this virus is, we have 106 tests that are fully vetted, fully scientifically validated, absolutely accurate? Not close.

The FDA and the US federal government in general is under pressure to get us all fast answers. The danger in fast is that it takes time to confirm accuracy. And that frankly isn't happening. Here's exact quotes in discussions I'm in about these tests available to the public in the US today: "It's the Wild West." "About half of these are pure junk." Leaves one feeling comfortable, doesn't it? Anything but.

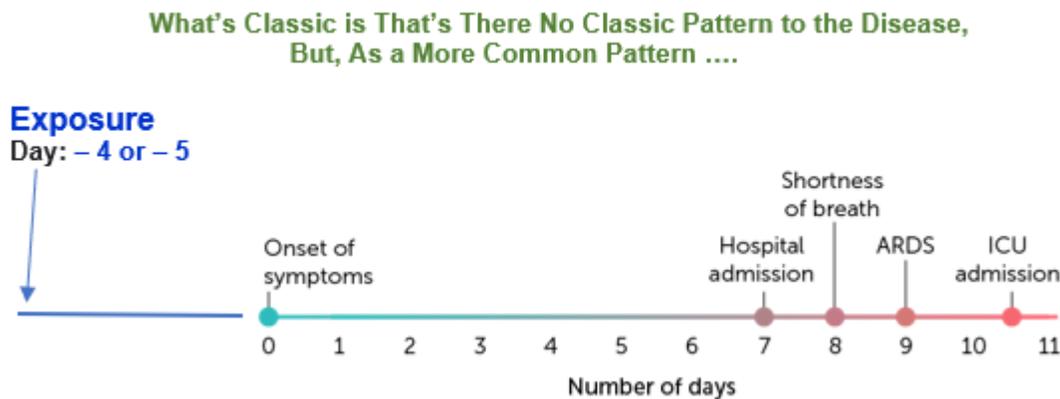
These tests are not FDA certified as accurate. They are simply acknowledging their existence at this point with very little to almost no scientific proof of accuracy. We could debate what makes a test in medicine "accurate enough" but nearly any medical research worth its salt has to prove that a finding is certain enough that there is only less than 5% chance that the finding is due to chance alone. Meaning, if we translate that to testing...at least 95/100 that have Disease X would then test positive for X = 95%+ true positive (that's also known as a test's "sensitivity" = tested positives divided by all that are really positive). Same applies to the negative, so we'd want to see at least 95/100 that don't have Disease X getting a negative for X result (also known as a test's "specificity" = tested negatives divided by all that are really negative). In fact, in the case of COVID-19, wouldn't you and I want a test that is even more "specific" or in other words, more accurate in telling us we don't have COVID-19 than just 95%? Sure. We'd want that closer to 100% to best control the spread of COVID-19 and help those that need supportive treatment get it sooner than later.

Types of Testing for COVID-19

Nasal swab virus testing – this is likely the first kind of test you have in mind when talking about COVID-19 testing. It has been around the longest (though ‘longest’ is weeks in this case) and best studied so far. It samples your nasopharynx (the back part of your nose) and collects a specimen on the swab, which is put in a liquid to preserve it, it goes to a lab, and is run on a machine, poof....a few hours later, a result. Hopefully, accurate, but there’s many steps there, and if the sample wasn’t taken properly, that alone can mess up the accuracy. This is a process that looks for virus itself, the actual SARS-CoV-2 and if it’s hanging around in your respiratory system.

Blood antibody testing – lots of hype (“results within minutes!!!!”) and hope about this one. This is likely the one you may be hearing the most discussion about these days. This uses a blood sample. This looks for the presence of two different types of antibodies (your body’s natural “police” against infections) in your blood. In the case of COVID-19, it’s looking for an antibody called anti-SARS-CoV-2 IgM and another antibody called anti-SARS-CoV-2 IgG. Yes, this gets detailed very quickly, but the details are important.

Let’s go back to Update 13 and study this illustration – and the descriptive text - of the classic pattern of COVID-19 illness:



(Image source: Dr. Paul Pepe – Metropolitan Municipalities EMS Medical Directors Alliance Briefing April 3, 2020)

The exposure could be anywhere from 2-14 days before symptoms, if symptoms even arise. The typical time from exposure to onset of symptoms we notice is 5 days at present, based on data from around the world, especially China and Italy. The symptoms are most commonly fever, achy muscles (myalgias), cough, and congestion. Sometimes gastrointestinal symptoms occur, such as nausea, vomiting, or diarrhea.

In the less than 20% that need hospitalization, it’s often about a week after symptoms start. It’s not an immediate need for hospitalization. Most of those folks needing hospitalization are because of problematic shortness of breath. The estimated 5% of total infected persons that require ICU care do so because of severe lung problems, to an extent that more than just oxygen, something like a ventilator is needed to do the work of breathing for the patient.

It’s important to understand the timeline of illness because when to test for antibodies and what they mean is directly linked to it. The antibody tests do NOT test for the SARS-CoV-2 virus itself in the bloodstream. The antibody tests are testing for signs that you have (or have had) SARS-CoV-2 infection. That’s the difference in the types of antibodies. First, let’s talk about the IgM antibody. This is a “police academy cadet” if we’re talking the law and order of infections. It’s a newly formed antibody. Not as strong as the IgG antibody. This shows up about Day 5 after illness starts. So the timing of an antibody test is important to its accuracy. If we tested as soon as symptoms showed up, we could miss an accurate diagnosis of COVID-19 simply because it hasn’t been long enough to form IgM antibodies. These go away though in time, so IgM typically means an active or recent infection of COVID-19. An IgM antibody won’t give you long-term immunity to this virus.

Now, the IgG antibody. The experienced “officer” of our immune system. Or for you Christmas movie fans, the Detective Lieutenant John McClane of our force. Experienced, able, ready for the fight. This shows up days later than the IgM antibody. In many cases, an antibody test that shows no IgM but yes IgG is saying you already HAD COVID-19. Super. Over and done. And now immunity to future exposures, right? Not so fast. Maybe. At least one study from South Korea gives us reason to be concerned that just because someone has been ill with COVID-19 doesn’t mean they will make a high enough level of IgG antibodies for the future to prevent a recurrence of COVID-19. In fact, that might be a limitation in up to 30% of individuals, at least those in this study. It’s quite a detailed study, but if your interest is peaked, you can read it all here: <https://www.medrxiv.org/content/10.1101/2020.03.30.20047365v1.full.pdf>

Saliva spitting into a tube testing – this is so new that it was literally announced this morning as acknowledged or “cleared” (which again doesn’t speak to its accuracy) by the FDA yesterday. Here’s the link to it: <https://apnews.com/a420e1c4b93f9fd9a14561196c92e0a2>

Lots of info, huh? It’s confusing at times and maddening at others. I can’t recommend one “brand” of test today because the validity of these are very, very scant in details available so far and what is available is based on small numbers of test subjects. Remember, marketing materials aren’t scientific literature.

So should you have a test? If you are sick and it’s been a few days and you are curious, sure. Just remember if it’s positive, that’s likely a true positive. If it’s negative (and of course for your sake and health, I hope it is) then put it in perspective. If you have all the right symptoms and the exposure risk (being human and working with humans) then I wouldn’t get too comfortable with that result. We don’t have to have test results, accurate or flawed, to make work or no-work decisions, or symptomatic care decisions, or when to go to the hospital decisions. We can use symptoms and our self-assessment skills for that. I’m sure more can and will be discussed on this subject as we learn more about which are the better accuracy tests in the weeks and months ahead. These tests, particularly the antibody tests, are more likely to help us in the Fall “wave” of anticipated coronavirus cases than at present.

Here’s a nice discussion about testing from the Assistant Medical Director for the EMS system in Austin/Travis County, Texas. Dr. J R Pickett is an enthusiastic EMS physician and I’ve appreciated his interest in having the facts lined up in this and other issues in the past. This was recorded on or just a bit before April 8th and already a few details have changed, but it’s a good discussion about the limitations of testing. One point to make for certain is that you don’t have to have a “negative” test to come back to work or be off a quarantine period.

<https://atcomd.wordpress.com/2020/04/08/episode-39-covid-tests-and-getting-out-of-quarantine/>

Educational Resource – COVID-19 – CIDRAP

Many of you are aware of my profound respect for an incredibly gifted epidemiologist at the University of Minnesota, Dr. Michael Osterholm. I encourage you to invest 48 minutes of time in listening to the third episode of The Osterholm Update – Preparing For What’s to Come (release date 8 APR).

You can access it at this link: <https://www.cidrap.umn.edu/covid-19/podcasts-webinars/episode-3> or The Osterholm Update is available on Spotify, Apple Podcasts, or Google Play Music.

I’m incredibly proud of all of you and your dedicated actions to serving others, keeping your colleagues safe, and keeping yourself safe. We’re in a true marathon length of illness. Stay on the “gas” and I will, too. Vigilance. Safety. Evidence-Based Service to Others.

Let’s be careful out there.

Dr. Goodloe

1111 Classen Drive • Oklahoma City, OK 73103-2616 • 1417 N. Lansing • Tulsa, OK 74106
(405) 297-7173 Telephone • (405) 297-7199 Fax • www.okctulsaomd.com