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Commentary

Conceptual changes needed to improve outcomes in rehabilitation medicine: A clinical commentary

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Abstract. Rehabilitation medicine has expanded the horizon of all medicine and brought about new human achievements. To facilitate continued advances in achievement, several changes are suggested in customary rehabilitation strategic goals, concepts, and practices. The main rehabilitation goals should focus on prolonged survival, contrary to the opinions of most authors on rehabilitation, and on achievement of *maximum* ability realization, rather than of independence or any given (including previous) level of functioning. Setting rehabilitation goals should benefit the patient, rather than the caregiver or the insurer. Training should focus on tasks that contribute to the patients' interests and desires, rather than on any task that reduces the burden of care. The main criterion for admission to a rehabilitation ward should be based on expected advantage in prolonging patient survival and maximizing ability realization.

Keywords: Rehabilitation, conceptual changes, longevity, ability realization, patient interest

1. Introduction

Rehabilitation introduced a new approach that has expanded the horizon of medicine, suggesting that medical interventions can improve patients' health and social involvement even when cure is impossible and the impairment is severe. To implement this approach, physiatrists translated fundamental concepts in rehabilitation medicine into strategic goals. The definition of these goals affects the care, which in turn determines the rehabilitation outcome (Levack et al., 2015; Locke & Latham, 2002; Bovend'Eerdt TJ, 2009). These goals seem to be self-evident. A quick perusal of textbooks of rehabilitation medicine and of websites of health systems or rehabilitation hospitals and wards shows that they embrace improvement of function and quality of life (QOL), increased independence, and shortened length of stay (LOS) in hospital (Guttmann, 1973; Kottke, 1982; DeLisa, 1993; DeLisa, 2005; Granger, 1996; Sunder, 2010; Maitin, 2015; WHO, 2011; Kessler, 2022; Good shepherd, 2022; Medicare, 2022; Australian government, 2004; Page, 2004). Without discounting these deserving goals, they would need to be amended in three ways, lest rehabilitation medicine fall short of achieving its potential: including longevity, striving for maximum ability realization, and emphasizing patient benefit. The first of these may seem counter-intuitive; the last two trivial. This article shows that neither is so.

2. Longevity

Most branches of medicine, in line with the Hippocratic and other physician's oaths, seek to extend life by definition, whether they cure, put into remission, or reduce morbidity (Encyclopaedia Britannica, 2019; WMA, 1983; Ogunbanjo, 2009; WHO, 2005; Feinsod, 2012; Tan, 2002). Not so rehabilitation medicine. The texts that define the goals of rehabilitation, explicitly or implicitly state that rehabilitation begins after the curative process is completed, and longevity is not one of its goals (Guttmann, 1973; Kottke 1982; DeLisa, 1993; DeLisa, 2005; Granger, 1996; Sunder, 2010; Maitin, 2015; WHO, 2011).

This reflects an underlying, often latent concept suggesting that QOL and functioning, which are the main pursuit of rehabilitation, are unrelated to survival, or even negatively related to it. Improving speech following a stroke or transferring independently from car to wheelchair after spinal cord injury does not inherently seem to prolong life. It may be argued that prolonging life with disability may extend misery, and that some patients prefer QOL over length of life.

In rehabilitation, however, *most of the activities required to prolong life also enhance functioning and therefore improve QOL.* Spinal Cord Independence Measure (SCIM) and Functional Independence Measure (FIM) scores 6 months and 5 years after discharge from rehabilitation were lower in patients with medical complications that cause excess mortality after spinal cord injury (SCI) (Kopp, 2017; Divanoglou, 2010; Savic, 2017). A low FIM score at discharge from rehabilitation was found to be an independent risk factor for hospitalization (Cohen, 2012), and for reduced survival, after SCI (Hatch, 2017). Stroke patients with more complications, such as venous thromboembolism (VTE), urinary tract infection (UTI), pneumonia, and pressure sores showed lower FIM scores from the time of discharge to 12 months after stroke onset (Kim, 2017). The 3-month disability, assessed with the Modified Rankin Scale (MRS) score, was an independent predictor of survival in stroke patients (Chiu, 2012). The same was true after traumatic brain injury (TBI): comorbidities independently predicted disability assessed with the Disability Rating Scale (DRS) (Gardizi, 2014), and disability assessed with FIM or DRS was an independent predictor of survival (Brooks, 2013). Therefore, defining longevity as a strategic rehabilitation goal, which can improve care, can help reduce morbidity in rehabilitation, improving both life expectancy and functioning.

There are mutual effects between survival and the elimination of complications on one hand, and functioning on the other, and both must be strategic goals of rehabilitation medicine.

3. Maximum ability realization

It is reasonable to believe that most caregivers in rehabilitation strive to attain maximum ability realization for their patients, to achieve the best possible functional condition. Most rehabilitation plans, however, set such goals as independence, functioning prior to illness or injury, or functioning that has reached a plateau during rehabilitation (DeLisa, 2005; Maitin, 2015; WHO, 2011; Australian government, 2004; Page, 2004). On the face of it, these are worthy goals. Those who set them may believe that these goals represent maximum ability realization, or that they are the most desirable goals. But neither is true. Set targets, as frequently defined, may be too high, resulting in frustration and discouragement, or too low, resulting in wasted potential. Prior functioning may not be achievable, and functioning can plateau during rehabilitation at a level that is lower than the functional potential.

To attain optimal functioning, physiatrists and caregivers should adopt the concept that rehabilitation must strive for *maximum realization of ability,* which is the *patient's potential functioning, defined as the highest performance achieved by people with a similar physical status*. Such an objective stimulates maximum effort to remove obstacles in the way to achieving it, and fosters maximum improvement of performance. This benchmark must be individually assessed for each patient. For patients with SCI, a tool has been developed that does just that: the Spinal Cord Ability Realization Measurement Index (SCI-ARMI; Scivoletto, 2015; Scivoletto, 2016). SCI-ARMI measures the patient's disability weighted for the neurologic deficit of patients with SCI, making it possible to set clear ability realization goals for each level of deficit, and to assess the achievement of these goals. Similar tools should be developed for other deficits of patients in rehabilitation, to allow easy determination of the ability for any given impairment, and quantitative assessment of the ability realization.

To optimize rehabilitation and reach the maximum ability of the patient, it is important to make the

realization of potential functioning, as defined above, a strategic goal, and seek to assess it quantitatively with a specialized tool.

4. Patient benefit

Striving for ability realization can maximize the functional achievements of rehabilitation, but the value of the functions achieved depends on their benefit to the patient or on the patient's explicit desire. In rehabilitation, as in other medical disciplines, the care is patient centered, and caregivers generally believe that they act for the patient's wellbeing (Jesus, 2016). Caregivers, however, may plan to discharge a patient to a nursing home rather than to the community (Rosewilliam, 2016; Johnson, 2015). They may focus on procedures that shorten the LOS in rehabilitation or on reducing the burden of care (Miyoshi, 2018; Karahan, 2014). Many rehabilitation plans aim at the highest FIM score, which signals the lowest burden of care (Maritz, 2019; Shirahama, 2020). Caregivers who believe that they are doing so for the benefit of the patient, probably share the underlying belief that reducing the burden of care and shortening LOS in rehabilitation represent the universal interest or desire of rehabilitation patients. Indeed, a lower burden of care is related to patient independence, which can serve the patient's interests, and a shorter LOS may allow more patients to achieve independence. But reducing the burden of care and shortening LOS in rehabilitation are *not necessarily in the interest or the desire of the patient*, and are likely to serve first and foremost the interests of those who provide and pay for this care.

For example, the burden of care may be similar for patients who can travel a certain distance using a wheelchair or walking. If the main goal is to reduce the burden of care, insufficient effort may be invested in achieving walking. The burden of care required for a patient with an indwelling catheter may be lighter than that required for a patient on intermittent catheterization. If the main goal is to reduce the burden of care, insufficient effort may be invested in weaning the patient from an indwelling catheter. Trying to achieve a given FIM score, with minimal burden of care and the shortest LOS, or with minimal rehabilitation effort, may prompt caregivers to choose goals such as wheelchair independence or indwelling catheter voiding, rather than walking or voiding using intermittent catheterization, which are usually preferable for the patient (Scivoletto, 2016).

Making patient benefit a goal of rehabilitation is not mere patient centeredness, as defined by the US National Academy of Medicine (Institute of Medicine USA, 2001). To attain functional achievements of maximum value and benefit for the patient, physiatrists and caregivers should adopt the concept *that set targets must conform to the real interest or desire of the patient*. Independence is important, but the value of independence must be assessed for each patient individually, before it is given preference to other values that patients may rank higher. The value of independence can be different for different modes of performing tasks, depending on the patient's interests and preferences. To act for the benefit of the patient, a caregiver should choose and rank higher the modes that contribute more to the patient's interest or that the patient prefers. Training should focus on tasks that contribute to the patients' interests and desires, rather than on tasks that reduce the burden of care.

The imputation that the patient's interest is not at the center of their activities would elicit strong and sincere protests from rehabilitation practitioners. But intentions alone do not tell the whole story. Current trends in rehabilitation often benefit caregivers or insurers, rather than patients. Therefore, to ensure an optimal rehabilitation plan, the patient's interest must be scrupulously segregated from that of the provider and the payer as a matter of policy. Rehabilitation goals must include tasks of value for the patient, with measurable weights assigned to these tasks that allow ranking their values.

5. Conclusion

A corollary of adopting the above goals as strategic goals of rehabilitation is that admission to rehabilitation should be based on the expected advantages of treatment in prolonging survival and achieving maximum ability realization. These goals are not part of the criteria for admission to rehabilitation services today, and present criteria for rehabilitation could be met, with a relatively small investment, by well-furnished nursing homes (Stefanacci, 2015; Kessler, 2022; Good shepherd, 2022; Medicare, 2022). Only a critical mass of physiatrists and a multidisciplinary team that have the ability to translate the physicians' knowledge and experience into care that maximizes survival and ability realization, as defined above, make a difference between a specialized rehabilitation ward and a well-furnished nursing home. These

goals can be pursued only in specialized rehabilitation wards, if they choose the embrace these goals. To optimally serve its patients, and justify its specificity, rehabilitation medicine must itself learn to fully realize its own maximum ability.

Conflict of interest

The author has no conflicts of interest to declare.

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