

Organizational aspects of neurorehabilitation at the outpatient stage

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Abstract

The study was aimed to evaluate the effectiveness of IRP implementation in patients of a specialized clinic providing long-term care to neurological and neurosurgical patients.

Material and methods. The study was conducted in 2020-2021. on the basis of the MC "Expert Health" (Odessa, Ukraine). 83 patients undergoing neurorehabilitation program were examined. The correspondence of the fulfillment of key rehabilitation tasks in terms of time and quality was assessed. Additionally, the level of motivation and compliance of the patient was assessed using the MOT-Q questionnaires (for patients with previous TBI (n = 13), SRMS (for patients with stroke (n = 54) and with SRQ-E (for patients with other types of neurological pathology (n = 16). The overall level of compliance was assessed using the General Rehabilitation Adherence Scale (GRAS). The level of safety was assessed according to the following criteria: the presence of FAST certificates for personnel, a system for monitoring vital functions, equipment and consumables for the provision of emergency care. Statistical processing was carried out by methods of variance and correlation analysis, using the MedCalc 1.3 software.

Results. There were not recorded any significant violations of safety principles in the provision of rehabilitation assistance in the certification of personnel according to FAST. The

frequency of detecting cases of improper implementation of IRP did not exceed 6.0% (5 cases out of 83 analyzed). When assessing the relationship between the effectiveness of IRP and the level of compliance, a strong positive correlation was found - $r = 0.78$

Conclusion. 1. Provision of rehab services for neurological patients in the long term requires coordination of the actions of specialists at the intra-, inter-, and transdisciplinary levels. 2. A necessary condition for the functioning of a multidisciplinary team in the provision of rehabilitation care is certification of staff in the BLS systems - for allied health specialists and ACLS for physicians. 3. The effectiveness of IRP depends on the patient's compliance level ($r = 0.78$). 4. For the continuity of the rehabilitation process, it is necessary to involve relatives and facilitate their training in the basics of "home" rehabilitation.

Key words: neurorehabilitation; effectiveness; efficacy; safety; standards

The Law of Ukraine "On Rehabilitation in the Sphere of Health Protection" dated 03.12.2020 defines the following periods of rehabilitation: acute, subacute, long-term [1]. The goals and objectives of rehabilitation differ at each of these periods, gradually coming down to ensuring and maintaining the maximum possible independence in functional terms individually. To ensure continuity and assess the quality of rehabilitation when setting goals in the world practice of rehabilitation, the qualitative approaches of S.M.A.R.T and M.E.A.N.I.N.G. are used; as well as quantitative scales GAS (Goal attainment scale), etc. [2-4].

The following factors are distinguished as factors influencing the achievement of the goal (Table 1):

Table 1 Factors influencing the achievement of the goal in the rehabilitation process [1]

Factors	Facilitator	Barrier
Time	+	+
Pain		+
Cognition		+
Family	+	+
Medical staff	+	+
Anxiety		+
Motivation	+	
Participation	+	+

As can be seen from the presented table, some factors act exclusively as a barrier (the presence of pain, a change in consciousness, the presence of anxiety and / or depression). Family support, availability of time resources, sufficient staffing for the rehabilitation process, patient motivation are important for achieving the goal [1, 5].

The influence of the type of rehabilitation team (multidisciplinary, interdisciplinary, transdisciplinary, intradisciplinary) on the compliance of rehabilitation goals and the interaction between staff is actively discussed in the literature [6, 7].

Goal setting is the main practice of rehabilitation. Goal setting is believed to motivate the client to rehabilitate and change behavior. Nevertheless, as practice shows, both patients and doctors report difficulties in implementing an individual rehabilitation program associated with low patient motivation, technical difficulties in the interaction of members of a multidisciplinary program, as well as a lack of coordination between institutions of a rehabilitation profile [7]. Especially often, such difficulties arise in the practice of neurorehabilitation, when the patient usually has a motor or sensory deficit, and often depressive manifestations, which prevents the implementation of the tasks of restorative treatment [5]

In a study by Littooj E. et al. (2021) assessed the compliance of the stated rehabilitation goals with their real implementation in the conditions of outpatient rehabilitation centers [8]. Differences were shown in the implementation of the rehabilitation goals of patients with demyelinating diseases, stroke and cerebral palsy.

The need to maintain continuous feedback with the patient and his family members is pointed out by Borgen I et al. (2021) [9]. In their opinion, some aspects of adaptation after TBI are not sufficiently covered by the ICF classification, for example, existing approaches do not take into account problems with identity, lack of meaningful activity and a sense of loneliness in patients of this category.

In the countries of the post-Soviet space, the concept of a three-stage provision of rehabilitation medical care, which only partly corresponds to modern approaches, remains relevant. The goals of outpatient (delayed) rehabilitation are full or partial restoration of the impaired and (or) compensation for the lost functions of the affected organ or system; prevention, early diagnosis and correction of possible dysfunctions of damaged organs or body systems; prevention and reduction of the degree of possible disability; improving the quality of life; maintaining the patient's performance; social integration of the patient into society; prevention of injuries and complications (primarily contractures) [1, 10, 11].

PC "Expert Health" is one of the first centers in Ukraine, which provides comprehensive health care to neurological patients, including neurorehabilitation. Table 1 shows the indications for the rehabilitation of neurological and neurosurgical patients at the outpatient stage.

Table 1 Indications for rehabilitation of neurological and neurosurgical patients at the outpatient stage

ICD-10 codes [12]	Indices
G04, G35, G95.02, G99.2, S14.0, S24.0, S34.0	BI 21-90 ASIA B,C,D
B67.9, B69.0, D16.6, D32.0, D33.0-4; D35.2-4; D36.1; G06.0-2; G20, G91.0-3; G93.0, G95.0; M43.1; M47.1-2; M48.0; M51.2-3; M50.0-1; M51.0-1; Q07.0; Q07.8; Q28.2-3; C41.2; C70.0-1; C71, C72.0-5,8; G21, G23, G40.0-2; G80.0, G93.0, G95.2,8; G97.2, I60, I61, I63, I64, S06, S14, S24, T90.1-3,5; T90.8, T91.1,3; T92.4; T93.4	BI 21-90 MMT 10-30
T91.3, T92.4, T93.4, T98.3, T90.1-3,5,8	BI 21-90 MMT 10-30 ASIA – B,C,D
A84-85, 87, 89	BI 26-85 MMT 10-30

Regardless of what anatomical structures are involved in the pathological process when creating an individual rehabilitation program, specialists most often have to deal with the following functional disorders (Table 2).

Currently, there are few studies devoted to the organizational aspects of neurorehabilitation at the outpatient stage, and most of them consider the technical side of rehabilitation at the long-term stage [10, 11]. At the same time, there is a clear request from domestic institutions that provide rehabilitation and palliative care in the long term for the development of approaches to the practical implementation of an individualized rehabilitation plan (IRP).

Table 2. Functional disorders in neurological and neurosurgical patients [13]

ICF	Name of category
	<i>Chapter: Mental functions (10 categories selected out of 22 chapter categories)</i>
b110	Consciousness functions
b114	Orientation functions
b130	Energy and drive functions
b134	Sleep functions
b140	Attention functions
b147	Psychomotor functions
b152	Emotional functions
b156	Perceptual functions
b167	Mental functions of language
b180	Experience of self and time functions
	<i>Chapter: Sensory functions and pain (9 categories selected out of 18 chapter categories)</i>
b210	Seeing functions
b215	Function of structures adjoining the eye
b230	Hearing functions
b235	Vestibular functions
b240	Sensations associated with hearing and vestibular function
b260	Proprioceptive function
b265	Touch function
b270	Sensory functions related to temperature and other stimuli
b280	Sensation of pain
b620	Urination functions
	<i>Chapter: Neuromusculoskeletal and movement-related functions (5 categories selected out of 17 chapter categories)</i>
b710	Mobility of joint functions
b715	Stability of joint functions
b730	Muscle power functions
b735	Muscle tone functions
b755	Involuntary movement reaction functions
b760	Control of voluntary movement functions

The aim of the study was to evaluate the effectiveness of IRP implementation in patients of a specialized clinic providing long-term care to neurological and neurosurgical patients.

Material and methods. The study was conducted in 2020-2021. on the basis of the MC "Expert Health" (Odessa, Ukraine). 83 patients undergoing neurorehabilitation program were examined. The correspondence of the fulfillment of key rehabilitation tasks in terms of time and quality was assessed. Additionally, the level of motivation and compliance of the patient was assessed using the MOT-Q questionnaires (for patients with previous TBI (n = 13) [14], SRMS (for patients with stroke (n = 54) [15]) and with SRQ-E (for patients with other types of neurological pathology (n = 16) [16] The overall level of compliance was assessed using the General Rehabilitation Adherence Scale (GRAS) [17].

In addition, the level of safety of carrying out rehabilitation measures was assessed according to the following criteria: the presence of FAST certificates for personnel, a system for monitoring vital functions, equipment and consumables for the provision of emergency care [18].

Statistical processing was carried out by methods of variance and correlation analysis, using the MedCalc 1.3 software [19]

Results

There were not recorded any significant violations of safety principles in the provision of rehabilitation assistance in the certification of personnel according to FAST. The frequency of detecting cases of improper implementation of IRP did not exceed 6.0% (5 cases out of 83 analyzed). The reasons were insufficient patient compliance, and in one case, the appearance of signs of bronchial obstruction (A16). Patients were generally satisfied with the level of services provided, but workers noted a lack of confidence in their knowledge and skills in providing first aid.

All workers received FAST-certified group first aid training. This program is run by the Canadian agency F.A.S.T. Rescue Inc. in collaboration with ANA, HSF, divisions of the International Red Cross, other international organizations that deal with health issues.

After the training, the number of cases of non-compliance with the IRP decreased by 50%, the indicators of motivation (by 55%) and confidence in their competencies (by 70%) increased significantly. There were no cases falling under the category of "red" flags during the observation

As shown by the results of observations, the effectiveness of the rehabilitation program was determined by the level of the patient's motivation (Table 3)

Table 3. Influence of patient motivation on the implementation of IRP

Criteria	High motivation (n=21)	Moderate motivation (n=60)	Poor motivation (n=12)
Implementation of the IRP as scheduled	100%	80%	41,7
Deviation from deadlines	-	15%	41,7
Complications	-	5%	16,7

When assessing the relationship between the effectiveness of IRP and the level of compliance, a strong positive correlation was found - $r = 0.78$ (Fig. 1)

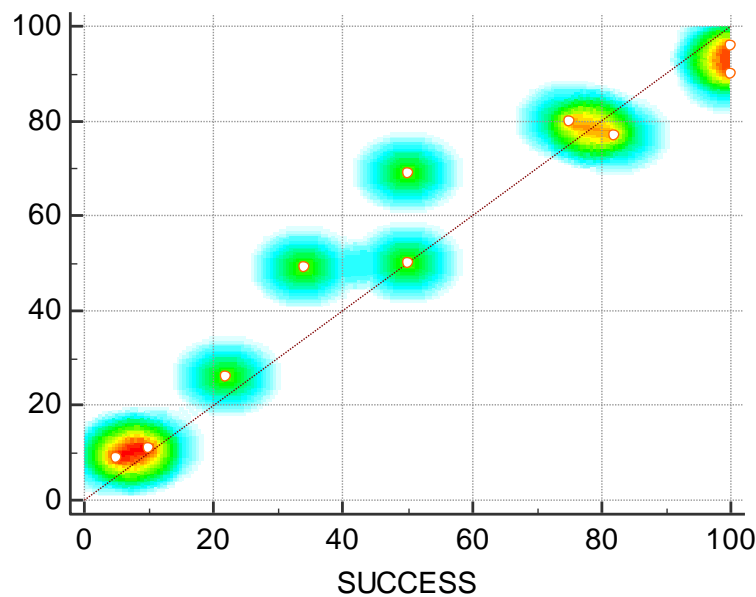


Figure 1. The role of compliance in the implementation of the IRP

There are a number of issues in the organization of outpatient neurorehabilitation, the solution of which is necessary for the successful solution of rehabilitation problems. Lack of motivation is the reason for refusal from rehabilitation or long breaks in classes, thus violating one of the basic principles of rehabilitation - “use or lose”. Training for relatives and social workers helps in overcoming this obstacle. It is important to timely identify emotional-volitional disorders and take measures to eliminate them.

In the case when a patient receives rehabilitation assistance on an outpatient basis, he needs to get to the rehabilitation center on his own, this can serve as an additional factor in reducing motivation, and can also lead to an increase in the financial costs of the family. Optimization is possible through the development of a wide network of outpatient centers and the organization of patient transportation, including with the involvement of government

mechanisms. It is advisable to develop a methodology for teaching relatives for self-study with a patient at home.

Rehabilitation must be safe. For this, it is necessary that the specialists of the centers be able to recognize situations that threaten the health of patients. In many rehabilitation centers in Ukraine, the main staff consists of non-medical specialists: physical therapists, occupational therapists, speech therapy specialists, neuropsychologists. The way out of this situation is seen in the training of specialists under the BLS program for non-medical workers and ACLS for physicians. At the moment, there is no state standard for medical styling for rehabilitation centers. Since rehabilitation medicine in Ukraine is in its infancy, it is necessary to develop a unified state standard for certification of rehabilitation centers, including the provision of emergency medical care.

Conclusions:

1. Provision of rehab services for neurological patients in the long term requires coordination of the actions of specialists at the intra-, inter-, and transdisciplinary levels
2. A necessary condition for the functioning of a multidisciplinary team in the provision of rehabilitation care is certification of staff in the BLS systems - for allied health specialists and ACLS for physicians
3. The effectiveness of IRP depends on the patient's compliance level ($r = 0.78$)
4. For the continuity of the rehabilitation process, it is necessary to involve relatives and facilitate their training in the basics of "home" rehabilitation

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