Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Sleep labs, lung function tests and COVID-19 pandemic – Only emergencies allowed!

Respiratory tract infections remain the top cause of morbidity and mortality worldwide from infectious diseases.[1] In January 2020, a novel coronavirus was identified, from the respiratory tract secretions of patients in China,[2–4] due to whole-genome sequencing. The disease was named COVID-19 (Corona-VIrus DIsease-2019) by the World Health Organization (WHO).[4] Afterwards, different investigation and research was undertaken and evidence was provided on human-to-human transmission in community, household and hospital settings.[5,6] Guidelines and recommendations were developed worldwide about prevention, diagnosis, control and management of COVID-19.

Public health measures targeting community infection control remain of primary importance and are still the only ones capable of buying time, flattening the infection incidence curve and causing a dramatic change in the course of the outbreak. Mankind has to make sustained and responsible changes in behaviour.[7] There still remain many unanswered questions concerning infection control measures inside the hospitals and clinics. In epidemic or pandemic situations like the one we are living through, sleep labs can configure increased risk of infection for patients and health care professionals and to the best of our knowledge, guidelines in this field are lacking.

Furthermore, patients under nocturnal ventilatory support including non invasive ventilation (NIV) combine an intrinsic high risk for respiratory infections and related complications and a very high potential risk of infection for care givers because of the high burden of droplets created by the ventilators (8). In fact, NIV using a vented mask in patients with acute respiratory failure can disseminate large droplets up to a distance of 1 m.[8]

Polysomnography level I (PSG I), the gold standard for sleep disorders breathing (SDB) diagnosis, takes place in sleep labs worldwide, using specific beds and under direct supervision of a sleep technician. Also PSG level II (domiciliary unsupervised) and PSG level III (domiciliary cardio respiratory study) are commonly performed. All these diagnostic approaches carry infection risks and in a pandemic situation, especially in the mitigation or suppression phases/strategies, sleep labs should no longer be working on diagnosis.

The belts used to fix the equipment to patients pyjamas or to patients' underwear are made of textile fibres which disable its disinfection. Also the manufacturers of the polysomnographers do not recommend them to be sanitized due to possible damage. So, this equipment is not safe to use in hospital or in patients' homes. Testing to clarify what kind of disinfection this equipment does resist without losing capability, and most of all, development of equipment that can be effectively disinfected in cases of respiratory infection due to highly contagious microorganisms are urgently needed.

At this point in this pandemic, sleep labs should avoid performing polysomnographies unless for hospitalized, acutely ill patients with a high probability of sleep disordered breathing that will impact negatively on the underlying disease(s). The equipment used in infected patients should undergo a quarantine period according to the material used by its manufacturer.

The working team of a sleep lab consisting of physicians, sleep technicians and respiratory physiotherapists or respiratory nurses should receive training in updated clinical knowledge of the COVID-19 pandemic, prevention tools and guidelines from the government, scientific societies and national authorities. Updates on this information should be provided as needed. Measures of prevention, protection and screening have been shown to be efficient in other settings.[9]

The healthcare team should respect some recommendations:

- check body temperature on arrival and departure to/from the sleep lab
- inform team leader if patient is presenting with *de novo* respiratory symptoms or in contact with a case
- use personal protective equipment (facial mask and gloves)
- use full personal protective equipment when dealing with confirmed cases of infection (protective gown, gloves, facial mask, goggles and cover boots)
- perform hand hygiene on arrival and departure from sleep lab and whenever needed

Medical doctors working in sleep labs have another great task and responsibility on their hands, that is the follow up of long term ventilated patients due to SDB and due to overlap of SDB and respiratory/pulmonary diseases. Keeping them free from respiratory exacerbations and away from health care resources must be a main objective.

Consequently, for those patients already diagnosed with SDB and under ventilatory support some approaches have to be initiated. Telemedicine is an interesting tool for following up patients who live far away from the health care structures, moreover these programmes can be of great value in public health emergencies, climate disasters and pandemic scenarios.[10] No telemedicine programme can be created overnight, but in patients who are chronically ventilated the medical community already have the technology allowing telehealth. Recent developments in modem-equipped ventilators software allow patients to be closely monitored,[11] providing data on compliance, leaks as well as residual apnea-hypopnea index. Also remote adjustment of ventilator parameters,[12] according to patient need and comfort, is possible, allowing prompt interventions, avoiding ineffective therapies and lack of adherence.[11,12] Furthermore, there are specific telemedicine applications designed for respiratory diseases,[13] offering a variety of possible evaluable parameters.

Patients under NIV infected by SARS-CoV-2 should be changed to non-vented masks, provided with filter in the circuit, and then the mask and humidifiers should be quickly retrieved, either if managed at home or in hospital. Also, after recovery, the ventilator equipment should go for a quarantine period of not less than 30 days as the virus can be viable for a long period in plastic.

There remain many uncertainties about the possibility of virus transmission when testing pulmonary function and the data are in evolution. Because of the potential for coughing and droplet formation, these procedures should be limited to spirometry, oximetry and arterial blood gases only if essential for immediate treatment decisions (for example in urgent preoperatory circumstances). Measures to protect both the staff and the patients should be put in place.[14,15] Personal protective equipment (long sleeved impermeable gowns, gloves, cover boots, mask, goggles and cap) that limits droplets acquisition should be used and the testing space has to be sanitized, including wiping down surfaces with appropriate cleaning materials.[14,15]

COVID-19 is a disease caused by a novel virus from the *coronaviridae* family, and at present it is a major global human threat which has become a pandemic. In these situations doctors should avoid unnecessary procedures that put patients and health care professionals at risk of infection and it is important especially that they adapt their clinical routine to be safe and efficient and postpone every non emergency diagnostic or therapeutic procedure.

Conflicts of interest

The author has no conflicts of interest to declare.

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