Post-COVID Recovery Assessment Clinics: A Real Need of Time

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Highlights

- COVID-19 is an infectious respiratory and vascular disease caused by SARS-CoV-2.
- COVID-19 mainly affects the lungs and also damage many other organs.
- Patients experience persistent deficits in pulmonary and cognitive functioning, as well as multifaceted health issues and worsened quality of life.
- COVID-19 patients need specialist investigation once they have been discharged from the hospital.

Abstract

COVID-19 is an infectious respiratory and vascular disease caused by SARS-CoV-2. This virus was first identified in Wuhan, China and caused an ongoing pandemic. The World Health Organization (WHO) declared the outbreak a public health emergency of international concern in January 2020 and a pandemic in March 2020. Reports suggest that patients experience persistent deficits in pulmonary and cognitive functioning, as well as multifaceted health issues and worsened quality of life. From records in Italy and France, COVID-19 survivors experience the return of symptoms. COVID-19 survivors need specialist investigation once they have been discharged from hospital. No proper guidelines are recommending that COVID-19 survivors should be under assessment. We intended to provide a model to assist local healthcare systems to establish post-COVID recovery assessment clinic(s) for CVOID-19 survivors. Our model will enable COVID-19 patients' access to multi-professional advice, so that they are put onto the right clinical pathway to treat their symptoms. Furthermore, the findings of different specialties in post-COVID recovery assessment clinic(s) may help doctors determine the best discharge plan for COVID-19 patients.

Keywords: COVID19, SARS-CoV-2, COVID-19 survivors, post-COVID recovery assessment clinic(s)

Introduction

At present, the world is facing a contagious and infectious coronavirus disease 2019 (COVID-19) with a novel coronavirus called severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The virus was first observed in Hubei province city, Wuhan, China at the end of 2019 [1]. The frequently reported signs and symptoms that remain over time are cough, shortness of breath (SOB), headache, fatigue, and joint pain [2]. Elderly people and people with serious illness are the most likely of having persistent COVID-19 symptoms. Although COVID-19 is considered a disease that mainly affects the lungs, it can also damage many other organs. This organ damage may increase the risk of long-term health problems [3].

Around 10% of patients who have tested positive for SARS-CoV-2 virus remain unwell. In a study based on COVID-19 symptoms conducted in the United Kingdom (UK), in which people entered their ongoing symptoms on a smart phone app [4]. A recent study in the United States (U.S) found that 65% of people had experienced COVID-19 sign and symptoms months after discharging from hospital [5]. All these findings highlight the need of post-COVID recovery assessment clinic(s). Thus, the purpose of this article is to provide a model to assist local healthcare systems in establishing post-COVID recovery assessment clinic(s) for CVOID-19 survivors. Our model will enable COVID-19 survivors to connect with the specialty care they need in the post-COVID recovery assessment phase.

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Proposed Model

The post-COVID recovery assessment clinic(s) should be manned by a dedicated team of specialists, including chest specialists, neurologists, hematologists, psychologists, physical therapists and pharmacist to deal with the aftermath of COVID-19 patients and reach at collaborative decision before discharging a patient. Here is a brief outline of a proposed model of post-COVID recovery assessment clinic(s). **Figure 1** shows the details of each step in the model. **Table 1** summarizes the role of each specialty in the post-COVID recovery assessment clinic(s). The important points concerning innovation in this topic are as follows:

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- A member of the administrative staff receives patient having signs and symptoms of cough, SOB, headache, fatigue, and joint pain.
- A nurse in the nursing station record the patient's weight and vital signs, escort the patient to COVID testing room, and perform COVID-19 testing.
- If COVID-19 test result is negative, refer the case to the doctor and general practitioner (GP).
- If treatment, such as medication is prescribed, doctor and GP contact pharmacist and fills the prescription, provide medication and discharge.
- If COVID-19 test result is positive, perform chest x-ray (CXR) and computing tomography (CT) scan.
- If CXR and CT scan are normal, provide medication and discharge the patient with 14-21 days quarantine suggestion. This will help in reducing burden of people in healthcare settings.
- If CXR and CT scan are abnormal, refer case to COVID-19 unit and provide medication to the patient.
- After recovery, refer case to post-COVID recovery assessment clinic. Patient should spend 7-21 days in the post-COVID recovery assessment clinic for specialized investigation.
- After making a collaborative decision of discharging a patient from post-COVID recovery assessment clinic, the pharmacist records the phone number and email for follow-up care to reduce hospital readmission rate.

Discussion

This is the first article of its type explaining the importance of post-COVID recovery assessment clinic(s). COVID-19 is a contagious and infectious disease that mainly affects lungs. People with COVID-19 recover fully after few days but some people continue to experience symptoms after their initial recovery. Although more patients are surviving, hospital readmission is common among COVID-19 survivors. Readmission in an ongoing pandemic is challenging and may cause care bundles.

In October 2020, the National Health Services (NHS) England announced a £10 million investment to help local services in every part of the country bring together the right professionals in order to fight with ongoing pandemic. [6]. These professionals provided physical, cognitive and psychological assessments to patients experiencing suspected post-COVID syndrome. The funding allocated by NHS England allowed the development of post-COVID assessment clinics for serving to local populations. These clinics have started to accept patients by the end of November 2020. The Apollo Hospital Group announced the launch of post-COVID recovery clinics on 21 October 2020. These clinics are providing services to patients who have recovered from COVID-19 and are suffering from long-term persistent effects of the infection. Over 50% of patients experience lingering effects include breathlessness, fatigue, joint pain, chest pain and memory loss months after discharging from hospital [7].

The respiratory system is the most commonly affected in response to SARS-CoV-2. However, the virus can affect any organ in the body. The virus binds to angiotensin converting enzyme 2 (ACE2) receptors present in vascular endothelial cells, lungs, heart, brain, kidneys, intestine, liver, pharynx, and other tissue. The virus can directly damage these organs. The type of pneumonia-related to COVID-19 can cause long-term damage to the small air sacs called alveoli in the lungs. The resulting scar tissue can lead to long-standing trouble in breathing [8]. Heart diseases associated with COVID-19 include myocarditis (inflammation and damage to the heart muscle) or pericarditis (inflammation of the heart covering). These conditions might occur individually or in combination. Heart damage can be an important part of serious illness and death from COVID-19, especially in elderly people with underlying diseases [9]. COVID-19 can cause strokes, seizures, and temporary paralysis a condition that causes Guillain-Barre syndrome in young people. COVID-19 may also increase the risk of developing Parkinson's disease and Alzheimer's disease. COVID-19 can make blood cells more likely to clump up and form clots. Such large clots can cause heart attacks and strokes. It is believed that most of the heart damage caused by COVID-19 comes from very tiny clots that block small blood vessels (capillaries) in the heart muscle. Physically, all patients hospitalized with COVID-19 have some degree of debility, meaning they are not as strong as they were before COVID-19 [10].

The COVID-19 pandemic has affected every area of life around the globe. The functioning of the healthcare services in preventing the spread of the outbreak and to help infected patients require the participation of not only doctors and nurses, but also pharmacists. The role of pharmacists in the current ongoing pandemic is of crucial importance because they are playing a significant role in patient care both in community pharmacies and in the hospital settings. They are often the first and the last point of contact for patients who need reliable information and advice [11, 12].

In the global spread of disease, reliability of information and control of misinformation are important concerns. Controlling the spread of any pandemic begins by controlling the spread of misinformation. Over 1.6 million people died of COVID-19, and misinformation played a central role in it [13]. Pharmacists can play an integral role in reviewing the prescribed drugs and interpreting the information for prescribers as to whether or not they would be an appropriate choice for treatment. Pharmacists are experts in the therapeutic use of medications. They regularly provide medication, therapy evaluations and recommendations to patients and other healthcare professionals. Pharmacists are the main source of scientifically valid information and advice on the safe, appropriate, and cost-effective use [14]. Pharmacists in post-COVID recovery assessment clinic(s) can provide medication information to healthcare professionals and educate patients to comply with prescribed therapy. Pharmacists can also guide nurses about

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treatment therapy, dose management and if any modification is needed, inform the prescriber and make appropriate changes. This will help in ensuring the safe and rational use of drugs and achieving the positive clinical outcomes.

In high-risk patients, follow-up care is a significant part of patient-centered care [15]. Pharmacist can play an important role in decreasing hospital readmission rates and improving patients' compliance with medication. Our proposed model demonstrates that follow-up care by the pharmacist is an integral part during post-COVID recovery assessment care. The competent authorities should dictate about the importance and ensuring that COVID-19 survivors have proper follow-up care by the pharmacist after discharge from the hospital.

COVID-19 disease caused by SARS-CoV-2 virus can affect multiple organs in the body. Therefore, post-COVID recovery assessment clinics are real need of time where COVID-19 survivors can get collaborative care of different specialists, including chest specialists, neurologists, hematologists, psychologists, physical therapists and pharmacists. The findings of different specialties in post-COVID recovery assessment clinic(s) may help doctors and GPs determine the best discharge plan for COVID-19 patients.

Conclusion

A collaborative, inter-professional teamwork supports high quality and safe care. Our proposed model and literature suggest that through the collaborative work in post-COVID recovery assessment clinic(s) can reduce readmission to hospital while improving overall quality of life, health span, societal problems, and the mental health of patients who have been in quarantine. Furthermore, long-term follow-up should be necessary part of therapy for serious ongoing complications or co-morbidities after being discharged from hospital.

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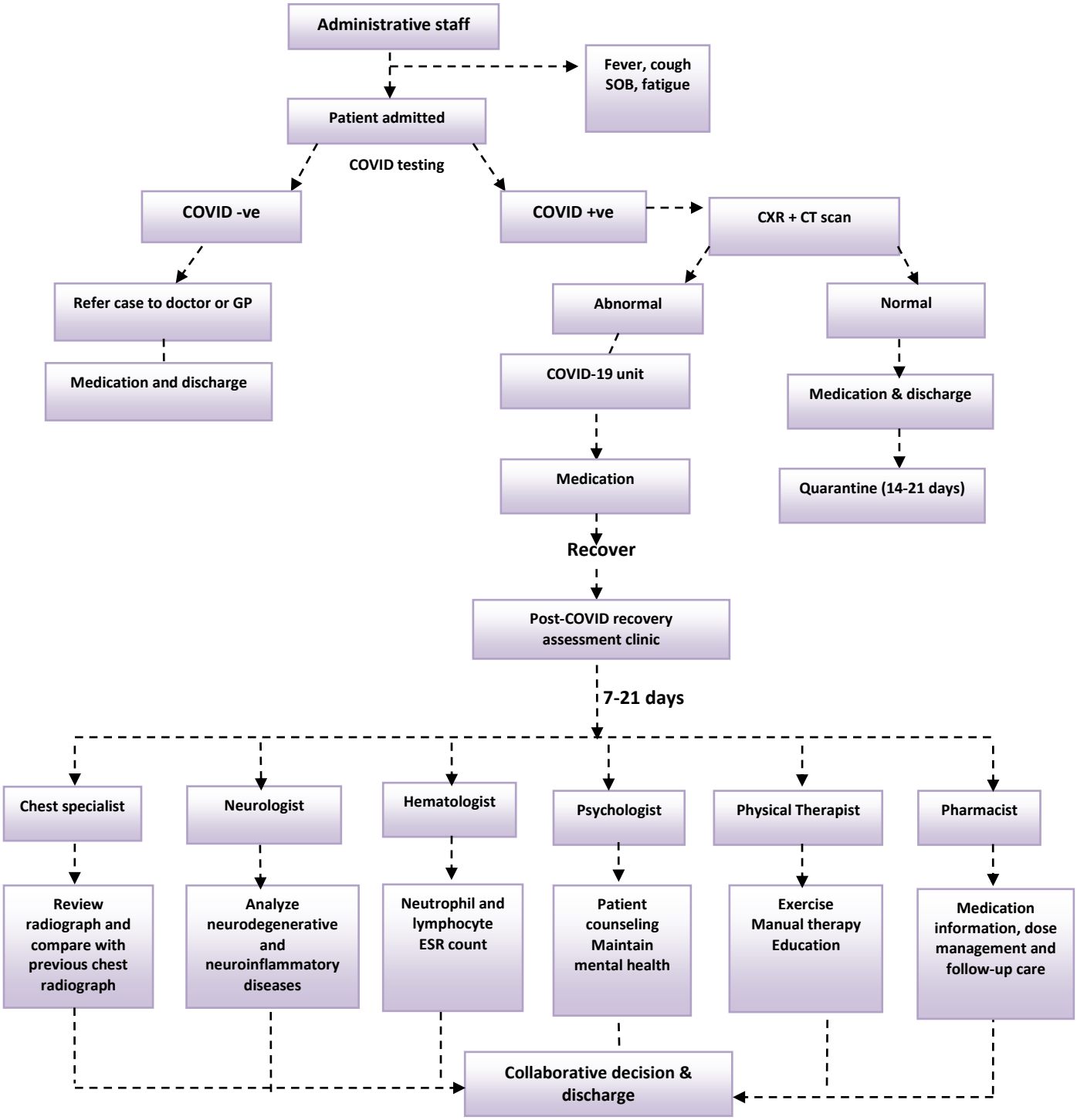

Figure 1 Proposed model of post-COVID recovery assessment care

Table 1 Role of different specialists in post-COVID recovery assessment clinic(s)

Specialty	Role
Chest specialist	Review radiograph and compare radiograph with previous chest radiograph
Neurologist	Analyze neurodegenerative and neuro-inflammatory diseases
Hematologist	Neutrophil and lymphocyte count, perform erythrocyte sedimentation rate (ESR), D-dimer and prothrombin time(sec) tests
Psychologist	Patient counseling, maintain mental health
Physical therapist	Exercise, manual therapy, education and advice
Pharmacist	Medication information, therapy and dose management, follow up care

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