

Keywords Algorithm; Critical illness; Early exercise; Feasibility; Intensive care unit; Physical therapy

Disclosure of interest The authors have not supplied their declaration of conflict of interest.

References

- [1] Gosselink R, Bott J, Johnson M, Dean E, Nava S, Norrenberg M, et al. Physiotherapy for adult patients with critical illness: recommendations of the European Respiratory Society and European Society of Intensive Care Medicine Task Force on Physiotherapy for Critically Ill Patients. *Intensive Care Med* 2008;34(7):1188–99.
- [2] Laurent H, Aubret S, Richard R, Gorce Y, Caron E, Vallat A, et al. Systematic review of early exercise in intensive care: a qualitative and practical approach about literature. *Anaesthesia Critical Care and Pain Medicine* 2015 (in press).

<http://dx.doi.org/10.1016/j.rehab.2015.07.114>

CO13-005-e

Cycling in critically ill patients in a neurological intensive care unit:

A pilot study

F. Feuvrier^{a,*}, M. Ascher^a, M. Espitallier^b, C. Calvet^a, P.F. Perrigault (Dr)^b, V. Carre (Dr)^a, C. De Labachellerie (Dr)^a, I. Laffont (Prof)^a

^aCHU Gui-de-Chauliac, service de médecine physique et réadaptation, Montpellier, France

^bCHU Gui-de-Chauliac, Département d'anesthésie réanimation neurologique

*Corresponding author.

E-mail address: feuvrier.f@gmail.com (F. Feuvrier)

Objective To determine the safety and feasibility of cycling in critically ill patients with brain or spinal cord injury.

Methods Patients with brain or spinal cord injury, either ventilated or not, who were admitted to the neurological intensive care unit (ICU) for at least one day were included. A multidisciplinary team with a physiotherapist, occupational therapist, nurses, intensive care doctors and a rehabilitation doctor screened the patients every morning for indications of early rehabilitation, specifically for indications of cycling with a cyclo-ergometer. This technique was used amongst other rehabilitation prescriptions in the neurological ICU such as mobilisations, neuromuscular-electrostimulation, ergonomic postures and transfer from bed to chair. The cyclo-ergometer used was MOTomed and gave the possibility to do passive, motor-assisted, or active resistive training. The use of MOTomed was assessed from a safety (contraindications and side effect profile) and feasibility (time constraints, availability, access to the machines and different modes) perspective.

Results During 40 days, 49 passive cycling sessions and 21 active cycling sessions were completed. Two patients used the MOTomed every day. Between one and seven patients, out of a total of 18 patients in the unit, were able to use the cyclo-ergometer on any one day. The physiotherapist needed ten minutes to prepare the patient. A nurse was needed to set up and adjust the external ventricular deviation if needed. Each session lasted 30 minutes. The MOTomed analysed the time using the passive or active mode, the force balance between the two legs and the calories used. The resistance and speed can be modified. The contraindications were: femoral venous or arterial lines, fragile skin, agitation or an acute medical problem. The relative contraindications were: bacterial isolation, external ventricular deviation. Only two side-effects were found: one desaturation and skin lesions.

Conclusion Literature on rehabilitation in neurological intensive care unit is poor. The delivery of cycling in critically ill patients with brain or spinal cord injury is both safe and feasible. Further research is required to confirm and evaluate the efficacy of cycling

to prevent muscle weakness, spasticity and functional disorder in this population.

Keywords Early rehabilitation; Intensive care unit; Cycling; Brain injury; Spinal cord injury

Disclosure of interest The authors have not supplied their declaration of conflict of interest.

<http://dx.doi.org/10.1016/j.rehab.2015.07.115>

CO13-006-e

Intensive care in rehabilitation and rehabilitation in intensive care



M. Enjalbert (Dr)*, F. Thevenot (Dr), G. Motte (Dr), J.M. Théry (Dr), B. PrévotEAU

Centre Hospitalier de Perpignan, Perpignan, France

*Corresponding author.

E-mail address: michel.enjalbert@wanadoo.fr (M. Enjalbert)

The history of rehabilitation post-intensive care can be illustrated by the links between PRM and anaesthesia/intensive care in the centre of Cerbere, as soon as it was created, in 1976, at the instigation of Dr Bouffard-Vercelli and Pr. Louis Serre, in charge of the emergency department in Montpellier. Their progress is an excellent example of a care process' building.

Methods It's through this history of about 40 years that we will bring out the main strong points.

Results One of the first important progress is the creation, in 1982, of the "rehabilitation in intensive care" department (20 beds), at the charge of Dr Layre, that will become later the "rehabilitation in intensive care" department (RICD) Louis Serre. When Dr Bouffard-Vercelli died, in 1995, we have taken over the management of the centre that from now on bears his name and strengthened the RICD (30 beds). In 2005, with the departure of Dr Layre, a new stage has been covered with the Perpignan Hospital, which is an agreement of two anesthetists provisioning. At last, the development, in 2010, of the territorial coordination for post-acute care conducted us to take over the management of the PRM department in the Perpignan Hospital, that provides the rehabilitation in all the hospital departments, one of which is the intensive care department, finishing the circle. The re-location plan of the Bouffard-Vercelli Centre, expected in 2018, will permit to structure all this process (that includes moreover an unit dedicated to chronic vegetative and pauci-relationship states) on a single site, permitting to provide the rehabilitation from the emergency department to the return in active life (or institutionalization in medicosocial facilities created at this opportunity).

Discussion This exemplary experience, resulting from will of two men, will conduce us, in a immediate future, to structure a coordinated care process for nervous system, locomotive, cardiovascular ones, and old people.

Disclosure of interest The authors have not supplied their declaration of conflict of interest.

<http://dx.doi.org/10.1016/j.rehab.2015.07.116>

CO19-001-e

Awakening from coma: Assessment and stimulation in a Post-Critical Care Rehabilitation Units (PCCRU)



J. Luauté (Prof)

CHU de Lyon, Saint-Genis Laval, France

E-mail address: jacques.luaute@chuyon.fr

Brain injured patients who have suffered a coma require important medical supervision with a coordinated program of rehabilitation and are most likely to benefit from Post-Critical Care Rehabilitation Units (PCCRU). For these patients, an important challenge is to recognize signs of awareness beyond

wakefulness. This evaluation is necessary to establish a diagnosis of the disorder of consciousness: vegetative state (VS) or unresponsive wakefulness syndrome versus minimally conscious state (MCS). Daily clinical observations of patients by trained caregivers confer to these particular environments an expertise in this field. The use of specific scales such as the Coma Recovery Scale Revised (CRS-R) allows the standardization of practices and provides quantitative data that are useful to follow patients, to assess the beneficial effect of a treatment or to compare patients. Neurophysiology and functional imagery can be used to search for markers of high-level brain activity. These tools are mostly used in research areas but can provide information complementary to the clinical evaluation, which involves a degree of subjectivity. Detecting awareness requires that patients are comfortable and because of the fluctuation of awareness, a sufficient time of observation is essential. A favorable atmosphere to promote the emergence of awareness comprises personalized stimulations such as sensory regulation programs. Music, noninvasive brain stimulations and several drugs can also boost awareness detection. A program integrating these practices is proposed to patients awakening from coma or for a specific assessment before the admission in dedicated units for patients in VS/MCS.

Keywords VS; URW; PCCRU

Disclosure of interest The author has not supplied his declaration of conflict of interest.

<http://dx.doi.org/10.1016/j.rehab.2015.07.117>

CO19-002-e

The withdrawal of tracheostomy and the use of NIV in tetraplegics patients in post-Intensive Care Units



B. Reiss (Dr)

CHU Nantes, Nantes, France

E-mail address: benedicte.reiss@yahoo.fr

The rate of the C1-C4 tetraplegia has tripled in 30 years, in parallel, the mortality rate decreased by 90%. The respiratory etiology remains a leading cause of death in the first year.

In the acute phase, several mechanisms explain the severity of the respiratory disorder: a significant decrease in lung volumes proportional to the neurological level, decreased lung compliance and parietal compliance, vagal hyperactivity and a modification of the diaphragmatic function. The early use of a tracheostomy can reduce the duration of mechanical ventilation and reduce the complications of prolonged intubation. It must be systematically for levels

The incidence of respiratory complications (36% atelectasis, pneumonia 31%) relate to 84% of C1-C4 tetraplegic patients, 60% for C5-C8 levels. The use of NIV helps prevent and treat respiratory complications in the acute phase due to the achievement of the inspiratory and expiratory function.

Among the different instrumental techniques: air-stacking, hyper-insufflations (pressure relaxant). They allow obtaining a prompt increased inspiratory volume. Their goals: to increase lung compliance, increase recruitment of atelectasias areas, reduce the stiffness of the chest wall.

Mucus plugging increases the work of breathing and promotes atelectasis can lead to pneumonia. Instrumental helps to fight against the mucus plugging: the in-exsufflator cough assist devices that provides a distal drainage of secretions by simulating cough. Its use allows a reduction of the use of fibro-aspiration. Its most common settings: 40 cm H₂O and blowing –40 cm H₂O exsufflation.

This respiratory care must be part of a comprehensive rehabilitation program for systemic deficiencies tetraplegic patients.

Keywords Tetraplegic; NIV; Tracheostomy

Disclosure of interest The author has not supplied her declaration of conflict of interest.

<http://dx.doi.org/10.1016/j.rehab.2015.07.118>

CO19-003-e

Epidemiology of patients admitted in awareness recovery units in the Nord-Pas-de-Calais region (France)



F. Beaucamp (Dr)^{a,*}, S. Follet (Dr)^b, X. Molders (Dr)^c, N. Dubrunfaut (Dr)^d, C. Rogeau (Dr)^c, B. Riegel (Dr)^c, O. Kozłowski (Dr)^e, M. Rousseaux (Dr)^c, E. Allart (Dr)^c

^a CH Roubaix (centre de rééducation Guy-Talpaert), Roubaix, France

^b Fondation Hopale-Berck

^c CHRU de Lille

^d Fondation Hopale-Fouquières-les-Lens

^e Réseau TC/AVC 59-62

*Corresponding author.

E-mail address: franck.beaucamp@ch-roubaix.fr (F. Beaucamp)

Objectives The main objective of this study was to describe the population of patients hospitalized in awareness recovery units [AE1], since the occurrence of brain-injury until their discharge. Secondary objectives were to know which criteria could influence length of stay in awakening centers and to judge evolution of patients' autonomy.

Patients and methods Multicenter prospective longitudinal study about inpatients hospitalized in 2013 and 2014 in the 4 awareness recovery units (ARU) of the Nord-Pas-de-Calais region. Analyzed data were related to socio-demographic characteristics of patients, brain injury characteristics, characteristics of the stay in intensive care and ARU (including functional evolution) and study of the destination of discharged patients.

Results One hundred and eighty-two patients were included (117 male, 64.2%; 46 ± 14 yo) divided as such: CHU Lille (37.4%), Hopale-Berck (29.7%) Hopale-Fouquières-les-Lens (19.2%), CH Roubaix (13.7%). Patients suffered from traumatic brain injury (53.6%), ruptured aneurysm (22.1%), stroke (13.8%) and cerebral anoxia (6.1%), the distribution was homogeneous by center. Socio-demographic data of patients by pathology was similar to the literature data. The median coma duration was 29 days; time to admission in ARU was 57 days, it was independent of the nature of pathology. The median length of stay in ARU was 65 days, but with substantial variability (mean 108 days). Time to admission since brain-injury was positively correlated to the length of stay in ARU. Autonomy of patients (physical, communication, GOS) was significantly improved between the beginning and the end of the stay in ARU. Conventional neurerehabilitation PMR units were the main destination of discharged patients.

Discussion This exhaustive study of all ARU of the Nord-pas-de-Calais region draws a global panorama of patients during their stay in intensive care upon discharge. It can serve as an initial reflexion to improve actual practices, and put the light on the necessity of leading other longitudinal works of the articulation between acute and rehabilitation care.

Keywords Coma; Awareness; Epidemiology

Disclosure of interest The authors have not supplied their declaration of conflict of interest.

<http://dx.doi.org/10.1016/j.rehab.2015.07.119>