

Some significant differences identified in “usual care” for post-stroke gait rehabilitation in Norway

Usual Care for Inpatient Stroke Rehabilitation in Norway: Is It “Usual”?

INTRO

- Usual care (UC): Routine care received by patients for prevention or treatment of diseases
- Purpose: For patients undergoing stroke rehabilitation and have goals to recover walking:
 - Identify the level of function of patients at admission to inpatient stroke rehabilitation in Norway
 - Characterize the amount of stepping activity and heart rates achieved during UC
 - Describe the outcomes of UC physiotherapy (PT)
 - Determine if differences in these factors exist between 6 facilities in Norway

METHODS

- Six Norwegian inpatient rehabilitation hospitals (Table 1)
- Observational design, occurred as phase one of multi-center implementation project (FIRST project)
- Inclusion criteria:
 - Undergoing stroke rehabilitation for stroke
 - Goal of improving walking function
- Exclusion criteria: FAC = 5; medically unstable
- Assessments (see tables 2, 3, 4)

RESULTS

- 208 patients were recruited with admission characteristics in Table 1
- Significant differences* in length of stay, age, and duration post-stroke for subacute patients ($p < 0.001$)
- No significant differences in admission level of function, however, clinically meaningful differences in scores noted
- Stepping activity* was significantly different (Table 3, orange)
- Heart rate data provided by two sites indicate minimal time spent in the target heart rate zone (Table 3)
- Outcome measurement changes: Significant differences* ONLY in the 6 MWT between 2 sites (Table 4)

DISCUSSION

- Significant differences between facilities were noted in admission characteristics, length of stay, stepping activity, and 6MWT outcomes.
- Admission level of function of patients post-stroke is substantially higher than reported in other countries (Table 5)
- These data provide information that could be valuable as baseline data for quality improvement and for developing UC protocols for studies

Abbreviations: 6 Minute walk test (6MWT), Berg Balance Scale (BBS), Fast velocity (FV), Functional Ambulation Category (FAC), Heart rate (HR); Not available (NA); Physiotherapy (PT), Self-selected velocity (SSV) Usual care (UC)

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Level of Care	Primary care	Specialty public hospital	Specialty public hospital	Specialty public Hospital	Specialty public hospital	Specialty care private rehab. institution
Number of rehabilitation beds	23	21	18	15	13	10
Average length of stay	23,5	15,2	18,5	11	14,0	22,5
Stroke admissions in 2021	86	200	123	90	78	107
Full-time PT positions	5	4,5	4,4	5,5	4,0	1,7
Full-time sport therapist positions	0	0	2	0	0	0
Scheduled PT session minutes	60	45-60	60	30 min x 2	45-60	30-60
Targeted # of PT sessions/week	5	5	5	10 (30 min)	5	5

	Age (years)	Days post-stroke	Length of Stay	Modified Rankin Scale	Admission BBS	Admission FAC	Admission SSV (m/s)	Admission FV (m/s)	Admission 6MWT (m)
All Subacute	70* (63 - 77; n=170)	19* (9 - 40; n=179)	22* (15 - 28; n=176)	3 (3 - 4; n=114)	38 (23 - 47; n=179)	3 (2 - 4; n=164)	0.65 (SD = 0.35; n=153)	0.90 (SD=0.47; n=143)	224 (SD=142 n=161)
Chronic	71 (65 - 76; n=19)	454 (279 - 1623; n=19)	21 (21 - 24; n=19)	2 (2 - 3; n=19)	41 (31 - 48; n=19)	4 (4 - 5; n=19)	0.61 (SD = 0.36; n = 19)	0.84 (SD=0.43; n=18)	181 (SD=104; n=19)

	Steps per Day	Steps per Session	Steps per Minute in PT	Minutes Stepping in PT	Peak HR (2 sites)	Time in Zone (min; 2 sites)
ALL Subacute	4506* (SD = 2978; n=166)	1361* (SD = 833; n=161)	45 (SD = 14; n=161)	26* (SD = 11; n=161)	65% (SD = 9; n = 36)	0 (0 - 3; n = 40)
Chronic	3690 (SD = 2478; n=19)	1174 (SD = 640; n=19)	41 (SD = 13; n=19)	26 (SD = 10; n=19)	64% (SD = 10; n = 18)	1 (0 - 14; n = 17)

	SSV (m/s)			FV (m/s)			6MWT (m/s)			BBS (points)		
	ADM	DC	Change	ADM	DC	Change	ADM	DC	Change	ADM	DC	Change
ALL Subacute	0.65 (SD=0.35 n=153)	0.82 (SD=0.35 n=156)	0.18 (SD=0.24 n=148)	0.90 (SD=0.4; n=143)	1.12 (SD=0.50 n=150)	0.21 (SD=0.32 n=138)	224 (SD=142 n=161)	303 (SD=152 n=162)	82* (SD=87 n=157)	38 (23 - 47 n=179)	47 (38 - 53 n=173)	8 (3-14 n = 173)
Chronic	0.61 (SD=0.36 n=19)	0.66 (SD=0.40 n=19)	0.05 (SD=0.13 n=19)	0.84 (SD=0.44 n=18)	0.90 (SD=0.44 n=17)	0.02 (SD=0.15 n=17)	181 (SD=104 n=19)	211 (SD=123 n=19)	29 (SD=44 n=19)	41 (31 - 48 n=19)	48 (41 - 49 n=19)	4 (1 - 8 n=19)

	Country	Age (years)	Days post-stroke	Length of Stay	Admission BBS	Admission FAC	Admission SSV	Admission 6MWT
Bland 2011 (2 samples; n=110 and 159)	USA	62 - 63 (SD=14-15)	4 - 5 (SD=4- 5)	14 -17 (SD=10 - 14)	16 (SD=14 - 15)	1** (SD=1-2)	0.00 (SD=0)	NA
Hornby 2015	USA	64 (55 - 75; n=201)	13 (8 - 25; n=201)	28 (21 - 35; n=201)	5 (4 - 22; n=173)	1** (2 - 4; n=164)	NA	15 (3-67; n=166)
Henderson 2022 ¹	USA	66 (58-75; n=157)	5 (4-8; n=157)	16 (11-26; n=157)	20 (5 - 35; n=152)	1** (1-4; n=157)	0.35 (0.05-0.66; n = 154)	96 (12-210; n=152)
Henderson 2022 ²	USA	68 (57--76; n=208)	5 (4-8; n=208)	20 (13-25; n=208)	6 (4-25; n=208)	1** (1-3; n=208)	0.08 (0.00-0.32; n = 208)	20 (0-92; n=208)
Louie and Eng, 2018	Canada	67 (SD=14.6; n= 123)	19 (IQR=16; n=123)	NA	24 (IQR=27; n=123)	NA	0.00 (IQR=0.39; n=123)	NA
Giaccari 2017 (2 samples; n=19 and 18)	Australia	68 - 74 (SD=14 - 16)	NA	7-11 (SD=3-4)	22 - 27 (SD=14-15)	NA	NA	NA

**Functional Independence Measure reported

Data are expressed as mean (standard deviation; sample size) or median (25-75th percentile; sample size).