Rehabilitation for COVID-19 Early Functional Return (RECOVER): Ensuring Delivery of Inpatient Rehabilitation Services for Patients with COVID-19 in a Low Resource Setting

Sharon D. Ignacio, MD, Isabella E. Supnet, MD, Therese Diane B. Estrada, MD, Dorothy D. Dy Ching Bing-Agsaoay, MD and Kristopher P. de Leon, MD

Department of Rehabilitation Medicine, Philippine General Hospital, University of the Philippines Manila

Early into the pandemic, medical attention centered on the immediate need for intensive medical care of patients diagnosed to have coronavirus 2019 (COVID-19). As more data emerged on the best medical care possible, attention was also given to the complications and long-term sequelae of COVID-19.[1]

The Philippine General Hospital became a COVID Referral Center last March 30, 2020. To continue service delivery, telemedicine through the ITAWAG Program (Introducing Telerehab as A Way to Access General Rehabilitation Services) was a platform pioneered by the department to manage patients with rehabilitation concerns. This was the department's swift and practical response to the lack of Personal Protective Equipment (PPE) at the height of the pandemic, which was understandably reserved for healthcare workers assigned inside the COVID-19 wards and intensive care units.

The need to create a specialized inpatient rehabilitation program for COVID-19 became more immediate as more patients were seen to suffer from the respiratory, physical, and psychological effects of prolonged immobilization. Generalized weakness, reduced joint mobility, cognitive decline, anxiety, and depression were some of the problems observed.[2] Consequently, the hospital expanded the management of admitted COVID-19 patients to include medical rehabilitation.

The **Re**habilitation for **COV**ID-19 **E**arly Functional **R**eturn (**RECOVER**) Program commenced in November 2020. RECOVER is an in-person program for COVID-19 created by the Department of Rehabilitation Medicine to evaluate and manage patients inside the COVID-19 wards. The safety of the team and available resources of the department were considered and prioritized in designing the program.

The RECOVER Program pathway is activated when a COVID-19 in-patient is referred for rehabilitation by physicians from the Department of Medicine including fellows and consultants from the Division of Pulmonology (Figure 1). Upon receiving the referral, a rehabilitation medicine physician assesses the patients face-to-face and designs an appropriate rehabilitation plan to achieve the patient's highest functional level. Because of the risk for falls and other sentinel events, physical therapy activities need to be guided in-person. Other members of the Rehabilitation Team utilize telemedicine to do the assessments and apply their interventions.

Timely communication between the referring department and the rehabilitation team is instrumental for a streamlined process of seeing and treating patients in the COVID-19 wards. The process involves accepting the referral, evaluating the referred patients in the pay and charity wards, and designing an appropriate rehabilitation program for each patient for endorsement to the paramedical team. A systematic approach is essential in organizing these steps, with the primary aims of such being appropriate prioritization of patients, the anticipation of patient needs, and reduction of the risk of self-contamination associated with frequent exposure and change of personal protective equipment. One of the ways strategic planning is employed in this regard is the separation of pay and charity ward consultation and treatment schedules into morning and afternoon batches, to both promote the efficient use of resources and limit patient exposure.

The Quick Assessment Tool (QAT) (Table 1) was developed to give a quick understanding of the general rehabilitation status of the patient and at the same time minimize the exposure of the healthcare workers. The QAT has six domains, with cardiopulmonary status and mobility as the primary domains since these are the most common rehabilitation concerns of patients with COVID-19.[3,4] The secondary domains include speech, swallowing, mental status, and activities of daily living (ADLs).[2] Assessments of these domains are done by grading the patient's alertness and capacity to breathe, move, talk, swallow, and perform self-care tasks from 1 to 5. Higher grades suggest a better level of

Corresponding author: Sharon D. Ignacio, MD
Department of Rehabilitation Medicine
Philippine General Hospital
University of the Philippines Manila
Taft Avenue, Ermita, Manila 1000, Philippines
Email: sdignacio@up.edu.ph

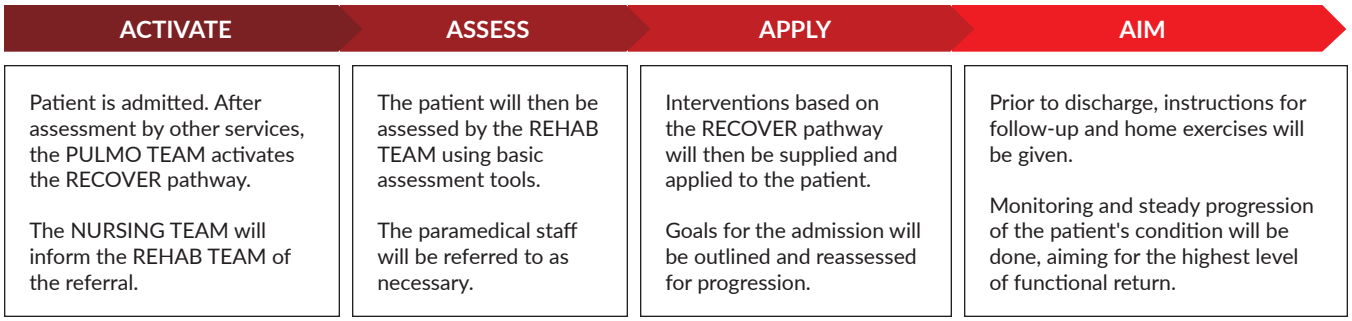

Figure 1. RECOVER Pathway.

Table 1. Quick Assessment Tool

Domains	Categories					Comments
	Red	Yellow			Green	
	1	2	3	4	5	
Cardiopulmonary Status	Needs ventilatory support	Dyspneic while sitting quietly	Dyspneic while standing	Dyspneic while walking	No dyspnea	
Mobility	Lying in bed	Sitting with support	Sitting with legs dangling	Standing at bedside	Can walk to the bathroom	
Speech	No verbal output/ un-intelligible		With difficulty		Without impairment	
Swallowing *(if with ventilatory support or NPO, write N/A)*	Cannot tolerate		Partially assisted/ needs modification		Without impairment	
ADLs *(feeding, grooming, dressing, toileting)*	Completely dependent		Partially assisted/ needs modification		Without impairment	
Mental State	With impairment				Without impairment	

Table 2. Sample interventions classified by QAT color category

Red	Yellow	Green
• Pulmonary support: drainage and positioning • Bedside mobilization	• Pulmonary exercises as able per grade • Bedside physical therapy as able per grade • Occupational therapy, speech therapy, and psychological care given through telemedicine	• Baseline assessment and instructions • Group/class therapy sessions • Energy conservation

function while lower grades suggest limited patient capacity and dependence. These grades are then placed under three color categories – red, yellow, and green – that determine not only the readiness of the patient to receive management but also the nature and amount of rehabilitation care (Table 2). This categorization helps the rehabilitation team triage referred patients and prioritize the use of its limited resources on those who would find it more beneficial. Patients in the yellow category are generally deemed to have a higher rehabilitation potential and are thus given more intensive management.

The QAT evaluates the aerobic capacity of patients by observing dyspnea associated with increasing levels of activity that have established metabolic equivalents (METs). Sitting, standing, and walking correspond to approximately 1, 2, and 3 METs, respectively.[5] As 3 METs is generally enough to perform most home activities,[6] this was set as the RECOVER program's primary patient goal. Once this is achieved, patients are provided with infographics and a home program and subsequently discharged from the program. A referral to the telerehabilitation service is provided if there are still other rehabilitation concerns to be addressed.

The physiatrist uses the last column or the Comments section to enter special concerns and/or additional treatment. Although there are suggested rehabilitation treatment protocols for each QAT category, the rehabilitation medicine physician continues to provide an individualized rehabilitation care program that helps the patient achieve their desired goals.[7] The physiatrist may also refer the patient to the department's telemedicine program to augment on-site rehabilitation management or to continue the treatment program after discharge from the hospital.

Aside from streamlining patient care, the RECOVER Program also highlighted cooperation across different

specialties. During the early phases, the Division of Pulmonology Medicine facilitated the referral pathway to Rehabilitation Medicine for COVID-19 patients admitted in the hospital. In June 2021, the Department of Medicine incorporated the use of the QAT to identify patients in need of rehabilitation. They found it to be vital in their COVID-19 post-discharge program.

As the QAT is continuously utilized in the hospital by more individuals, it will need to undergo validity and reliability testing. It can also be correlated with the eventual outcomes of patients and refined to become not just an aid for assessment but also a prognosticating tool for morbidity, mortality, or general response to rehabilitation management. The utility of the QAT and satisfaction with its use by resident physicians will also require further evaluation. Analysis of the operation and administration of the RECOVER pathway may entail a time-motion analysis of the initial rehabilitation evaluation and subsequent therapy sessions. The economic aspect and cost-effectiveness of the program in the setting of our tertiary institution can also be analyzed.

Despite limitations in resources, the Philippine General Hospital Department of Rehabilitation Medicine was able to pioneer a program that has benefited patients suffering from the effects of COVID-19. The RECOVER Program hopes to keep on providing and improving its services and serve as guidance to others in the implementation of in-patient COVID-19 rehabilitation services.

Statement of Authorship

All authors contributed in the conceptualization of work, acquisition and analysis of data, drafting and revising and approved the final version submitted.

Author Disclosure

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