



World Federation for NeuroRehabilitation

CHAPTER 1

REHABILITATION OF COVID AND POST-COVID PATIENTS

With the progress of the CORONA pandemic, there is a growing number of COVID patients who suffer not only from the typical pneumonias with acute respiratory distress syndrome but also – as we gradually learn - from a variety of other organ system problems including neurological and cardiological problems. In addition, there is a growing number of COVID patients who, having undergone weeks of artificial ventilation, may present with the typical signs of critical illness neuro-myopathies which for a long time have been classical targets for neurorehabilitation.

Neurorehabilitation settings will receive patients discharged from COVID Acute Departments for treatment of respiratory, motor and cognitive problems. There is a high degree of heterogeneity in the form and quality of COVID and post-COVID problems, not only between countries, but also within countries. COVID survivors will face denial of access to rehabilitation units but may deserve a prolonged period of post-COVID care. We therefore have to consider how we should offer specific programmes to overcome disabilities following COVID infection and to guarantee the rehabilitation treatment for their neurological disability. At present, the burden of care of COVID patients is shared among COVID Acute Departments that include ICU, SICU and medical and infectious disease units. Most patients will recover without disabilities. Others will have impairment in multiple organs and tissues, including secondary neurological problems.

According to different phases of COVID disease, we can outline the critical role of rehabilitation that covers the pathway of care after acute hospitalisation.

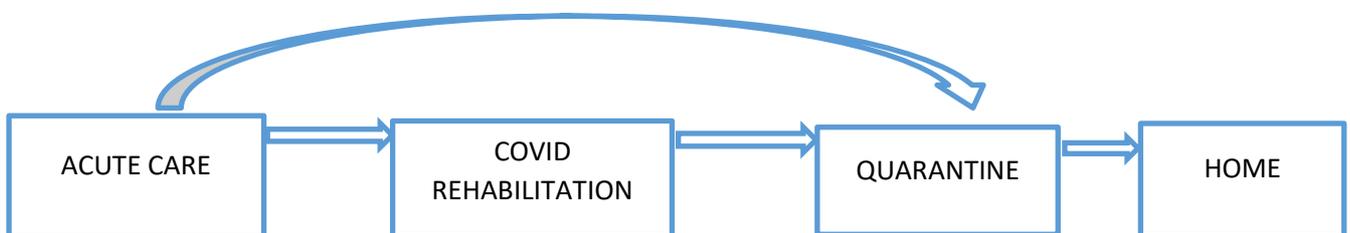
When, after discharge from Acute Departments, patients have a disability and a loss of autonomy (the majority of patients) they can be admitted to **COVID + REHABILITATION UNITS**.

COVID REHABILITATION UNIT (COVID+) includes those patients who need rehabilitation treatment because of neurological disability and respiratory consequences (including tracheostomy) who, for instance, still need low flow O₂ support. They can still have positive tests and need clinical surveillance. The patients should be grouped into special wards with maximum protection rules for nursing and therapy staff.

Depending on their level of respiratory and motor impairment, patients can perform rehabilitation treatments following the usual guidelines. When staff are using complete protection, there are also no limitations for “hands-on” treatments although it has to be considered to emphasise more distant “hands-off” and coaching strategies for staff protection. Personalised principles must always be followed. For each individual patient, a custom-tailored programme and an individual plan for respiratory and sensorimotor, as well as psychological treatments, must be designed.

QUARANTINE is a period when patients, without clinical and neurological consequences, still have positive swabs and therefore cannot go home. After a period of quarantine (usually lasting 2 weeks) with negative tests at the end of the second week, quarantine can be abandoned.

The following graph illustrates the possible pathway of care in COVID patients.



Several specific points for COVID and post-COVID patients should be considered.

Rehabilitation, as usual, should start early (when the patient is in appropriate respiratory condition). More than in mainstream neurorehabilitation, physicians have to carefully monitor impairment of multiple organs and tissues (heart, lung, liver, renal, neuro and immune system). The significantly greater risk of deep vein thrombosis, skin pressure lesions, as well as psychological problems such as anxiety, depression and lack of motivation have to be considered and appropriate prophylaxis instigated.

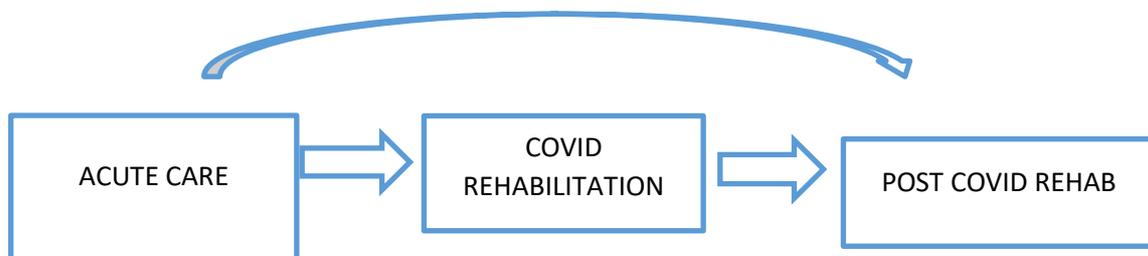
1. Gradually increase the anti-gravity position until the patient can maintain an upright position. Treatments aimed at reducing orthostatic hypotension such as postural variation should be performed several times a day, adapted to the patient.
2. To improve respiratory function, aerobic exercises at least twice a day at moderate intensity of at least 30 minutes duration of training, combining upper arm exercises if possible.
3. Swallowing and nutritional condition have to be carefully monitored to avoid complications e.g. by silent aspirations and hypometabolism. NGT and PEG tubes may be necessary as well as the use of supplementary nutrition.

4. To offer psychological support especially when there are behavioural problems such as disorientation and confusion.
5. Always ascertain optimal protection for the staff.

POST-COVID REHABILITATION UNIT (COVID-). This includes patients who need rehabilitation treatment because of neurological disability either being present already before COVID and possibly outlasting a COVID problem.

These patients may come from acute hospitals, e.g. stroke units or COVID+ units. In both cases, criteria for the admittance to less protected settings have to be handled very carefully to avoid infection spread to “healthy” co-patients and staff. Multiple negative Corona tests are necessary. It is not yet entirely clear how far antibody tests may help to determine the infectiological status of the patient and so far cannot be used to select patients.

There are certainly many patients who need neurological rehabilitation especially after severe conditions such as stroke and TBI in whom the infectiological status concerning the SARS CoV 2 virus is unclear. They may be admitted to in-patient rehabilitation units from acute care hospitals and also from the community. For this group, it is necessary to install “clearing wards” with very strict transient isolation and staff protection rules before the COVID-free status is definitely clarified (see also chapter 2).



The continuum of the rehabilitation treatment at home after discharge may be recommended. See chapters 2 and 3.

After the identification of respiratory and motor criteria for patient discharge, for patients with minimal ADL reductions there are 3 different options at the end of rehabilitation:

- Home discharge with scheduled rehabilitation check-ups.
- Home discharge with outpatient rehabilitation.
- Teleconsulting and Telerehabilitation.

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GLOSSARY

- ICU = Intensive Care Unit
- SICU = SUB INTENSIVE CARE UNIT
- ADL = ACITIVITY DAILY LIVING
- BADL = BASIC ACTIVITY DAILY LIVING
- TBI = TRAUMATIC BRAIN INJURY
- MS = MULTIPLE SCLEROSIS