

Development of early comprehensive stroke inpatient rehabilitation in Poland — current status and future requirements

Rozwój wczesnej kompleksowej rehabilitacji poudarowej w Polsce — stan obecny i dalsze potrzeby

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Abstract

Background and purpose: Every stroke patient should undergo early rehabilitation. We aimed to evaluate accessibility, development and needs in early stroke inpatient rehabilitation in Poland.

Material and methods: A questionnaire evaluating rehabilitation departments was prepared and sent (in 2004 and 2008) to rehabilitation wards in Poland, where stroke patients are treated and undergo early rehabilitation. We divided departments into classes: class A – having comprehensive rehabilitation (physiotherapy minimum 60 minutes/day, speech therapy minimum 30 minutes/5 days/week, rehabilitation of other cognitive impairments minimum 30 minutes/5 days/week, group physiotherapy); B – having the possibility of all types of therapy, but done less frequently; C – physiotherapy and speech therapy; D – physiotherapy and cognitive rehabilitation; E – only physiotherapy.

Results: In 2004, we obtained responses from 115 of 172 (66.9%) rehabilitation departments. According to prespecified criteria there were 11 class A, 31 class B, 28 class C, 4 class D, and 41 class E wards. In 2008, we received response from 89 of 149 (59.7%) rehabilitation departments. According to prespecified criteria there were 17 class A, 40 class B, 22 class C, 0 class D, and 10 class E wards. In 2004, 159 beds and in 2008, 294 beds in class A departments were available for stroke patients. The minimal number of needed but lacking beds was 604 in 2004 and 469 in 2008.

Streszczenie

Wstęp i cel pracy: Każdy chory na udar mózgu powinien mieć zapewnioną wczesną rehabilitację. Celem pracy była ocena dostępności, rozwoju oraz potrzeb w zakresie wczesnej szpitalnej rehabilitacji poudarowej prowadzonej w Polsce.

Materiał i metody: Opracowano kwestionariusz pytań i rozesłano go (w 2004 r. i 2008 r.) do oddziałów rehabilitacji w Polsce, w których leczeni są pacjenci po udarze mózgu. Oddziały podzielono na klasy: klasa A – kompleksowa rehabilitacja poudarowa (kinezyterapia minimum 60 min/dzień, terapia mowy minimum 30 min/5 dni w tygodniu, rehabilitacja innych zaburzeń funkcji poznawczych minimum 30 min/5 dni w tygodniu oraz kinezyterapia grupowa), B – możliwość prowadzenia wszystkich rodzajów terapii w mniejszym wymiarze czasowym, C – kinezyterapia i rehabilitacja zaburzeń mowy, D – kinezyterapia i rehabilitacja zaburzeń innych funkcji poznawczych, E – tylko kinezyterapia.

Wyniki: W 2004 r. odpowiedziało 115 ze 172 (66,9%) oddziałów rehabilitacji. Według przedstawionych kryteriów było to 11 oddziałów klasy A, 31 klasy B, 28 klasy C, 4 klasy D i 41 klasy E. W 2008 r. odpowiedziało 89 ze 149 (59,7%) oddziałów rehabilitacji. Według kryteriów było to 17 oddziałów klasy A, 40 klasy B, 22 klasy C, 0 klasy D i 10 klasy E. W 2004 r. 159 łóżek na oddziałach klasy A było przeznaczonych dla pacjentów po udarze mózgu; w 2008 r. liczba ta wyniosła 294 łóżka. W 2004 r. dla chorych na udar mózgu brakowało co najmniej 604 łóżek, a w 2008 r. – 469 łóżek.

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Conclusions: Development of departments providing early comprehensive stroke rehabilitation from 2004 to 2008 is marked, but still insufficient. In 2008, 19% of rehabilitation departments could provide comprehensive stroke rehabilitation and this was 38.5% of beds actually needed.

Key words: stroke, comprehensive rehabilitation, classification, needs.

Introduction

Stroke is one of the most common causes of adult-onset disability [1]. Even with optimal stroke unit care including thrombolysis, fewer than one third of stroke patients recover fully and have no deficits [2]. Based on previously published data, six months after stroke 45% of patients have hemiparesis, 22% do not walk without assistance, 24-53% need help in activity of daily living, and 12-18% have aphasia [3,4]. Stroke rehabilitation, by definition, is the process of assisting a person who has become disabled as a result of stroke to return to an optimal level of health, activity and participation. Rehabilitation for hemiplegic stroke includes organized multidisciplinary, supportive services that begin during 48 h after stroke onset. Stroke rehabilitation has typically relied on the training of patients in restoration and compensatory strategies [5].

Many organizations have established rules and recommendations for stroke care. The WHO Region Europe in Helsingborg Declarations (1995, 2006) outlined aims for the next years to improve stroke care [6,7]. The European Stroke Organization [8] and the earlier European Stroke Initiative [9-11] recommended that all acute stroke patients should have access to specialist stroke care and to an experienced multidisciplinary rehabilitation team. In Poland, the National Stroke Prevention and Treatment Programme (Polish abbreviation – NPPILUM) was established in 1998 as the initiative of Polish experts in neurology. The main goals were to monitor stroke epidemiology and care, to improve stroke care, and to make wide as possible implementation of thrombolysis as well as effective primary and secondary prevention methods. In 2003, the Programme became part of the National Cardiovascular Disease Prevention and Treatment Programme (Polish abbreviation – POLKARD) and was continued until the end of 2008 in its primary form. A group of opinion leaders in neurology translated and published the Polish version of the

Wnioski: Rozwój oddziałów zapewniających chorym po udarze mózgu wczesną kompleksową rehabilitację w latach 2004–2008 jest zauważalny, ale wciąż niewystarczający. W 2008 r. 19% oddziałów rehabilitacji mogło prowadzić wczesną kompleksową rehabilitację poudarową; dostępnych było 38,5% z minimalnej liczby potrzebnych łóżek rehabilitacyjnych dla pacjentów po udarze mózgu.

Słowa kluczowe: udar mózgu, kompleksowa rehabilitacja, klasyfikacja, potrzeby.

Helsingborg Declarations [12,13]. They also prepared and published in Polish several guidelines for stroke prevention, treatment, organization of care and rehabilitation [14-16]. The last update was published in 2008 [17]. According to these guidelines, all stroke patients in Poland should undergo early rehabilitation without prior selection, and its programme should be tailored according to individual needs of the patient to ensure optimal outcome.

In Poland in the nineties only about 1% of stroke patients had access to early stroke rehabilitation [18]. During the works of POLKARD, financial resources were dedicated to developing stroke units with a multidisciplinary approach as well as new rehabilitation departments where stroke victims undergo early inpatient rehabilitation [19].

The aim of the present work is to evaluate the accessibility of early comprehensive stroke rehabilitation in the years 2004 to 2008, and to calculate the country-wide needs for the future to assure that all post-stroke patients have access to early post-stroke rehabilitation.

Material and methods

For the purpose of this study, we have prepared a questionnaire evaluating the structure and staff of inpatient rehabilitation departments in Poland, where stroke patients are treated and undergo early post-stroke rehabilitation. In the questionnaire, we have enquired about the hospital (region, population, type of hospital, number of beds, number of patients treated per year, number of patients with acute stroke treated per year in different departments of the whole hospital) and about the rehabilitation department (staff, equipment, number of stroke victims treated per year, length and frequency of different rehabilitation procedures).

For the purpose of this work, we defined early inpatient rehabilitation in rehabilitation departments as

rehabilitation started directly after discharge from the stroke unit. Usually, therapy in rehabilitation departments started within 6 weeks from stroke onset. Very rarely the admission to rehabilitation wards was delayed, with the maximum length from stroke onset to admission to the rehabilitation department of 3 months. Comprehensiveness of rehabilitation was defined according to guidelines by the Experts of the National Programme of Prevention and Treatment of Stroke [15] as: providing to each patient who needs individual (one-to-one) physiotherapy minimum 60 minutes/day, speech therapy – minimum 30 minutes for 5 days a week, rehabilitation of other cognitive impairments – minimum 30 minutes for 5 days a week, and group physiotherapy minimum 30 minutes/day. All patients should also undergo occupational therapy, which in Poland could be provided by occupational therapists as well as by physiotherapists and nurses.

Our questionnaire was sent to all rehabilitation departments where stroke patients are treated and undergo early rehabilitation. The lists were made based on information from the neurological and rehabilitation consultants in each of 16 voivodships, and based on the e-information about neurological rehabilitation from the Polish National Health System.

We divided rehabilitation departments into 5 categories – classes A to E:

- Class A – having comprehensive rehabilitation,
- Class B – having the possibility of all types of therapy, but done less frequently,
- Class C – having the possibility of physiotherapy and speech therapy,
- Class D – having the possibility of physiotherapy and cognitive rehabilitation,
- Class E – possibility of only physiotherapy.

The questionnaire was sent to 172 rehabilitation departments in 2004 and to 149 rehabilitation departments in 2008. Two months after sending each questionnaire we called to heads of all departments who did not respond, with the request of sending a filled out questionnaire. Each returned questionnaire was checked and in case of doubts was verified by a telephone call or by e-mail. After that verification, the final classification was made. Also 5% of departments in 2008 were randomly selected and audited by us (M.K.).

The number of inhabitants with stroke in every voivodship was calculated on the basis of data from the Central Statistical Office regarding the population of Poland [20] and on the stroke incidence rate [21]. The number of post-stroke patients requiring inpatient reha-

bilitation was calculated from the experience of our department, where both stroke unit and neurorehabilitation ward are located. Therefore we have no administrative or other barriers for early transfer of stroke patients to rehabilitation.

We found that 19% of patients admitted to the stroke unit should have inpatient rehabilitation. The number of beds dedicated for stroke patients in rehabilitation departments class A (where the comprehensive early stroke rehabilitation is conducted) was estimated calculating that average minimum duration of inpatient rehabilitation is 4 weeks. The detailed methods of all evaluations was described earlier [22].

Later, we estimated the number of person-days in one year of hospitalization in rehabilitation departments (number of stroke survivors requiring inpatient rehabilitation \times 28 days of therapy). Then we calculated the number of needed beds (number of person-days/365 days in one year). Finally, the needs regarding further development of comprehensive stroke rehabilitation departments were assessed.

Results

We calculated that we need a minimum of 763 inpatient beds for early comprehensive stroke rehabilitation in Poland. The detailed calculation of accessibility and needs for each of 16 voivodships are given in Table 1.

The response ratio of the questionnaire was 66.9% (115/172 departments) in 2004 and 59.7% (89/149 departments) in 2008.

According to our classification, in 2004 there were:

- Class A – 11 departments (10%),
- Class B – 31 departments (27%),
- Class C – 28 departments (24%),
- Class D – 4 departments (3%),
- Class E – 41 departments (36%).

There were 159 (20.8% of needed) beds in rehabilitation departments for stroke patients. People from only six voivodships had access to comprehensive stroke rehabilitation in a place near their home. The number of stroke patients who needed inpatient rehabilitation per one early comprehensive rehabilitation bed in the whole of Poland was 62. In individual voivodships which had class A rehabilitation departments the number of stroke victims per bed in such department vary from 14 in Mazowieckie to 204 in Śląskie voivodship. The minimal number of needed rehabilitation beds dedicated for stroke people was 604.

Table 1. Accessibility and needs in early stroke patient rehabilitation after discharge from stroke and neurological departments in Poland in 2004 and 2008

Voivodship	Number of citizens [11]	Number of stroke patients	Number of persons who need early stroke inpatient rehabilitation	Minimal number of beds needed for early stroke rehabilitation	Departments focused on early stroke rehabilitation (N beds in 2004/ N of beds in 2008)
Wielkopolskie	3 365 283	5721	875	67	14/0
Kujawsko-pomorskie	2 068 258	3516	538	42	0/0
Małopolskie	3 260 201	5542	848	65	0/10
Dolnośląskie	2 893 055	4918	752	58	0/0
Lubelskie	2 185 562	3716	568	44	13/25
Lubuskie	1 009 168	1716	262	20	0/0
Łódzkie	2 587 702	4399	673	52	0/0
Mazowieckie	5 145 591	8748	1338	103	97/77
Opolskie	1 051 531	1788	237	19	0/31
Podlaskie	1 202 425	2044	313	24	0/14
Pomorskie	2 194 041	3730	572	44	0/44
Śląskie	4 700 771	7991	1222	94	6/35
Podkarpackie	2 097 975	3566	546	42	10/28
Świętokrzyskie	1 288 693	2191	335	26	0/19
Warmińsko-mazurskie	1 428 714	2429	371	29	19/11
Zachodniopomorskie	1 694 865	2881	441	34	0/0
Poland – whole	38 173 835	64 896	9927	763	159/294

Between 2004 and 2008, the accessibility of class A stroke rehabilitation departments and class B rehabilitation departments has markedly improved. According to our classification, in 2008 we had:

- Class A – 17 departments (19%),
- Class B – 40 departments (45%),
- Class C – 22 departments (25%),
- Class D – 0 departments (0%),
- Class E – 10 departments (11%).

In 2008, there were 294 (38.5% of needed) beds on rehabilitation departments for stroke patients, and people from ten voivodships had access to comprehensive stroke rehabilitation in a place near their home. The number of stroke victims per bed in a rehabilitation department providing comprehensive early stroke rehabilitation in the whole of Poland was 34, and in individual voivodships varied from 8 in Opolskie to 85 in Małopolskie voivodship. The minimal number of needed rehabilitation beds dedicated for stroke people was 469.

Figure 1 shows the location of class A and B rehabilitation departments.

Discussion

In our study, we evaluated rehabilitation departments where stroke patients undergo early post-acute treatment. One might think that evaluating only rehabilitation departments which have responded to the questionnaire could be a limitation of our study. We think that it may have a minor influence, because in rehabilitation departments which did not respond to our questionnaire patients after stroke are admitted rarely, so these departments are not orientated to early post-stroke rehabilitation. All rehabilitation departments were encouraged financially to answer the questionnaire – only departments that completed the questionnaire had the possibility to receive financial support from the National Cardiovascular Disease Prevention and Treatment

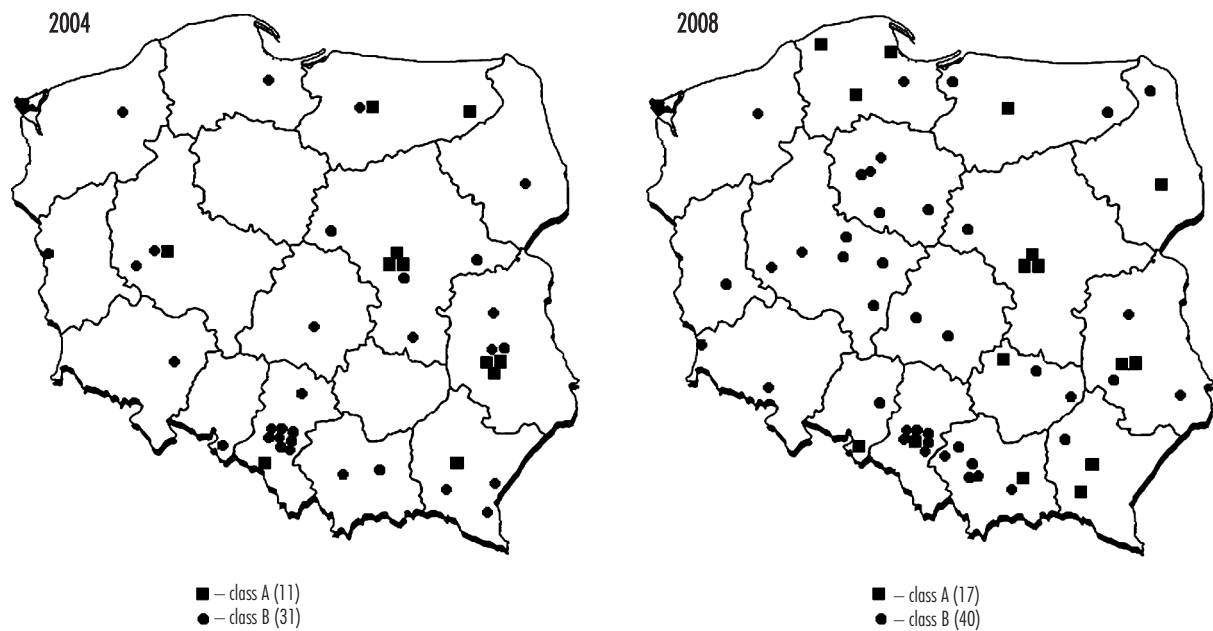


Fig. 1. The location of rehabilitation departments having the possibility of all types of therapy (class A and B) in 2004 and 2008

Programme. So departments really interested in stroke rehabilitation responded to our questionnaire. This is important, because there is evidence from a systematic review of randomized controlled trials that inpatient multidisciplinary stroke rehabilitation commenced ≥ 7 days after stroke has benefits for stroke rehabilitation, distinct from acute medical management aspects of effective stroke unit care within the first week after stroke. The authors also found a trend for better outcome among people treated in a stroke rehabilitation unit versus a general rehabilitation unit [23].

In our previous study we estimated that 19% of stroke patients should have access to early inpatient stroke rehabilitation after discharge from stroke units and neurological departments. In other studies also approximately 20% of adults who sustained stroke were referred to an inpatient rehabilitation facility [24,25]. In our study, the number of needed beds for stroke survivors was calculated for 4 weeks duration of inpatient rehabilitation. Some authors consider longer hospital stay as necessary for early post-stroke rehabilitation [26-28]. However, the optimal timing and duration of rehabilitation after stroke are still unknown. Present available data do not allow for recommendations on minimal or maximum therapy times [8], but it is recommended that the patient receive as much therapy as he needs to recover or adapt [29]. So based on needs of the patients the-

re can be some underestimation of the number of needed beds calculated in our study. We however in Poland, having a shortage with early rehabilitation, take 4 weeks as the minimum.

The effective delivery of post-stroke rehabilitation requires development of an organized approach. The integrated stroke care system includes: acute care and acute rehabilitation, subacute, early inpatient rehabilitation, outpatient services, home care and community support services [30]. We have in Poland a well-organized stroke unit network, where stroke patients are treated and undergo early rehabilitation [19,31]. In our study we found that during four years (from 2004 to 2008) the development of comprehensive subacute stroke rehabilitation departments in Poland is marked. Such development was mainly an effect of expenses allocated to this goal during implementation of the National Cardiovascular Disease Prevention and Treatment Programme. The programme has supported the purchase of appropriate equipment of rehabilitation departments, where stroke patients undergo early rehabilitation (for example, ergometers, treadmills, traction tables, tilt tables, computed rehabilitation programmes for neuropsychological rehabilitation, rehabilitation beds, wheelchairs, etc.).

During the works of the stroke programme many teaching courses were organized for physicians, nurses,

physiotherapists and neuropsychologists aiming to improve the implementation of innovative and evidence-based procedures in stroke care and rehabilitation.

It is necessary to note that still there are many regions in our country without any rehabilitation departments providing comprehensive stroke rehabilitation. The next step in the development of integrated stroke care should be further progress in organizing inpatient early rehabilitation as well as outpatient services, home care, and community support services.

Conclusions

1. Due to Stroke Programmes development of early inpatient stroke rehabilitation departments providing early comprehensive stroke rehabilitation from 2004 to 2008 is observed but it is still insufficient.
2. Only 19% of rehabilitation departments could provide comprehensive stroke rehabilitation.
3. In 2008, there were 38.5% of needed comprehensive rehabilitation beds for stroke patients.

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Disclosure

Authors report no conflict of interest.

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