

A Need of the Hour Approach for COVID-19 Clinical Home Monitoring and ICU Admissions

With COVID-19 pandemic spreading across the globe like wildfire, and insidiously making its way into Pakistan, we started getting calls from family and friends with questions like, will I get COVID-19? Is it real, or some political or pharmaceutical conspiracy? What is the next step after a positive PCR test? Why am I breathing differently?

At the end of the day, general public was disquiet and confused, navigating through media and social media, for what is authentic COVID-19 information, and what is not scientifically evidence based. We punctiliously stayed up to date with the continuously amended CDC,WHO, and NIH guidelines and quickly, but carefully, devised a COVID-19 home monitoring online service. Our approach being noncommercial and free of charge, is not latitudinous, and currently serves a small set of population within family, friends and community with limited resources. It is also slightly unconventional, and not in alignment to how we usually practice medicine. However, the current pandemic's urgent needs took precedence over standards of patient encounters.

Our COVID-19 home monitoring has three objectives:

- 1) Patient education and counselling based on updated and amended clinical guidelines
- 2) Close monitoring for mild and moderate cases
- 3) Virtual triage of cases requiring hospitalization

We started with what we immediately had on our hands, i.e. WhatsApp, as it is the most commonly used platform, a telephone line, pen and paper, our medical degrees and informatics skills, a telephone line, and an excel sheet to collect patient information. In parallel to growing number of cases, we created a homegrown COVID-19 electronic data repository system with COVID-19 focused data to record a change in symptoms ,labs and vitals. To these, we added a home pulse oximeter, allied health home services, for pharmacy and blood tests, based on patients' symptomatology.

Patients send their PCR results via WhatsApp after which we establish first encounter, on audio or video call with patient or family group call. We first evaluate clinical stability, by asking questions related to difficulty breathing, chest pain, delirium, altered state of consciousness. If any of these are reported, we ask patients to call ambulance or immediately go to nearby hospital. After ensuring clinical stability, we take a detailed history of onset of symptoms and preexisting co morbid conditions. We explain difference between isolation of a case, and quarantine of healthy exposed individual, and the importance of reducing spread.

After establishing first encounter, we ask patients to monitor their vitals and symptoms. We ask our affording patients to purchase a pulse oximeter, and non-affording, to monitor their respiratory rates per minute. Patients WhatsApp their Respiratory rates, Pulse oximeter and glucose monitor readings with time stamps, three times a day i.e. morning, afternoon and last reading at 8 p.m. daily. Pictures and videos ensure accuracy of readings compared to typing. We educate patients how to use a pulse oximeter, and interpret readings, in accordance to updated clinical guidelines. We also ask patients to send us any 'change' or worsening of symptoms over 10-14 days of isolation period. Any newly developed shortness of breath is further evaluated on a WhatsApp video call to check for nasal flaring and use of accessory muscles.

We order labs through home visit allied health services. For patients with preexisting co morbidities, such as diabetes, coronary artery disease, COPD and immunosuppression, we monitor CBC and inflammatory markers of CRP, Ferritin and D-dimers. D-dimers are not a viable option in non-affording patients uninsured patients.

We believe virtual patient education and counseling are keys to the COVID-19 pandemic. We persuasively educate patients about infectious period, immunity, nutrition and sleep hygiene, contact tracing and the difference between quarantine and isolation, as majority, use the terms interchangeably. We reassure clinically stable patients for home monitoring, rather than being hospitalized, to reduce exposure and educate them about disease progression and improvement by clinical and biochemical manifestations.

Although we have been proning patients in the ICU, however with COVID-19 morbidity and mortality worsening globally, we have been recommending all our home monitored patients to prone 10-15 mins before meals, and in comfort while watching TV or using phone. We send them images of proning and educate them about its benefits. We ask our patients to take pulse ox readings on supine and prone positions. We have observed a two to three percent discrepancy in pulse ox readings, on supine and prone positions. These are the patients who eventually were hospitalized during home monitoring. This needs to be further studied.

After successful completion of 10-14 days of home isolation, we email discharge summaries to our patients for their records, as they were not hospitalized, and these summaries, may perhaps, help to evaluate a candidacy or exclusion for vaccinations, as were at that time no guidelines for the expected COVID-19 vaccination yet.

We currently have a small heterogenous, home monitored patients' data that can help us to understand mild to moderate COVID-19 disease, severe to critical COVID-19 disease, and the clinical profile of the journey in between. Thus far, majority of our patients have been successfully discharged from home monitoring, after completing 10-14 days of isolation, while a few have recovered, after being hospitalized in high dependency units and ICU with pulse Ox dropping to less than 85.

We believe our small team of an intensivist and a private practitioner, and need of the hour approach of home monitoring, plays a small, but impactful role in raising evidence-based awareness of COVID-19 among general population, and possibly helps to reduce morbidity and mortality with timely hospitalizations by virtual home monitoring follow-ups.

COVID-19 has helped us to acquire skills of patient care on a virtual platform. We learned that sometimes, when you don't know where to start, you start from where you are. When you don't know what to start with, you start with what you have. After helping a small population of COVID-19 patients recover successfully during first wave, we are continuing our virtual home monitoring services during our second wave, to play our small individual parts locally, to have a collective impact on the pandemic globally. COVID-19 is still around and not done yet, and neither are we!

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