GW Provider FAQs on COVID-19
Updated: April 8, 2020

1. How can I evaluate my patient's respiratory status via Phone/Telemedicine?

- A few questions can help assess breathlessness[1]:
  "Are you so breathless that you are unable to speak more than a few words?"
  "Are you breathing harder or faster than usual when doing nothing at all?"
  "Are you so ill that you've stopped doing all of your usual daily activities?"

- Focus on a change in respiratory status from previous
  "Is your breathing faster, slower, or the same as yesterday?"
  "What could you do yesterday that you can't do today?"

- If telemedicine video is available, then assess a respiratory rate, along with work of breathing, interrupted speech and accessary muscle use. Listen for audible wheezing. Assess the oropharynx and evaluate for cyanosis of the lips or nails.

- Consider the Roth test for estimation of oxygen saturation[2] (Please note that this has not a widely validated tool)
  1. Have the patient count from 1 to 30 in their native language, in a single breath, as rapidly as possible.
  2. Record the duration of time and highest number reached
  3. Maximal counting number < 10 or counting time < 7 seconds identified patients with a room air O2 saturation < 95% with sensitivity of 83-91%
  4. Maximal counting number < 7 or counting time < 5 seconds identified patients with a room air O2 saturation < 90% with sensitivity of 82-87%

- Smartphone Apps for pulse oximetry (Accuracy may be limited[3])
  Pulse Oximetry App for heart rate and oxygen saturation (May not be accurate <93%)
  Samsung Health App (under "stress", built into phones)

1. Greenhalgh T et al. Covid-19: a remote assessment in primary care. BMJ 2020;368:m1882
2. Waller MR et al. Benefits and risks of incorporating virtual visits into an allergy/immunology practice. Allergy Asthma Proc. 2020;41(2):76-81.
3. Chorin E et al. Assessment of Respiratory Distress by the Roth Score. Clin Cardiol. 2016;39(11):636–639.
4. Jordan TB et al. The utility of iPhone oximetry apps: A comparison with standard pulse oximetry measurement in the emergency department. Am J Emerg Med. 2019;S0735-6757(19)30467.

2. Should my patient stop their ACE-inhibitor (ACE-I) or Angiotensin-receptor blocker (ARBs)?

Recommendation: The American College of Cardiology, American Heart Association and Heart Failure Society of America recommend **against discontinuing** ACE-I and ARBs[1].

Explanation: Angiotensin converting enzyme II (ACE2) is a transmembrane protein that serves as a main cellular entry point for SARS-CoV-2, the virus that causes COVID-19[2]. ACE2 is

expressed in the hearts, lungs, kidneys, and vasculature. ACE-inhibitors (ACE-I) and angiotensin-receptor blockers (ARBs) in animal models increase the expression of ACE2[3], though this has not been confirmed in human studies. This led to the hypothesis that ACE-I and ARBs may worsen myocarditis or precipitation acute coronary syndrome. It has also been hypothesized that the upregulation of ACE2 is therapeutic in COVID-19 and that ARBs may be protective during infection[4].

1. Bozkurt et al. HFSA/ACC/AHA Statement Addresses Concerns Re: Using RAAS Antagonists in COVID-19, 2020.
2. Paules CI et al. Coronavirus infections – more than just the common cold. JAMA, 2020.
3. Zheng Y et al. COVID-19 and the Cardiovascular system. Nat Rev Cardiol, 2020.
4. Gurwitz D. Angiotensin Receptor Blockers as Tentative SARS-CoV-2 therapeutics. Drug Dev Res, 2020.

3. Should my patients stop NSAIDs/Aspirin?

Recommendation: The FDA and WHO **do not recommend avoidance of NSAIDs** at this time. For treatment of COVID-19, Tylenol (acetaminophen) may be preferred, if available.

Explanation: SARS-CoV2 binds to cells via Angiotensin converting enzyme II (ACE2). ACE2 is upregulated by ibuprofen in animal models and might contribute to increased pathology. Reports from France suggest a possible increase in mortality with ibuprofen in COVID-19 infection but these have not been corroborated.

1. FDA Advises patients no use of NSAIDs for COVID-19. Federal Drug Administration. March 19, 2020. https://www.fda.gov/drugs/drug-safety-and-availability/fda-advises-patients-use-non-steroidal-anti-inflammatory-drugs-nsaids-covid-19
2. Fang L et al. Are patients with hypertension and diabetes mellitus at increased risk for COVID-19 infection? Lancet Respir Med, 2020.
3. Day M. Covid-19: Ibuprofen should not be used for managing symptoms, say doctors and scientists. BMJ. 2020;368:m1086.

4. What is the recommendation for corticosteroids, both oral and inhaled?

Recommendation: The WHO recommends **against the routine use of corticosteroids** for the outpatient treatment of COVID-19, unless treating another indication. If treating another indication such as asthma or COPD exacerbation, minimize steroids by using the lowest effective dose for the shortest duration. Patients currently on inhaled corticosteroid should continue these medications to prevent exacerbations of their underlying lung disease.

Explanation: The data on corticosteroids for COVID-19 treatment is mixed. Steroids have not been shown to be beneficial in SARS. There is observational data regarding an impaired viral clearance, increased mortality and increased secondary infections with steroids in other viral illnesses. There has been one retrospective study from China in COVID-19 positive ARDS patients which demonstrated that methylprednisolone decreased the risk of death (HR 0.38, 95% CI 0.20-0.72) but this has not been corroborated.

Regarding inhaled corticosteroids, there is no data to support a higher likelihood of severe infection with use of these medications. As patients with uncontrolled asthma and COPD are at higher likelihood of exacerbations with viral illnesses, the benefits outweigh the potential risks.

1. WHO, COVID-19 Interim Guidance, March 2020
2. Lee et al. Effects of early corticosteroid treatment on plasma SARS-associated Coronavirus RNA concentrations in adult patients. J Clin Virol. 2004; 31(4):304-9.
3. Stockman et al. SARS: systematic review of treatment effects. PLoS Med. 2006 Sep;3(9):e343.
4. Wu et al. Risk Factors Associated with Acute Respiratory Distress Syndrome and Death in Patients with Coronavirus Disease 2019 Pneumonia in Wuhan, China. JAMA Intern Med. 2020 Mar 13.

5. Are hydroxychloroquine/chloroquine effective treatments for COVID-19?

Recommendations: Evidence is limited regarding the efficacy of chloroquine and hydroxychloroquine in the treatment of COVID-19 and currently neither the CDC or the Surviving Sepsis COVID-19 guidelines have recommendations for either drug in the treatment of COVID-19[1,2]. Clinical trials are underway and you may contact our infectious disease colleagues for more information on the status of studies at GW.

Explanation: Hydroxychloroquine has been shown to viral entry and viral release into the cell as well as reduce viral infectivity[3]. There have been several in-vitro studies demonstrating that hydroxychloroquine and chloroquine have activity against SARS-CoV, SARS-CoV-2, and other coronaviruses[4]. Hydroxychloroquine was shown to have relatively higher potency against SARS-CoV-2[5]. One study performed in China showed clinical and virologic benefit of chloroquine[4]. Another study showed that the combination of hydroxychloroquine and azithromycin decreased detection of SARS-CoV-2 RNA in upper respiratory tract specimens however clinical benefit was not assessed[6,7]. Several randomized control trials are currently underway in the United States to assess treatment and prophylactic benefit of hydroxychloroquine in COVID-19 patients, but there is currently no data available.

1. CDC: https://www.cdc.gov/coronavirus/2019-ncov/hcp/therapeutic-options.html
2. Alhazzani, Waleed, et al. "Surviving Sepsis Campaign: Guidelines on the Management of Critically Ill Adults with Coronavirus Disease 2019 (COVID-19)." *Intensive Care Medicine*, 2020.
3. Devaux CA et al. New insights on the antiviral effects of chloroquine against coronavirus: what to expect for COVID-19? Int J Antimicrob Agents. 2020 Mar 11.
4. Wang M et al. Remdesivir and chloroquine effectively inhibit the recently emerged novel coronavirus (2019-nCoV) in vitro. Cell Res. 2020 Mar;30(3):269-271.
5. Colson P et al. Chloroquine and hydroxychloroquine as available weapons to fight COVID-19. Int J Antimicrob Agents. 2020 Mar 4:105932.
6. Yao X et al. In Vitro Antiviral Activity and Projection of Optimized Dosing Design of Hydroxychloroquine for the Treatment of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). Clin Infect Dis. 2020 Mar 9.
7. Gautret P et al. Hydroxychloroquine and Azithromycin as Treatment of COVID-19: Results of an Open-Label Non-Randomized Clinical Trial. Int J Antimicrob Agents. 2020 Mar 20; 105949.

6. Is there data for vitamin C?

While the idea of vitamin C has been popular in the media, there is currently no evidence to support a low-dose or high-dose vitamin C regimen in COVID-19. There is a trial currently recruiting for high dose vitamin C in COVID-19 in China to be completed in Fall 2020.

7. Are there other COVID-19 treatments?

Anti-IL-6 therapies and remdesivir are other potentially promising therapies in COVID-19. Clinical trials are underway and you may contact our infectious disease colleagues for more information on the status of studies at GW.