

CT scan	Usually peripheral focal or multifocal ground-glass opacities affecting both lungs in approximately 50%–75% of patients. The severity of disease in some cases may not be parallel with CT imaging (consider age and comorbid conditions). As the disease progresses, crazy paving and consolidation become the dominant CT findings, peaking around 9–13 days followed by slow clearing at approximately 1 month and beyond. In some patients, especially in younger age, may not be consistent with disease severity. Serologic testing or RT-PCR are warranted. Keep in mind a negative CT does not rule out COVID-19.	[11]
Labs	Lymphopenia (poor recover) Lymphopenia (poor recovery) Monocytosis Neutrophils: increased Liver panel: transaminitis Increased creatinine d-dimer: elevation may be particularly predictive of respiratory failure Troponin: increased Procalcitonin: most patients at the time of admission present with normal level. CRP: elevated ESR: elevated LDH: elevated Serum albumin: decreased Hemoglobin: decreased	[12]

To date, the current status of potential therapies for COVID-19 is uncertain. Drug development is in embryonic stage. Vaccine developments are either in FDA process, or at the final stage of licensing. The authors caution about vaccines - if the virus has mutated since it outbreaks in China, we must make sure the future available vaccines are protective enough in lieu of viral polymerase mutations. The results HIV protease inhibitors lopinavir/ritonavir turned out discouraging. In one study, the authors concluded orally given lopinavir and ritonavir did not provide significant benefit in patients admitted with severe COVID-19 [13]. There are ongoing clinical trials for the efficacy of remdesivir and interferons [14]. The use hydroxychloroquine against COVID-19 has generated interesting discussions internationally. The use of this drug has been investigated for COVID-19 patients in China. Hydroxychloroquine has generated interest for use in certain international communities [15]. The US-FDA is allowing this medication to be used, the healthcare centers must receive the FDA protocol for its use. Hydroxychloroquine has a favorable pharmacokinetic profile [16]. Following a single 200 mg oral dose of PLAQUENIL to healthy individuals, the mean peak blood concentration of hydroxychloroquine was 129.6 ng/mL, reached in 3.26 hours with a half-life of 537 hours (22.4 days). Since dose of 200-400 mg may not produce an immediate acute adverse effect, we suggest the use might be helpful as a prophylactic agent for HCWs who are in the frontlines. The singles of 200-400 mg can also be used for at risk individuals. The prophylactic approach must be discussed with hospital formulary committee and as well with the therapeutic authorities as we believe that PCs can play a major role. The prescription of hydroxychloroquine for COVID-19

must also be explored in the Primary Care setting. Although we caution about contraindication of this medication such as Cardiotoxicity (prolonged QT syndrome) with prolonged use in patients with hepatic or renal dysfunction and immunosuppression [16], we believe that primary care doctors can contribute to the safe dissemination of this drug. The use of a humanized interleukin-6 (IL-6) receptor antagonist, tocilizumab, which first approved by the U.S. FDA in 2010 for rheumatoid arthritis, can now be used to manage for severe COVID-19 infections with the presentation of ARDS and has been tested in China [17]. The manufacturer of tocilizumab has recently launched a phase 3 clinical trial evaluating the efficacy of drug plus standard of care for use in hospitalized adult patients with severe COVID-19 pneumonia [18]. We believe the current rational use of tocilizumab may be considered in those patients with severe form of disease when they develop severe cytokine release syndrome (CRS), also known as a "cytokine storm." CRS essentially involves an overreaction of the immune system to COVID-19 which triggers a runaway inflammation response. CRS can lead to organ failure and death [19]. We strongly recommend the level of blood inflammatory markers must justify administration of this drug.

Healthcare clinics located in communities are an important part in creating infrastructure in addressing and fighting epidemics both immediate and long term [20]. It was stated that health clinics may serve as a critical role during an epidemic were trained healthcare professionals can deliver vaccinations and help monitor disease patterns in patients. It is already proposed that the use of telemedicine during the COVID-19 pandemic can be instrumental in monitoring and

triaging patients safely [21] and we believe that during this pandemic, PCs are well positioned to support in the effective treatment and coordination of patients that will help reduce over utilization of hospital services and to address unnecessary worry and anxiety among individuals in their respective communities. We predict that if PCs adopt our specific characteristics, they could potentially contribute significantly in flattening the coronavirus curve and avoid overwhelming our healthcare systems around the country.

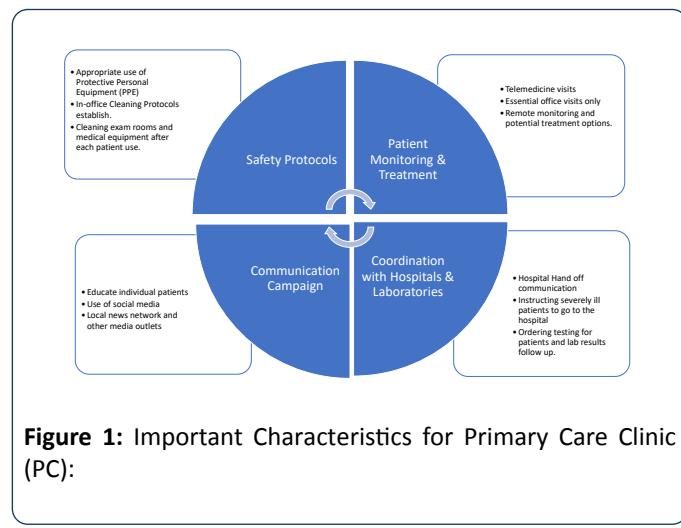


Figure 1: Important Characteristics for Primary Care Clinic (PC):

First, in order to effectively perform this role, PCs need to establish clear Coronavirus policies for their staff and clinicians within the office in order to protect the providers from getting infected. These policies are required to be followed in detail and comply by all staff members. For instance, the CDC has published recommendations [22] for all healthcare personnel to use proper protective personnel equipment (PPE) when dealing with potentially infected patients. Although the recommendations included PCs, there is very few studies looking at the effectiveness of these measures and if the PCs that are located in communities around the country are actually adopting such measures. For instance, we suggest that the PCs establish in office cleaning protocols that include cleaning office desk spaces, door handles that would eliminate any potential fomites in the office while cleaning all exam rooms, blood pressure cuffs and other equipment after each patient use.

Second, the use of remote care is encouraged during this pandemic where PCs are able to do this by doing telemedicine or phone consultations with patients to reduce the number of patients needing to come for an appointment. This type of Remote care was already recognized as a convenient and inexpensive way to care for patients who are potentially infected with the COVID-19 virus [21]. Simple conditions should be treated remotely, and all prescriptions should be sent electronically to pharmacies. Essentially, PC in the community will need to stay open and staffed accordingly and restrict office visits for essential conditions such as uncontrolled chronic diseases and acute illnesses that cannot be managed at home. Once treatment or vaccination for the COVID-19 is made available for use with established guidelines, PC can serve an important role in increasing access to such

treatments to the public accordingly. For instance, antiretrovirals or even chloroquine can be prescribed by PCs in collaboration with infectious disease doctors, which would ultimately make these interventions more widely available.

Third, PCs should coordinate with local hospitals and share their capabilities and capacities to local hospitals that can potentially redirect some of their simple cases to them. In addition, hospital physicians can also look at the possibility of discharging patients sooner from the hospital setting with appropriate hand-off communication to local primary care doctors in order to reduce readmission to the hospital. This will in effect make more hospital beds available for patients who are severely ill with the COVID-19. This is especially important in this pandemic as we have already predicted there would be limited hospital resources for the expected number of COVID-19 severely ill patients [23]. PCs also play a pivotal role in presumed diagnosis, and to establish baselines that are based upon physical, lab and imaging to determine if the patient warrants hospitalization. For instance, this level of coordination with specific patients in the community that are experiencing symptoms of potential COVID-19 infection would be able to be monitored in order to watch for signs or symptoms of severe illness where at that point they would be instructed to go to the hospital for further care. PCs need to also coordinate with the Department of Health (DOH) and commercial laboratories for testing and to support ongoing surveillance of this pandemic. During testing shortages, the only patients that should be tested are patients with severe illness that are hospitalized in order to support hospital-based clinician's diagnosis and management. During this time, PCs can advise all patients with symptoms to stay home and monitor those patient's closely using telemedicine, phone consultation and other remote means as per above. Once testing is made widely available then PC can send patient who meet criteria to "drive thru testing" centers or once point of care testing is made available, PCs can send actual test kits to patient's homes with appropriate follow up where laboratories would send lab results directly to the treating primary care doctor(s) at the PCs.

Forth, PCs should institute a communication campaign for ongoing education about the coronavirus for individual patients and their respective communities. For instance, doctors can choose to educate patients at the end of each encounter about the pandemic and how best to practice personal hygiene. PCs can also use social media and other media outlets in their respective communities to effectively communicate reliably with trusted information about COVID-19.

In conclusion, we believe these four characteristics if they were adopted widely, we would quickly realize the important role PCs can have during this pandemic in reducing the curve.

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