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Disability through COVID-19 pandemic: Neurorehabilitation cannot wait

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Coronavirus disease 2019 (CoViD-19) pandemic is strongly impacting all domains of our healthcare systems, including rehabilitation. In Italy, the first hit European country, medical activities were postponed to allow shifting of staff and facilities to intensive care, with neurorehabilitation limited to time-dependent diseases,[1] including CoViD-19 complications.[2,3] Hospital access to people with chronic neurodegenerative conditions such as multiple sclerosis, movement disorders or dementia, more at risks of serious consequences from the infection,[4] has been postponed. Patients also seek less for hospital care, with over 50% reduced stroke admissions as from an Italian survey,[5] possibly in fear of being infected or denied to see their families after being hospitalized. This situation can be bearable only for a short time, as any initial freezing reaction to a danger.

After about two months from the first European national lockdown, in Italy (March 10), it has become evident that COVID-19 will be still circulating for the next months, until the epidemic will become self-limited, or effective vaccines will become available. We need to take specific actions and adaptive strategies to at least grant a restoration of the previous level of healthcare activities, safely. Neurorehabilitation for CoViD-19 patients should also begin in the intensive care unit, fostering recovery and weaning and allowing to improve their prognosis, admitting the right patient in the right moment in their recovery pathway. Neurorehabilitation cannot be further delayed even to people with disabilities from chronic progressive diseases, requiring constant monitoring and care.

With the re-opening of productive activities, we are facing increased neurorehabilitation needs, not only as a consequence of prolonged immobilization and acute neurological complications from COVID-19, but also of mitigation healthcare and civil measures (e.g. reduction of physical activity from government decrees, postponing already scheduled medical interventions, reduced management of medical conditions with expected increased incidence of complications, e.g. cardiovascular).[2–4]

Telerehabilitation platforms for physical, language and cognitive rehabilitation, exergaming, allowing remote supervision and collection of patient-reported outcomes,[6] should be offered, including personnel training, also keeping in mind their drawbacks (Table 1). Some clinical events, disease progression or treatment side effects can go undetected. Severely disabling symptoms as spasticity and imbalance cannot be fully taken care of remotely with audio-visual interactions

(computers, iPads or virtual reality 3D visors), without any physical intervention. Robotic-based and exoskeleton interventions will need to be implemented more efficiently,[7] not only for rehabilitation centers to limit patient-physiotherapist interactions, but also for at-home use to limit risks from traveling and patient-to-patient proximity. Neurorehabilitation centers will need to consider SARS-CoV-2 screening, searching for fever or respiratory symptoms, and performing oro-pharyngeal swabs and/or serologic tests to identify asymptomatic individuals according to local regulations.[8]

Physical distancing, separate pathways for CoViD-19 positive and negative patients, and adequate personal protection equipment (PPE) will continue.

Rehabilitation facilities will need to offer larger common spaces, or reduced patients' simultaneous occupancy with longer waiting lists and/or longer opening hours, also to allow sanitization of medical equipment and common areas multiple times per day.

Forbidding access to visitors or strongly limiting their access to hospitals not only has had a terrible psychological impact on severely ill patients,[9] but is going to limit the occasions for fruitful interactions among patients, caregivers and operators in rehabilitation settings. PPE, such as surgical or FFP2/FFP3 masks, gloves, protective gowns, goggles and/or face shields, should be considered in light of the national/local recommendations. Wearing a mask may be cumbersome for disabled patients, particularly during effortful physical activities. Masks may also limit specific interventions, such as logopedic exercises requiring imitation of the operator. Again, technology may help, but may not be enough. CoViD-19 pandemic is also stealing away our faces as means of emotional communication and empathy, so relevant in the process of healing. We must further explore protections alternative to masks, like face shields or transparent panels, proposed for intubation,[10] but can make the difference also for softer activities such as neuropsychological testing, psychological support, or logopedic and language training.

Finally, the closure of schools may deprive disabled children of dedicated personalized teaching activities in a social and stimulating environment, and we will all pay a higher price in the future. We need to massively invest in developing dedicated facilities, human and technological resources to overcome and limit the risks for disabled children to become neglected and isolated.

If we take proper action now to grant equal opportunities to neurorehabilitation care, no matter what the event causing disability, this emergency will produce long-term healthcare positive effects able to prevent, or at least promptly counteract, future outbreaks or their consequences.

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Table 1. Neurorehabilitation in the COVID-19 world

Current challenges and actions to minimize COVID-19 risks in different settings of neurorehabilitation, and possible drawbacks to be overcome before continuing on previous healthcare activities.

Challenge	Actions	Drawbacks
Reduce inpatient and outpatient visits	Telerehabilitation and teleconsultations	To be made widely available Not feasible for complex diseases or severe symptoms Periodic in-person assessments needed
Outpatient and day service	Screening for body temperature and active respiratory symptoms	Asymptomatic patients are missed
	SARS-CoV2 oro-pharyngeal swab and/or serological testing, according to local regulations	To be made widely available
	Physical distancing	Reduced number of simultaneous treatments Longer opening hours Caregivers and visitors not allowed to access
	Appropriate PPE for operators and patients	To be made available at population level
Inpatient	Screening for body temperature and active respiratory symptoms	Asymptomatic patients are missed
	SARS-CoV2 oro-pharyngeal swab and/or	To be made widely available

	serological testing on admission, according to local regulations	
	Separate pathways	To be considered within hospital re-organization plans
Staff and patient's protection	Personal protective equipment	To be made widely available
	Robot-assisted rehabilitation	To be made widely available
	Contact tracing apps	Depending on national regulations
Patients with active COVID-19 infection	NeuroCOVID-19 wards and/or COVID-19 hospitals	To be made widely available