A New System to Classify Rehabilitation Facilities Outpatients for Financing Purposes

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Introduction
The improvement of living conditions along with medical advances in the treatment and prevention of many diseases has led to changes, with an increased longevity and different health profiles. These changes are the result of the evolution in the treatment of diseases that have become less mortal and more chronic. Many of these conditions lead to the inability to perform the Activities of Daily Living (ADL) which, in turn, cause disability and dependence. The Health Systems face additional challenges and must respond by reorganizing institutions, resources and financing, in order to provide care in agreement with a new pattern of population's needs. Portuguese outpatient rehabilitation facilities are financed on a fee for service basis, with no differentiation according to the complexity of the patient's disability. There is no systematic information, regarding patients functional dependence, diagnostics or demographic characteristics. It has been long acknowledged that a financing system detached from the patient case-mix and burden of disease may lead to inequities among providers since there are potential incentives to select individuals with less complex disabilities. Since patients are treated not only by the etiological diagnosis but also by functional dependency, a financing system that does not contemplate the amount of health care needed will lead to an inadequate allocation of resources. An evidence based system for allocating financial resources would be fairer and enable the implementation of a prospective financing system according to the patient's clinical and functional status. Given the assumption that patients with higher dependency require additional time in rehabilitation and more allocation of resources, the Portuguese Ministry of Health has been studying the development of a financing system for ambulatory rehabilitation according to complexity levels. The main objective was to create a new patient classification system for ambulatory rehabilitation care based on a case mixed group function, to determine the complexity level of rehabilitation outpatients. This variable will be used as a proxy of the care needed to find homogeneous patients groups according to their complexity. The aim of such a PCS is to characterize the patients receiving ambulatory rehabilitation care within the Portuguese NHS and adjust financing to patient complexity.

Methods
A sample of patients was classified in a retrospective manner. Patient dependency level was measured through the ICF Core Sets. Since WHO's ICF includes more than 1400 categories, this shorter classification instrument was developed (by the ICF Research Branch, mainly sponsored by the Department of Physical Medicine and Rehabilitation and the Institute for Health and Rehabilitation Science in Munich, Germany) for some specific patients groups which can serve as a practical and time efficient tool to classify and describe patients' functioning. For this purpose only a fraction of the categories is needed and different ICF core sets are being developed for a number of rehabilitation impairment groups. Gender, age and diagnostics (through ICD-10) were also collected. The question was how to tackle such a heterogeneous population. A fuzzy clustering approach to data analysis was used, namely a grade of membership (GoM) representation of data, enabling the creation of a severity indicator for each patient. A Classification and Regression Trees model was then applied to create the different patient groups according to the new severity variable.

Results
From a total of 1.850 episodes, 344 (18.6%) were classified in Core set 1 - neurological, 1404 (75.9%) in Core set 2 - musculoskeletal, and 102 (5.5%) in Core set 3 - cardiopulmonary conditions. The CART model resulted in the creation of 51 homogenous patient groups, divided through 14 impairment groups, with 50,1% of the patients being classified into the inflammation impairment group, resulting in a low total casemix index (0,8663) for the studied sample. Only 1,5% of the patients were grouped into non progressive diseases of the nervous system, with a casemix of 1,0943.

Conclusions
Ambulatory rehabilitation patients treated within the Portuguese National Health System have common characteristics, namely in what severity and functional dependence are concerned, which enables complexity grouping. Patients with musculoskeletal condition and low severity are the most common within this type of care, showing that less complex patients are more attractive in a fee for service financing system. The creation of an ambulatory patient classification system is the first step to change into a prospective financing system. Presently, instead of just prescribing this sort of care, general practitioners are now measuring patient functional level enabling patient ranking by complexity and, in the near future, the payment adjustment to the patient complexity.

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