

COVID-19 First Responder Update 6/11/20

There is plenty of information about COVID-19 available for anyone who searches and clicks on a computer or turns on a TV or radio to catch up on the news. As more is learned about the disease, more info is written and released in an effort to help advance the ability to recognize, identify, track, treat and prevent COVID, so sometimes, as more insight is gained, the information changes. In the beginning, a lot of it was because there just wasn't enough data and/or there were assumptions about COVID made that turned out not to be true. Currently, there is still valuable info that has to be released so that others can apply it to provide better care although some is released before enough (or any) scientific or peer review has been completed. Or, it may be put out to be wrong maliciously, is intended to sway opinion, or to provide a financial benefit.

Knowledge really is power. Just realize that information being published may not have completed the typical scrutiny, but is being offered as suggested solutions, based on previous or recent practice, and will still need to be scientifically tested, critically peer reviewed for the use of proper methods, conclusions and applications, and then likely formally accepted. Be aware of this as you search for articles and read information. Look at what organization/institution is publishing the information, look at the credentials of the person writing, look at the details and type of the study or observation. Check for other related articles that back up or are counter to what is suggested. Look for conflicts of interest or who is backing the writer or publisher. Check for written comments, see if they make sense and if there is any consensus. And, **always**, be ready for change; we won't know a lot of proof-beyond-a-doubt info for quite a while yet. But, it's good to know that there are great minds all over the subject and almost all are doing their best to advance the science.

Here is updated information on topics that have been discussed in some of the past 13 Paramedic Chiefs of Canada Webinars on COVID-19, with some links to more information and details.

Pediatric Multi Inflammatory Syndrome Associated with COVID is an ongoing issue with WHO, Canadian and CDC registries announced, but not yet providing public information. For EMS purposes, the case definitions don't really help responders understand what to look for in these children (assessment) or how to monitor and manage because many of the criteria require hospital procedures to determine. Details specifically for EMS and parents can be found on the *FirstWatch Health Intelligence Page (HIP)* <https://www.firstwatch.net/hi/>, by clicking on *COVID-19* and again on the links from *May 29, 2020*. An important take-a-way is that these kids have to be identified quickly (within 48 hours of the first symptom) and the common symptom is fever, which then has a fairly long list of other symptoms that may also be present. Remember that fever-reducing meds may change the presenting picture so ask the parent/caregivers if these meds have been given. If the infant/child/teen meets the criteria, transport to a hospital for further care. Some systems may develop protocols & transport policies specifically for this syndrome, since it requires specialized care. And, since fever, aches,

pains, and rashes are common to kids, anyone who has or is around them, needs to know what to look for and what to do when found, so tell your family, friends, teachers, and so on all about it. Below, there are some links with updates on the Syndrome. Updates on this topic will be published on the HIP as they become available.

Multi Inflammatory Syndrome in Children/Pediatrics Associated with COVID:

CIDRAP - Multi Inflammatory Syndrome in Kids Different than Kawasaki 6/11/20:

<https://www.cidrap.umn.edu/news-perspective/2020/06/covid-19-linked-syndrome-kids-new-distinct-studies-suggest>

Medscape Commentary on Pediatric Multi Inflammatory Syndrome:

<https://www.medscape.com/viewarticle/930686>

JAMA SARS-CoV-Related Multi Inflammatory Syndrome in Children (6/8/20):

<https://jamanetwork.com/journals/jama/fullarticle/2767205>

Recently, in the news and in COVID-specific medical/science updates, there has been discussion about a recently pre-released study (6/3/20) about **N95 masks and deconning them for reuse via four methods (VAP, UV, Heat, Ethanol)**. It tests both efficacy of the decon and the filtration efficacy of the N95s after each cycle. I encourage you to read at least the abridged version of the study and see the Figures on page 13-16 of the full study, available in the 2nd link below.

Note: although the majority of PPE of today was specifically intended for single use only, including N95 masks, the lack of coordinated effort in manufacturing these supplies and distributing them, has resulted in a need to extend wear or not be protected at all. Therefore, as awful as it is, Decon and Reuse have become a necessity in many areas.

However, it must be understood at all times, that **a single use N95 mask is still the scientifically accepted choice when managing a COVID patient, meeting the case definition of PUI, or during aerosol-generating procedures**. Manipulating, transporting, and deconning all run the risk of contamination of the holder. Particular attention to doffing any PPE should be done thoughtfully, and in a safe, prescribed way, preferably using a checklist, algorithm, or poster.

CDC Emerging Infectious Disease (EID) on N95 Respirators, Reuse & Decon Efficacy and Failure to Fit:

https://wwwnc.cdc.gov/eid/article/26/9/20-1524_article

EID Appendix for Study Presented Above (see pages 13-16 for Figures):

<https://wwwnc.cdc.gov/eid/article/26/9/20-1524-app1.pdf>

Testing for SARS-CoV-2 (the virus causing COVID-19) is still not as reliable as it needs to be, at least with some tests. This needs to change as rapidly as possible. This issue applies to both the diagnostic test (**do** you have it?) and the antibody test (**did** you have it?). Both have issues, which is not surprising because in an attempt to get testing up and running, the process rules were relaxed under an FDA Emergency Rule order, and not all tests performed as promised or as they should. The FDA has now stepped in and started validating the testing process and results for both diagnostic and antibody tests. Unfortunately, the majority of the erroneous results were false negatives for the diagnostics (the least desirable outcome) and false positives for the antibodies (ditto). Some of the errors may not be in the science part of the test, but may be the technique of the person administering the test, the wrong test materials are used (swab, substrate), delays in performing the test once gathered, poor timing of the test, etc. Hopefully, both tests will become more reliably valid.

You have probably heard the terms sensitivity and specificity used in describing these tests. There are different ways to think about the terms but both apply to biological tests. First, the down and dirty difference, although not the ultimate answer you would write on an exam: Think of sensitivity as being the screening part of the test and specificity being the confirmation. You don't want to miss anything on the screen, but you don't want to give any results if they are wrong for the specificity part. As an example, let's use cancer as the test. If I am screening (sensitivity) for cancer, I don't want to miss it. However, if I have a result, I have to know that the result is giving me an answer for cancer and not the flu (specificity). In COVID, that means, if it's a diagnostic test, the sensitivity is high so that few/no COVID infections are missed on the "screen" but a positive result is really a positive result for COVID and not for another virus that may share some similarities, like a coronavirus that causes a common cold "specific". Same principle for an antibody test. The sensitivity and specificity for a test (for that specific type of test from a specific manufacturer/lab not for each test) is expressed as percentages. The closer to 100% for each, the better. Many of the COVID tests have not come close to 100%; in a range of 60-80%, with some lower and other higher. Some tests have done well.

To confound the antibody testing even more, no one is sure what a positive result means, other than you have been exposed. No one is sure what level of antibody is needed to prove immunity to reinfection or lasting infection. In May, the American Medical Association listed the limitation to current antibody tests as 1) may give false positive results; 2) could possibly pick up other virus antibodies; and 3) immunity of those who have had COVID-19 is not well understood. In other words, is one immune and protected, is the immunity permanent, is the immunity the same for someone with asymptomatic disease as those with mild symptoms? What about the difference between mild illness at home, vs moderate disease in the hospital, vs severe disease in the ICU? Is the immunity conveyed the same or different?

Below, are a few websites on COVID testing and test results. Some pertain to both diagnostic and antibody; others are diagnostic only, as marked. The article about the USS Roosevelt not only discusses symptomatic testing but also how many of them were

asymptomatic and still tested positive. Different observations and other studies have indicated an asymptomatic rate of COVID from 7% to 98%. The majority were in the 40-60% range, with the likelihood expected to be around 50%. That is 50% who don't have any symptoms of COVID, who are sick with it, and don't know it. That is one of the major reasons that wearing a mask all the time, except when you are in your home is recommended. But a mask does not preclude at least 6 feet between you and another person, avoiding those that are sick, avoiding places where you can't keep 6 feet between you and others, or washing your hands. A type of close-fitting eye wear would add another layer of protection.

COVID Testing - Diagnostic & Antibody:

Medscape COVID Testing FAQ Diagnostic & Antibody (6/10/20):

<https://www.medscape.com/viewarticle/932105>

MMWR Report COVID Infections & Testing on the USS Roosevelt Carrier:

<https://www.cdc.gov/mmwr/volumes/69/wr/mm6923e4.htm>

Diagnostic Testing:

York Press Release on Mismatches in COVID Diagnostic Testing & False Positives:

https://www.eurekalert.org/pub_releases/2020-06/yu-pcd060920.php

Literature Review & Pooled Analysis from Annals of Internal Medicine on Diagnostic Testing False Negative Results:

<https://pubmed.ncbi.nlm.nih.gov/32422057/>

SARS (not COVID) PCR Testing Timing & Results in Toronto Hospital, 2003:

<https://pubmed.ncbi.nlm.nih.gov/14707219/>

Below is an article about the different **COVID Vaccines** currently in the running. There are over 120 candidates throughout the world and, although they need thorough vetting, scientists and specialists agree that the more candidates there are, the more likely there will be one or a few which will work. Plus, multiple vaccines will likely be necessary to provide enough vaccinations for people worldwide. The fast track that the US has initiated is desirable from a protection standpoint, but a compressed timeframe also means that all the typical information we have on vaccines, before administering them to a population at large, will not be available until a few years into the post vaccination period. First, the current frontrunner vaccine candidates are made using a totally new process for developing the vaccine. They are using messenger RNA (mRNA) placed into a cell to introduce the new genetic material into the body and begin an immune response. Since this is a new method, adverse or unknown side effects cannot be predicted as readily as using known vaccine-producing techniques. This compression of time has already been occurring with some medications totally unrelated to COVID, so although

that part of it is not an entirely new process, it is likely that the COVID vaccine trials are much shorter. Basically, these vaccine trials will continue with vaccination of the population. It will be unknown how long immunity from the vaccine may last, if it prevents disease, as well as what adverse effects may occur when given to very large groups and/or those not eligible for vaccination during a trial because of medical history, acute or chronic disease (cancer, asthma, kidney disease, post-transplant, etc.).

COVID Vaccines:

Medscape COVID Vaccine Candidates (6/10/20)

<https://www.medscape.com/viewarticle/932127>

Lastly, unlike other outbreaks, epidemics or pandemics, there doesn't seem to be **much public information regarding the number of Health Care Workers (HCWs) & First Responders (FRs) who got sick with COVID or died**. Both these groups include those that may not be performing direct patient care but are in close contact with patients because they are taking care of patient rooms, meals, activities, transportation, etc. Normally, the number infected with an infectious disease, and those who die from it, are included in official counts, both as a testament to their work, but also as an indicator of how infectious a disease is and whether or not there is enough protection for the HCWs and FRs. For whatever reason, the numbers of workers affected by COVID has not been readily available within Public Health data and/or reports. In multiple articles, a number of > 600 has been used to describe the number of deaths in either the US or the US and Canada.

COVID is taking its toll on everyone. So much is unknown that there is widespread fear about what is to come. Some seem able to carry on as if nothing extraordinary is occurring, but, for most, there have been major changes to their lives. This includes children. And, perhaps it includes our HCWs and FRs the most. Because, they have to deal with all that and more. They are putting themselves at risk with, at a minimum, having to change their normal protection practices because of extended or reuse of PPE. They have had to curtail normal behaviors of caring for the entire patient and not just their body and disease. They have had to take the place of family members, sometimes for weeks, because there are no visitors allowed in the hospital or in an ambulance. The HCWs, and even FRs, may be there while a person is actively dying without their family, whether from COVID or something else. They are also taking care of other front-line workers, or their family and friends who get sick or die. So, it takes its toll. Below, are a few links to acknowledge it and provide some insight.

Thank you for what you do so well and so nobly.

Infections & Line of Duty Deaths for First Responders & Health Care Workers:



Helping the Helpers

Ontario Provides Infection Control and Prevention for First Responders:

<https://www.publichealthontario.ca/-/media/documents/ncov/evidence-brief/eb-covid-19-first-responders.pdf?la=en>

Globe & Mail Opinion that Canada Has to Prepare for Medical Workers:

<https://www.theglobeandmail.com/opinion/article-canada-has-to-prepare-for-medical-workers-to-die-in-the-line-of-duty/>

Kaiser & Guardian Join to Keep Track of HCW & First Responder Worker Deaths:

<https://khn.org/news/lost-on-the-frontline-health-care-worker-death-toll-covid19-coronavirus-2/>