

# Letter to the Editor

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## COVID-19 pandemic: why time-dependent rehabilitation is forgotten

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The COVID-19 pandemic has created an increased demand for acute or post-acute hospital beds, far surpassing the existing provisions in place in many communities. Italy [1] and many other countries, including Spain [2], forcibly converted existing health facilities into dedicated COVID-19 centres to ensure a ‘pop-off valve’ for overcrowded Intensive Care Units. Most other severe diseases, including tumours and acute cardiovascular diseases, possibly received limited attention, culminating in increased associated mortality [3,4].

Italy has 60 million inhabitants [5] and has reported, up to date, about 38 000 deaths due to COVID-19 infection [6]. Our region, Lombardy, was the most severely affected within Italy. Lombardy has 10 million inhabitants, representing 17% of the Italian population [5]. It reported more than 170 000 cases (30% of the infected people in Italy) and over 17 300 deaths (about 45% of the total death toll) [6]. As physicians and specialists working in a post-acute 50-bed Neurorehabilitation Unit, we witnessed the impact on Lombardy’s rehabilitative services.

The type and prevalence of disabling sequelae of the COVID-19 infection are still partially known [7]. Meanwhile, disabled individuals, with or without COVID-19 infection, were among the worst affected by the reorganization of health services [8,9]. In particular, the rehabilitation needs of patients with acute neuromotor impairments did not receive the required attention. This problem was typically the case for patients after stroke, operated for brain tumours, or with severe peripheral neuropathies.

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## What happened to Physical and Rehabilitation Medicine

All over the world, Rehabilitation was the most disrupted service for the prevention and treatment of non-communicable diseases [8]. In our region, for conditions with long-term consequences, such as stroke and cardiac diseases, a hub-and-spoke model was implemented wherein selected hub-hospitals provided acute care with specific paths for patients presenting with or without positive COVID-19 swab test. Subsequently, as a rule, patients were discharged to post-acute ‘spoke’ units different for COVID-19 and non-COVID-19 patients, with varying levels of overall care standards, for example, hospital units vs. nursing homes, but with little or no differentiation of the destination units by medical specialization.

Physical and Rehabilitation Medicine (PRM) facilities, for the most, were converted into non-rehabilitative COVID-19 centres. When still serving their intended purpose, rehabilitation units were organized to remain COVID-19 free and had to deny admission to disabled patients with COVID-19. These facilities also had to discharge inpatients prematurely if they tested positive for COVID-19. To our knowledge, only a few PRM facilities (as in our case) created sub-sections dedicated to COVID-19 patients.

The overall results were the shortage of inpatient rehabilitation beds or, in the best case, a severe delay in admission or proper care of patients with neuromotor impairments.

It seems of interest to reflect on the reasons for such political decisions regarding rehabilitation.

## The neglected point: acute disabilities may have time-dependent rehabilitation outcomes

In some of our patients admitted from ‘generic’ Hospital units, we have witnessed the occurrence of ankyloses, spasticity, weakness due to deconditioning and undernourishment, and other clinical comorbidities (e.g. pneumonia, pressure sores) that might have been better prevented.

These patients require treatments for the primary disease, co-morbidities, and the resulting functional impairments. An individualized therapeutic program is needed. For example, in stroke survivors, such a program primarily targets mixed impairments directly stemming from the cerebral lesion (lowered consciousness, paralysis, spasticity, language deficits, sensory loss, etc). At the same time, however, the program must consider the treatment of the underlying vascular disease (i.e., the

management of anticoagulant and antiarrhythmic drugs), of the associated comorbidities (e.g. hypertension, epilepsy, diabetes), and of the frequent complications (psychiatric symptoms, pneumonias caused by swallowing disorders, urinary tract infections, deep vein thrombosis, etc.). There is long-established and robust evidence for ‘better outcomes associated with specialist, coordinated, multidisciplinary teams, both during early inpatient recovery and for resettlement at home’ [10], all over the world [11]. It is also well known that ‘functional outcome is a major determinant on costs of stroke’ [12] and of the long-term caregiver burden [13].

### Reflecting on a disappointing neglect

The Italian National Health System provides universal coverage and affords high consideration to inpatient rehabilitation (16% of all inpatients beds, 30% of the total length of stay) [6]. Possibly, planning ‘rehabilitation spokes’ dedicated to COVID-19 disabled patients should not cause relevant extra-costs since it would mainly consist of an organizational change. Thus, it remains to be answered why the health care system overlooked the specific needs of patients with severe, post-acute disabilities during the pandemic.

One might speculate that such a situation reflects the obsolete yet widespread and tenacious idea that PRM is just a generic approach to late, chronic sequelae of ‘true’ diseases. Dichotomous thinking is still dominant in medicine, segregating science from assistance, cure from care, acute from chronic care, causes from symptoms, treatment from palliation, theory-based biology from clinical empiricism [14]. Perhaps policymakers still view PRM as characterized by the latter terms within these artificial contrasts rather than a point of delivery of a unique continuum of cure and care. On the contrary, PRM is not a pure supplement to other specialties. It is a disease-independent medical specialty that targets multiple organs (from musculoskeletal to nervous), primarily sharing a pivotal role in ensuring person-world interaction, also called a person’s functioning. This interaction is the primary goal of PRM, making its scope span from biological to behavioural sciences and from acute to chronic disability [15]. It is imperative to understand that certain functional limitations need to be treated and prevented promptly to enhance outcomes and avoid the development of disability and dependence that can lead to suffering, death, and increased long-term costs for public health services. Hopefully, in the future, we shall understand which forms of disability (e.g. respiratory, cognitive, psychiatric, neuromotor) are a direct consequence of COVID-19 disease [9] and which may have been caused by lost opportunities of providing rehabilitation. We fear that the latter will account for the majority.

In conclusion, we should remain vigilant that outcomes of both COVID-19 and non-COVID-19 patients are not undermined by limiting timely access to rehabilitation services that have proven critical for improving the functioning of disabled individuals. PRM should be included within the hub-and-spoke model when facing any disasters imposing new priorities on inpatient beds allocation.

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### Conflicts of interest

There are no conflicts of interest.

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