

CO51-004-e

### Electric-Powered Wheelchair (EPW) electronic system Adaptation to Pathology Progression. Experience from our younger neuromuscular patients

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EPW are classically equipped with a standard electronic system allowing basic functionalities including:

- variable and controlled speed driving;
- position changing.

Due to the negative and polymorphous progression of our patient's deficiencies, the electronic system can become unable to meet the patient's new needs.

Adaptation of the EPW with an upgradable electronic system offers new possibilities to patients allowing:

- continued use of the EPW with/or;
- increase of autonomy and control on their environment.

This electronic system evolution can provide:

- new modalities of driving with new input devices: mini joystick, latched mode...;
- more positions offered with new electrical functions, a better actuators management (stroke, speeds, "therapeutic" positions...);
- effective role on environment with standards channels (IR, Bluetooth) or specialized channels ( $\times 10$ , zWave).

Power wheelchairs can be equipped by the manufacturer, during the initial order, with an upgradable electronic system, at an increased cost.

The initial choice of an upgradable electronic system that will adapt to the progression of the deficiencies is very important. Otherwise, it is not necessary to renew the whole EPW, as often recommended. Nevertheless it is often cost effective to upgrade the electronic system even if minimally or not covered by health insurance.

This upgrade allows keeping the wheelchair for which positioning work has already been done and funded.

#### Further reading

CERAH Les véhicules pour personnes handicapées – Module Technique.

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Feer L, Langbein Ed, Skaar St B. "Adequacy of power wheelchair control interfaces for persons with severe disabilities: a clinical survey". Journal of rehabilitation Research and Development Vol. 37 n°3 May-June 2000.

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### Evaluation of user's satisfaction after their first acquisition of an electric-powered wheelchair

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**Keywords :** Electric-powered wheelchair; Satisfaction; Quality of life

**Objectives.**– Electric-powered wheelchair (EPW) allows users' to improve their autonomy in their movement as well as improve their quality of life [1]. The objective of this study is to analyse users' satisfaction after their first acquisition of an EPW.

**Method.**– A prospective study with retrospectives data was conducted. Patients with a first purchase of an EPW since 2011 received an occupational therapy interview. Satisfaction with technical solution (ESAT scale), overall satisfaction (VAS) and the impact of the EPW on quality of life (VAS) were evaluated.

**Results.**– Twenty-two patients received the assessment (55 years  $\pm$  13.6; 59% of women). On average patients were seen 11 months  $\pm$  6.3 after the acquisition. The EPW's tests lasted on average 6.5 days  $\pm$  7.6 per EPW with an



average of 1.9 EPWs' tested. Twenty-seven percent refused testing a second EPW. The most important criteria for this choice the most frequently cited are: efficiency, (60%), comfort (52%) et facility of use (57.1%). Efficiency (4.45/5), adjustment (4.43/5) and comfort (4.36/5) were the criteria's that gave the most satisfaction whereas the after-sale service (3.8/5), the weight (3.72/5) and the procedure (4.14/5) gave the most dissatisfaction. Globally patients are very satisfied with their EPW (VAS = 8.1) and notice a big impact on their quality of life (VAS = 8).

**Conclusion.**– Users are generally very satisfied with their EPW following a first acquisition with an occupational therapy support.

#### Reference

[1] Pettersson I, Ahlström G, Törnquist K. The value of an outdoor powered wheelchair with regard to the quality of life of persons with stroke: a follow-up study. *Assist Technol* 2007 Fall;19(3):143–53.

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### Conservative treatment of camptodactyly by successive splinting

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**Keywords:** Orthosis; Camptodactyly

Camptodactyly (Greek *camptos*: bend + *dactylos*: finger), which was described by Landouzy, is defined as a permanent flexion of the proximal interphalangeal joint (PIP). It is most often a deformity of the little finger. Two types have been described: a congenital type and an acquired (adolescent) type. Eighty percent of cases, if untreated, showed no improvement or got progressively worse.

Surgery is rarely indicated because of disappointing results. Conservative treatment must be tried first, to recover the passive and active range of motion of the PIP.

**Aim.**– To assess efficacy of successive splinting in camptodactyly.

**Method.**– The occupational therapist make a low temperature thermoformable splint. Wrist and metacarpo-phalangeal joint are in neutral position or in extension. Affected PIP are postured with strapping and foam units for each treated finger to form supports and to control the finger rotation. It is a sleep splinting. It is a retrospective study about 30 camptodactylyes which received a conservative treatment in the department: Splint making by the occupational therapist, evolution follow up and spint adjustment or replacement each two weeks or each month.

**Results.**– The treatment lead to a complete (62%) or sub-complete (flessum PIP  $< 10^\circ$ : 38%) recovering of all the camptodactylyes a the end of the treatment.

**Discussion.**– Treatment is often long (average 7 months). Compliance and tolerance are good for nursing whom splint are put by the parents when sleeping, sometimes it's more difficult in acquired type. Long-term efficacy needs to be evaluated.

#### Further reading

Landouzy L. Camptodactylie. Stigmate organique précoce du neuro-arthritis. *Press Med* 1906;14:251–253.

Senrui H. Congenital contractures. In: Congenital malformations of the hand and forearm, Churchill Livingstone, Hong Kong, 1998.

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### Occupational therapy (OT) and pulmonary rehabilitation (PR) of COPD patients

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**Keywords:** Occupational therapy; Pulmonary rehabilitation; COPD



**Introduction.**– Pulmonary Rehabilitation (PR) is an evidence-based and multidisciplinary intervention designed for COPD patients allowing to improve their autonomy in Activities of Daily Life (ADL) and their Quality Of Life (QOL).

The intervention of an occupational therapist during comprehensive PR is now clearly demonstrated and recommended. Nevertheless, standardized protocols of intervention of Occupational Therapy (OT) and definition of OT's roles during PR are lacking.

**Aim and methods.**– The aim of this study is to propose some guidelines about specific roles and interventions of OT during PR based on a review of the literature and our experience in *Cliniques Universitaires Saint-Luc* (CUSL).

**Results and discussion.**– There is a lack of randomised controlled trials (RCT) about specific roles of OT during the PR.

Following our experience in CUSL, the evaluation and the education of COPD patients can be considered as the key roles of the OT. Global OT intervention in PR should include at least: assessment of patient's autonomy in ADL; proposal of economical strategies, technical support and environment's modifications

facilitating the ADLs' achievement; COPD patient's self-management; therapeutic education sessions.

Concerning the therapeutic education, the role of the occupational therapist is first to identify the patient's needs and the activities that pose difficulties in their daily lives through various tools (as the Canadian Model of Occupational Performance). Therapeutic education will then aim to reduce energy costs (for example, learning appropriate positions) and ventilatory costs (modification of activities' procedure) of the patient in ADL. The occupational therapist also uses motivational interviewing in therapeutic education. It is necessary for behavioral changes and essential in patient's compliance during the PR.

**Conclusion.**– OT is an effective intervention for COPD patients during PR that improves their ADL and QOL, and must be promoted to evaluate and solve problems related with respiratory disability. Although it lacks RCT, we can propose some clinical guidelines about specific roles of OT during PR.

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