UEMS PRM Section & Board

Clinical Affairs Committee

Template Version 2.3

Stroke Rehabilitation Program

Neurological Rehabilitation Department

Loewenstein Rehabilitation Medical Center

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Issue

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Content

Quality criteria of a PRM Programme of Care
Reviewing table

Reviewers are invited to use the table below in order to express their opinion about the programme description. Absolute criteria should be noted "yes or no". Relative criteria can be marked:

- G: Good
- F: Fare
- I: Insufficient

Reviewers should also add a short comment in each box.

Criteria	Assessment
The programme must be under the responsibility of a PRM doctor *Comment:*	Yes/No
The description provides relevant information on each item of the template *Comment:*	G/F/I
Foundations of the programme must be linked to EBM and/or official data and/or official documents *Comment:*	G/F/I
PRM care principles must not be confused with the description of the programme content	G/F/I
Environment description should be brief and not redundant with other chapters *Comment:*	G/F/I
The goals of the programme should be expressed in ICF terms and an additional brief text *Comment:*	G/F/I
In the PRM organization chapter, a difference should be made between the staff of the facility and those specifically involved in the programme *Comment:*	G/F/I
Number of PRM specialists involved in the PRM programme should be mentioned *Comment:*	G/F/I
Comparison with legal national standards or other available standards should be made for staff devoted to the programme and team management *Comment:*	G/F/I
Patients records (medical files) are mandatory *Comment:*	Yes/No
Statistics about general organisation are required *Comment:*	G/F/I

Sustainability of the programme (IV.C.4): prior to final accreditation by the UEM PRM Section, a programme of care should be **submitted at a national level, at least as an oral paper in a PRM congress**.	Yes/No
References must be cited within the description of the programme; they must be freely accessible on the Internet or provided to the reviewers in a “pdf” file *Comment:*	G/F/I
A short summary in English should be provided for the documents in other languages *Comment:*	G/F/I

Other comments:

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I. Summary

Loewenstein Rehabilitation Medical Centre (LRMC) is the largest rehabilitation hospital in Israel. It belongs to Clalit Health services, the largest HMO in Israel, and is one of its fifteen hospitals. It is affiliated with the Sackler School of Medicine at the Tel-Aviv University. It was founded at 1959 and was vastly extended on 1974. It is a ~300-bed tertiary rehabilitation centre with 7 in-patient rehabilitation and one out-patient rehabilitation wards. Each one of the in-patient wards has its own etiological specialization: orthopaedic injuries, traumatic brain injuries, spinal injuries etc. The Neurological Rehabilitation (B) department is one of two departments that specialize in the rehabilitation of patients with acquired non-traumatic brain lesions. Most of the patients admitted to Neurological Rehabilitation B department suffer from brain stroke, though we admit also patients after other acquired brain lesions (e.g., removal of brain tumours, encephalitis) and sometime also patients with critical-care neuropathy/myopathy and de-conditioning after long hospitalization.

Our department specializes in treating complex neurological patients with multitude of complications. Due to the lack of specialized rehabilitation beds in the periphery and Jerusalem, our ward is frequently admitting patients from all country wide. We are situated relatively close to several secondary and tertiary hospitals in the centre of Israel, which provide both acute and out-patient medical and surgical services to our patients when needed.

The LRMC is equipped with an x-ray unit, blood drawing service, electro-diagnostic unit, sleep lab, pain alleviation service, and an urodynamics units. In addition, with have several visiting consultants (ENT, urologist, infections and internal medicine specialist, dermatologist, ophthalmologist and orthopaedic surgeon). Other consultants, such as stroke neurologist are also available, mostly for remote consultation, when needed.

The program was established according to ICF guidelines and other standardized treatment algorithms. We have three senior physiatrists and two resident physicians. The treatment team also consists of 6 physical therapists, 6 occupational therapists, 15 speech and language therapists[1], two social workers, 3 rehabilitation psychologists, and 39 rehabilitation nurses.

Patients are insured by the National Health System, so they pay nothing for their treatment. Furthermore, as part of the largest HMO in the country, we are able to organize the smooth transition of our patients from inpatient care to the appropriate outpatient settings in the region.

[1] Speech and language therapy is provided hospital-wise, but every patient is assigned a single therapist.

II. General foundations of the Programme

A. PATHOLOGICAL AND IMPAIRMENT CONSIDERATIONS

1. Aetiology

Cerebrovascular disease refers to an abnormality of the brain, resulting from a pathologic process of the blood vessels. The terms stroke or cerebrovascular accident refer to the abrupt onset of a focal neurologic deficit caused by cerebrovascular disease. Strokes can be classified as ischemic (85%) or haemorrhagic (15%) (1, 2, 3).

Stroke is the most common neurologic emergency, and it is the leading cause of disability in the United States. Modifiable risk factors include hypertension, hyperlipidaemia, poorly controlled diabetes mellitus, obesity, substance abuse, and atrial fibrillation (3).

Rehabilitation specialists provide an individually tailored treatment program. Services may include: Rehabilitation nursing, physical therapy, occupational therapy, speech-language pathology, recreational therapy, counselling, social work, psychiatry/psychology, patient and family education, support groups, vocational evaluation, and driver's training (4).

The Trial of Org 10172 in Acute Stroke Treatment (TOAST) classification system (5) for ischemic stroke is based on the underlying stroke mechanisms:

1. Large artery atherosclerosis: Intracranial, extracranial (carotid, aortic arch).
2. Cardioembolic: Atrial fibrillation, segmental wall akinesis, paradoxical embolus, patent foramen ovale, and congestive heart failure.
3. Small vessel: Lacunar infarction.
4. Other: Vessel dissection, venous thrombosis, drugs.
5. Cryptogenic.

Haemorrhagic strokes are most often caused by hypertension, with lesions typically located in the basal ganglia, thalamus, pons, and cerebellum. Amyloid angiopathy is the second most common cause, with lesions more often in cortical locations. Other causes of stroke include medications (either iatrogenic, e.g., warfarin, novel oral anticoagulant (NOAC) agent, or drugs of abuse, e.g., cocaine), vascular malformations, cerebral venous thromboses, or tumours (3). Our close relationship with the neurosurgery department as part of the Brain Science Division makes care of these patients seamless.

Today, international standards have been established, with an attempt to comply with the ICF categories that can be used in clinical practice for the general assessment of functioning (6). Early rehabilitation has become a goal. The establishment and analysis of Stroke Units provide strong support to this practice. Natural history and relationship to impairment.

2. Diagnosis approach and prognosis

Initial evaluation focuses on the time since symptom onset as presentation within 4.5 hours enables treatment with thrombolytics. This leads to better functional outcome (7-9). Once in the rehabilitation department, the prognosis depends on the aetiology, size, location, and side of the stroke. Other factors (such as whether this is an initial or subsequent stroke) also determine the outcome prognosis.

3. Impairment treatment principles

Following an acute stroke, initial emphasis is given to treatment and prevention of a recurrent stroke. This includes the administration of thrombolytic drugs, interventional catheterization, and control of blood pressure and other treatable causes. The focus then shifts to a multi-disciplinary team approach to improving the patient's impairments. Multiple algorithms and scales have been developed in an attempt to direct appropriate post-stroke treatment (1).

Stroke may affect almost all types of brain-mediated functions: cognitive, language, attentional, sensorimotor as well as visceral and hormonal functions. The main issues encountered by stroke patients are cognitive and vigilance problems, memory disturbances, speech and language problems, unilateral spatial neglect, visual field defects, perceptual problems, disorders of motor control (such as hemiparesis, apraxia, ataxia and spasticity), sensory disturbances and gaze and balance disorders (10).

Recovery after stroke could be divided to two main aspects: neurological recovery (i.e., recovery in body function impairments), functional recovery (i.e., recovery of activity limitations). Neurological recovery is attributed to several focal processes: reduction of post-stroke edema, resolution off ischemic penumbra, and resolution of remote diaschisis and CNS reorganization (11). Neurological recovery peaks at three months post-stroke, although functional recovery can continue for longer periods. Stroke rehabilitation is thought to promote neurological recovery through means of providing a more optimal environment for natural processes to occur and by actively promoting CSN re-organization. Moreover, functional recovery is facilitated by stroke rehabilitation via means of patient education, prescribing of accessories, orthotics and other equipment as well as promoting the adjustment of modifiable obstacles, such as personal motivation or household accessibility (12).

Functional recovery can continue between 6 months to 3 years post stroke (12). Prognosis vary greatly but several studies have shown that at least for motor recovery, patients recovery proportionally to their initial impairments (13). Similar relationships were shown for aphasia and unilateral spatial neglect (14). However, other authors have opposed this view (15). It seems that patient differ considerable in their final neurological gains (16).

Stroke rehabilitation was shown to benefit different groups of patients in different ways: severe patients experience reduced mortality and their families have decreased burden of care, while moderate patients experience improved functional ability (17). In-patient rehabilitation is focused on delivering high-intensity physical, cognitive and language treatments in medically-supervised and metabolically-favourable setting (18).

B. ACTIVITY LIMITATIONS AND PARTICIPATION RESTRICTIONS

Activity limitations after stroke encompass all aspects of life and include both basic and more extended ADLs. Common aspects include mobility, transfers, grooming, bathing, continence, communication, problem solving and social interactions. Long-term participation of many stroke patients is reduced relative to their basic state.

C. SOCIAL AND ECONOMIC CONSEQUENCES

1. Epidemiological data

Stroke is a common life-altering event that frequently leads to disability and decreased independence (19) and is the 3rd cause of death in Israel. *Approximately 19,000 individuals suffer a stroke each year (as for the latest updated report from the Israeli National Stroke Register* (20)*. Out of these patients, around 7,600 were alive after one-month and suffered from a considerable neurological deficit.* Only 30% of stroke patients in Israel receive inpatient rehabilitation. The average length of stay is 55 days (21).

2. Social data

Stroke can lead to physical and cognitive impairment and can have long lasting psychological and social implications. Research shows that stroke survivors and their families suffer from social isolation, anxiety, depression and poor quality of life. Most of them do not return to work. The principal problems are difficulties of performing home-based healthcare, high level of post-discharge stress, inaccessible post discharge care services and health resources, financial burdens and economic stress, interpersonal relationship disruption and lifestyle changes.

3. Economic data

Stroke is associated with tremendous direct and indirect costs. Direct cost mostly include the cost of acute services such as emergency teams, tPA, thrombolysis and admission to general hospital and associated social security compensations. Indirect costs include items like loss of potential income of the patient and his/her informal caregivers (12). These were estimated to be around 2,309 billion NIS (~626 billion euro) (13). Specifically, the official price of in-patient rehabilitation day in Israel is 2,889 NIS (~783 Euro). In 2018, the estimated direct cost of in-patient rehabilitation of stroke patients was approximately 40 Million NIS (~10.8 Million Euro) (22).

D. LEGAL FRAMEWORK IN YOUR COUNTRY

In Israel, which has a socialized medical system, the Ministry of Health has established that initial rehabilitation services for hospitalized patients are all covered under the national health system (23). The ministry later extended this to include practice guidelines that acute care wards refer patients for rehabilitation accompanied by an initiative to promote these ends. The ministry also decreed that the recommendation for rehabilitation must be made by either a rehabilitation doctor (physiatrist) or geriatrician (24). In its 2013 recommendations, further regulations were instituted to demand that every hospital discharge note include a recommendation for rehabilitation treatment and documentation of the diminished functional status of the patient as a result of the acute care stay (or illness that led to the admission in the first place) (25). Ultimately, it is the patients' HMO's rehabilitation administrative staff that is responsible for deciding about the specific facility for rehabilitation treatment (23-25).

III. Description of the Programme

A. ENVIRONMENT OF THE PROGRAMME

1. Clinical setting

Individual practice or part of a doctor's group practice	**No**
Individual practice in a private hospital	**No**
Part of a local (public) hospital	**No**
Part of a regional hospital (or rehabilitation centre)	**No**
Part of a university or national hospital	**Yes**

Comment: Part of Tertiary Rehabilitation Medical Center

2. Clinical programme

Inpatients in beds under PRM responsibility	**Yes**
Inpatient beds belonging to other departments	**No**
Day programme (most of the day in outpatient setting, not home)	**No**
Outpatient clinic (assessment and/or treatment, for up to 3 hours/day)	**No**
Community based (in the patient's home or workplace or other relevant community location, eg sports centre)	**No**

Comment:

3. Clinical approach

Uniprofessional	**No**
Multiprofessional	**Yes**

Comment: Full multiprofessional staff under the professional responsibility of PRM doctor

4. Facilities

Does your programme have a designated space for:	
For assessments and consultations?	**Yes**
For an ambulatory or day care programme?	**No**
For inpatient beds?	**Yes**
For therapeutic exercises?	**Yes**
For training in independence and daily living?	**Yes**
For vocational and/or recreational activities?	**Yes**

Comment: There is an option for 2-3 patients in an out-patient care. Treatments are taken place at the same in-patient facilities. There is also a separate large out-patient rehabilitation department that some of the patients are admitted to, at the end of the in-patient rehabilitation (depends on proximity of living and other factors).

B. TARGET POPULATION

1. Inclusion criteria

Ischemic of Haemorrhagic stroke with functional decline

Age greater than 18

Potential to benefit from in-patient rehabilitation according to clinical picture and multi-disciplinary assessment done in the general hospital.

2. Criteria for refusal

- Unstable medical situation or need to have further medical management in acute-care departments
- Patient or family do not wish inpatient rehabilitation
- Complete absence of patient cooperation

3. Patients referrals

Direct access to the PRM programme	**No**
Referral from general practitioners	**Yes**
Referral from other specialists	**Yes**
Referral from specialists in PRM	**Yes**

Comment :

There are two ways to be referred: (1) via local hospital board for patients' referrals; (2) via the department's clinic. In the first case, documents that include a complete medical record in addition to multi-disciplinary assessments (nursing, physiotherapy, social worker – always, occupation therapy, speech and language therapist – when relevant; PRM or geriatric physician – when available). Documents are reviewed by the senior physicians of the departments, which have the ability to communicate with the referring department for clarifications or requests. If judged fit to the department the admission unit is instructed to coordinate the transfer at a specified date, according to the department occupancy. In the second case, patients may be referred by any doctor or even independently to an appointment with one of the senior physicians of the department. If they are judged fit for in-patient rehabilitation, they are given a letter to their GP and HMO (funder) that they can be admitted. Once the HMO approves the admission, a formal referral is sent to the department, and a admission date is given. Most admissions are done according to the first way.

4. Stage of recovery before admission

Within two weeks of onset	**Yes**
2 weeks to 3 months after onset	**Yes**

3 months or longer after onset	**Yes**

Comment:

Most patients are admitted between 2 weeks to 3 months, more acute or more chronic patients are sometimes also admitted.

5. Early management before admission

How are patients selected? **Most are selected by the treating staff in the referring departments, though there is always the option for self-referral at later stage via the department clinic.**

Do they benefit from PRM advice in acute settings? **Only part of the patients are hospitalized in hospitals with available PRM doctors.**

What alternate solutions are proposed to refused patients?

This depends on the reason for refusal:

(1) In case of unstable medical, surgical or psychiatric condition – the patients is referred to continued care at a general or psychiatric hospital or a dedicated chronic ward.

(2) In case of insufficient potential for improvement due to severe neurological impairment or low prior functional status – the patient may benefit from home rehabilitation, community-rehabilitation or nursing home.

(3) Patients older than 65 with relatively lower potential for improvement may benefit from geriatric rehabilitation

(4) Patients with relatively mild impairments may benefit from community rehabilitation, out-patient rehabilitation or home rehabilitation.

(5) In extremely complicated cases, we might request that the patients will be assessed in our clinic for better decision.

C. GOALS

1. In terms of body structure and body function (impairment)

ICF code	ICF label
b110	Consciousness functions
b114	Orientation functions
b140	Attention functions
b144	Memory functions
b167	Mental functions of language
b730	Muscle power functions
s110	Structure of brain
s730	Structure of upper extremity

Comment: **In appropriate cases all categories of Comprehensive ICF Core Set for Stroke are used (https://www.icf-core-sets.org/en/page3.php)**

2. In terms of activity

ICF code	ICF label
d310	Communicating with - receiving - spoken messages
d330	Speaking
d450	Walking (G)
d510	Washing oneself
d530	Toileting
d540	Dressing
d550	Eating

Comment: **In appropriate cases, all categories of the Comprehensive ICF Core Set for Stroke are used (https://www.icf-core-sets.org/en/page3.php)**

3. In terms of participation

ICF code	ICF label
e310	Immediate family
e355	Health professionals
e580	Health services, systems and policies

Comment: **In appropriate cases all categories of the Comprehensive ICF Core Set for Stroke are used (https://www.icf-core-sets.org/en/page3.php)**

D. CONTENT OF THE PROGRAMME

1. *General scheme and time frame*

- Patient is admitted during the few weeks after stroke onset (2-5 weeks for most patients, depending on complications).
- Multi-professional assessment by relevant team members (Always: nurse, PRM doctor, physiotherapist, occupational therapist, and a social worker. On staff or patients' request: speech and language therapist (SLT) or psychologist) (one week)
- Staff meeting for discussion of and customization of individual Rehabilitation Program, including goals (by ICF) and time frame (about one week from admission)
- Assessment, results, goal-setting, and general discussion with the patient and family (caregivers) done by PRM specialist (after first staff meeting)
- Individual Program path reassessment and discussion at staff meetings once every 3-4 weeks – with adjustments made as necessary
- Once goals are achieved – final staff meeting with discharge planning and post-discharge management program recommendations (2 weeks – 3 months according to patient's functional situation; mean = 55 days)
- Program results, discharge plan and post- discharge treatment recommendations, discussion with patient and family (caregivers) done by PRM specialist (after last staff meeting)
- Patients discharged to appropriate outpatient setting in his or her place of living.

2. Role of PRM specialist

- Patient assessment in at admission, and during clinical rounds, staff meetings and scheduled appointments
- Professional staff management
- Professional responsibility of the Individual Rehabilitation Program general
- Program discussion with patient and his family (caregivers) after first and last staff meeting and when needed (in some cases with all staff members)
- Medical management
- Prescription and reviewing of orthoses (once a week, together with PT and orthotists)
- Specific rehabilitation medicine procedures (spasticity and pain management)
- Teaching / training rehabilitation residents and medical students
- Professional quality assessment
- Organization of research and ongoing staff education
- Academic activities in Tel Aviv University (our affiliate university) for medical and other students
- Professional organizational activity in Israeli PRM association (PRM education and exams, Active participation in organizing and scientific committees of the annual Israeli PRM association meetings).

3. Specific role of each team member in this program

Nurse:

- General medical management and assessment, including acute medical conditions and basic chronic diseases (hypertension, diabetes)
- Positioning in bed, pressure sores prophylactics, wound management
- Assessment & training of Basic ADL in the department
- Urinary and bowel management
- Nutritional management in cooperation with dietician
- Pain management

Physiotherapist:

- Muscle strength & ROM evaluation and management
- Basic motor (sitting, standing, transferring) function training
- Gait and ambulation training, balance training
- Technological rehabilitation (VR, robot assisted therapy, biofeedback and other)
- Electrotherapy and ultrasound therapy, spasticity management by physical techniques, taping
- Neurorehabilitation (PNF, Bobath and other) techniques,
- Lower limb orthotic testing and fitting, serial plaster casting
- Hydrotherapy and hydro-gymnastics

Occupational Therapist:

- Training of participation in activities of daily living
- Assessment and training of upper limb function and hand fine motor skills retraining
- Cognitive function assessment and treatment
- Technological rehabilitation of upper limb and cognitive functions (VR, robot assisted therapy, biofeedback and other)
- Special equipment and assistive technology prescribing and training
- Environmental modification in association with outpatient units and family
- Organization and training of recreational activities (art-therapy, therapeutic garden, therapeutic kitchen and other)
- Orthotics of upper and lower limbs
- Scar management

Speech and language therapist:

- Assessment and treatment of language pathology (aphasia and other)
- Assessment and treatment of speech problems (dysarthria and other)
- Assessment and treatment of swallowing difficulties (dysphagia and other)
- Selection of alternative communication options and devices and training of appropriate use of them
- Re-learning of writing and functional reading

Social worker:

- Advice and help in social security fields, including cooperation with the family and local municipalities about financial support and house adaptation
- Help in returning to work and founding solutions about the discharge place
- Patient's support in the department in one-to-one or group sessions
- Cooperation with community organizations for post-discharge treatment plan successful realization
- Family members support

Psychologist:

- Assessment of patient's personal factors, support, adaptation to new abilities, self-esteem rebuilding
- Assessment and treatment of neurocognitive dysfunctions
- Organization of individual and group psychological treatment sessions for patients alone and for patients with family members

External members of the team:

- Psychiatrist (in-house) for psychiatric diagnostic evaluation, medication adaptation, and counselling
- ENT doctor (visiting once a week) for (1) ear and throat exams (2) assessment of airways when removal of tracheostomy is desired (3) assessment of vocal cords in cases of dys/hypophonia (4) performing FEES studies together with SLT to assess dysphagia
- Ophthalmologist (visiting, once a week) for assessment of ophthalmic consultation and screening for hypertensive/diabetic retinopathy
- Dermatologist (visiting, once a week) for dermatological consultations when needed
- General Surgeon (visiting, when need) for common, non-acute concomitant surgical conditions.
- Cardiologist (on call) for consultations less common cardiac conditions or when ECG interpretation is required.
- Infections Control and internal medicine (on call) for deciding on antibiotics regimen in non-trivial infections, also available for internal medicine consultations.
- Haematologist (on call) for consultation in concomitant haematological or coagulation problems
- Electrodiagnosis PRM specialist – for EMG/NCV performance and interpretation
- Medical Office administrator – for scheduling and coordination of outside medical appointments and checks, communicating with HMOs
- Neurologist (visiting, once a week) – for interpretation of EEGs
- Stroke Neurologist (director of stroke unit at a tertiary nearby hospital, Rabin Medical Centre, Petach Tiqva – on call) for consultations in regards of complex cases and when non-standard secondary prevention is required

- Plastic surgeon (on call) for plastic surgery evaluation, need for surgery assessment, performing bedside surgical treatment of pressure ulcers and other wounds
- Orthopaedic surgeon (visiting, once a week) for orthopaedic evaluation, need for surgery assessment, joint and soft tissue surgical corrections. Such
- Certified Prosthetist and Orthotist (visiting, once a week) for manufacturing and fitting of lower limb orthoses
- Pain specialist (in house) for pain management in severe cases
- Urologist (visiting, once a week) for urological problems diagnosis and management, insertion of special urinary catheters and suprapubic catheters, urodynamic evaluation and cystoscopy when anatomical problems are suspected
- Sexual rehabilitation specialist (vising, once a week) – for sexual consultations
- Dietitian (in house) for nutritional management and Nutritional rehabilitation plan creating
- Neuro-optometrist (visiting, once a week) – for evaluation vision acuity, visual fields, pathologies of gaze. Prescription and adjustment of prisms and gaze therapy
- Art therapist, music therapist (in house) and animal therapists (visiting few times a week) – when the team thinks they can benefit specific patients
- Sleep Medicine and PRM specialist (in house) for consultation in certain cases
- Osteoporosis and PRM specialist (in house) for consultation in certain cases

4. Diagnostic and assessment tools

- Blood tests are drawn by blood technicians or the department physicians and are sent to nearby general Clalit hospital for analysis
- All kind X-rays are done in-house and are interpreted by an in-house Imaging specialists
- Certain types of US is done by an in-house imaging specialist. Urgent or musculoskeletal US is referred outside
- Polysomnography, EEG, EMG/NCV, and assessment of residual urine volume by portable ultrasound are available in-house
- All other types of imaging (CT, MRI, SPECT, PET, bone-scan), echocardiography, vascular doppler, Holter ECG, diagnostic catheterizations and so forth are referred for dedicated diagnostic institutes or general hospitals.
- FEES study is done in house

Tools for clinical assessment:

The following is a partial list and includes only the routine or most common measures:

- Functional Independence Measure (FIM)
- Norton scale
- Morse Fall Scale (MFS)

- Manual Muscle Test (MMT)
- Modified Ashworth Scale
- Contraversive Pushing Scale (CPS)
- Berg Balance Scale
- 10-meter walk Test
- 6-minute walk Test
- Timed UP & GO (TUG) test
- Dynamic Gait Index (DGI)
- Fugl-Meyer Assessment for Upper-Extremity (FMA-UE)
- Action Research Arm Test (ARAT)
- Manual Dexterity Test (MMT)
- Box and Blocks Test (BBT)
- Montreal Cognitive Assessment (MoCA) test
- Mini-Mental State Examination (MMSE)
- Loewenstein Occupational Therapy Cognitive Assessment (LOTCA) battery and its versions (LOTCA-D, LOTCA-G)
- Behavioural Inattention Test (mostly BIT-C, sometimes when relevant BIT0B)
- Rivermead Behavioural Memory Test (RBMT)
- Executive Function Rote Finding Test (EFRT)
- Behavioural Assessment of Dysexecutive Syndrome (BADS)

Linguistic Assessments:

- Psycholinguistic Assessment of Language Processing in Aphasia (PALPA) battery (translated and to Hebrew by our SLTs)
- SHEMESH naming test (Standard Hebrew standard picture-naming test) (26)
- TOKEN test
- Israeli Loewenstein Aphasia Test (Aphasia screening test, largely based on the Boston Diagnostic Aphasia Examination, BDAE) (27)
- Pyramid & Palm tree (translated and culturally adapted to Hebrew and Israeli population)
- Loewenstein Communication Scale for the minimally responsive patient (LCS) (28)

5. *Specific interventions*

- Botox and Phenol injection for spasticity management
- Injections and nerve blocks for pain management
- Suctioning for secretion management
- Vacuum-assisted closure for wound care management
- Urinary bladder training before indwelling catheter removal
- Kinesio taping techniques
- Serial plaster casting for spasticity management
- CIMT – constrained induced movement therapy for upper limb

- Robotic & VR Therapy – ARMEO Power, Locomat, Several VR / gaming motor serious games

E. DISCHARGE PLANNING AND LONG TERM FOLLOW UP

1. Discharge criteria

- Achieving the goals of the interdisciplinary Individual Inpatient Rehabilitation Program based on staff-meeting decision/s
- Absence of rehabilitation potential due to staff meeting decision after completion of "Rehabilitation attempt" (about 4 weeks)
- Ability of the patient to return home or to achieve another destination option from social, medical and functional points of view
- Availability of rehabilitation treatment options in outpatient settings (including place, intensity and professional level)
- Patient and family request to stop the inpatient treatment program and to return home for outpatient treatment

2. How patients are managed after the program?

The department receive patients from all around the nation, thus treatment options are vary greatly between different regions and HMOs

Our regional options for stroke program are:

- Day-care multidisciplinary rehabilitation units. This option is available for most patients, excluding patients that have no means of transportations who live in the periphery. When there is not quality outpatient treatment fit for the patient requirements (e.g., SLT for aphasia which is more scarce) patients stay may be extended
- Home multidisciplinary rehabilitation programs ran by the HMOs or funded by the HMOs and operated by private company (TSABAR).
- Continuation of physiotherapy or occupational therapy as a monotherapy at home.
- Therapy, activity, and support at different social community centres

Medical and nursing management is run by outpatient regional clinics of all HMOs

All stroke patients are invited to the neurological rehabilitation department clinic for a follow-up appointment about 3-6 months after discharge

In very specific cases of functional decline at home, there is an option for a "secondary" inpatient rehabilitation program wherein patients are admitted directly from home.

IV. Additional information about PRM organization

A. SAFETY AND PATIENT RIGHTS

1. Safety

The safety concerns of people in the unit where the programme takes place, relate to:	
Emergencies (fire, assault, escape)	**Yes**
Medical emergencies	**Yes**
Equipment	**Yes**
Handling of materials	**Yes**
Transports	**Yes**
The safety of people in the programmes of your unit is provided by:	
Written standards from National Safety Bodies	**Yes**
Written standards from National Medical Bodies	**Yes**
Unit-specific written rules	**Yes**
Periodic inspection	
Internal	**Yes**
External	**Yes**

Comment: The unit is accredited (as a part of medical center) by Joint Commission International (JCI)

2. Patient rights

Has your program adopted a formal policy or statement of patients' rights?	**Yes**
Does this statement specify the influence that the patient should have in the formulation and implementation of the program?	**Yes**
Is the statement known to all personnel involved in delivering the program?	**Yes**
Is this checked periodically?	**Yes**
Is the statement made known to and is available to all persons visiting your unit?	**Yes**

Comment: Patient rights is defined in a law in Israel and a list of general statements of this law are available in every department

3. Advocacy

Give at least one example of how your organization advocates for people your program deals with:
We advocate equal rights for all patients to participate in a multi-disciplinary rehabilitation program, without discrimination of gender, race, religion, age or sexual orientation. Our medical center have a program for promoting equal care for LGBTQ patients and caregivers.

B. PRM SPECIALISTS AND TEAM MANAGEMENT

1. PRM Specialists in the Programme

Does your PRM physician have overall responsibility and direction of the multiprofessionnal team?	**Yes**
Does your PRM physician have overall responsibility and direction of the rehabilitation program, not medical responsibility only?	**Yes**
Does he/she have a European Board Certification in PRM?	**No**
Does he/she meet National or European CME/CPD Requirements?	**Yes**
Number of CME or EACCME points earned in the last 3 years:	150
The two primary functions for the PRM specialist in your Program are to:	
Treat comorbidity	**Yes**
Assess the rehabilitation potential of the patient	**Yes**
Analyse & treat impairments	**Yes**
Coordinate interprofessional teams	**Yes**

Comment: There are no CME requirements for doctors in Israel, but our department is very active and our PRM doctors are regularly participating in national and international PRM congresses and educational programs.

2. Staff devoted to this program

Please, don't mention staff members who do NOT participate in this specific program!

Which rehabilitation professionals work on a regular basis (minimum of once every week) in your program? (give the number)	
Physiotherapists	
Occupational therapists	
Psychologists	
Speech & Language therapists	
Social workers	
Vocational specialists	
Nurses	
Orthotists/prosthetists assistive technicians/engineers	

Other (please specify)	

Comment:

3. Team management

How often does your staff receive formal continuing education (mark as is)?	
In team rehabilitation:	**Every year** Every second year Other period Not regularly
In their own profession:	**Every year** Every second year Other period Not regularly
Do team activities in your rehabilitation programme include the following?	
Is the patient at the centre of a multiprofessional approach?	**Yes**
Do you always give informed choices of treatment?	**Yes**
Do you regularly promote family involvement?	**Yes**
Does your organisation of multi professional team working include:	
Holding regular team meetings with patient's records only (more than 2 members)	**Yes**
Holding regular team meetings (more than 2 members) with the presence of the patients	**Yes**
Joint assessment of the patient or joint intervention	**Yes**
Regular exchanges of information between team members	**Yes**

Comment:

C. INFORMATION MANAGEMENT

1. Patient records

Do the rehabilitation records have a designated space within the medical files?	**Yes**
Do you have written criteria for:	
Admission	**Yes**
Discharge	**Yes**
Do your rehabilitation plans include written information about aims and goals, time frames and identification of responsible team members?	**Yes**
Do you produce a formal discharge report (summary) about each patient?	**Yes**

Comment:

All patient records are integrated in Clalit's Electronic Medical Record system (Chameleon) . Generally, most records are in electronic version, only few of them (some scales – like BIT) are on paper, but they are scanned and attached to the electronic records. All of admission and discharge letters could be accessed by almost all HMOs and hospitals in the country via a national healthcare data-pooling system (OFAKIM)

2. Data about general organization

How many new patients (registered for the first time) are treated in your programme each year:	**280**
In your day care or inpatient programme:	inpatient
What is the mean duration spent in therapy by patients on this programme	**55 Days**
How many hours a day do the patients spend in therapy.	**2-4 Hours**
Give the mean duration of stay spent in the programme:	**55 Days**

Comment:

3. Programme monitoring and outcomes

Does your programme have an overall monitoring system in addition to patient's records?	**Yes**
Are the long term outcomes of patients who have completed your programme regularly monitored?	
Impairment (medical) outcomes:	**Yes**
Activity/Participation (ICF) outcomes:	**Yes**
Duration of follow up of the outcomes:	**6-12 months**
Do you use your outcome data to bring about regular improvements in the quality of your programme's performance?	**Yes**
Do you make the long term overall outcomes of your programme available to your patients or to the public?	**Yes**

Comment:

Comment: Overall monitoring system is an administration monitoring system, managed by Hospital Administration (mostly for information & payment issues).

Long-term outcomes monitoring is managed by 3 systems:

1. General health data is managed by Ministry of Health of Israel (mortality, recurrent hospitalizations, outpatient visits) and it is available for us, for patients and for public.
2. There are Clalit Medical data system records (Ofek/Ofakim) and an outpatient data of South Department after patients' discharge from our program to outpatient settings are available for us upon request.
3. All stroke patients are invited to the our department clinic for a follow-up appointment

4. Sustainability of the programme

Does your programme show evidence of sustainability?	
Established as part of public service:	**Yes**
Has existed for more than 3 years:	**Yes**
Has received national accreditation (where available):	**Yes**
Has been accepted for oral presentation in a National or International congress (mandatory criterion for accreditation)	**Yes**
Has been the subject for papers in PRM journals	**No**

Comment: The unit is accredited (as a part of the medical center) by Joint Commission International (JCI).

V. Quality improvement

A. WHAT ARE THE MOST POSITIVE POINTS OF YOUR PROGRAMME?

1. Our department is specialized in the rehabilitation of patients with acute stroke. Rehabilitation services are delivered by a multidisciplinary team of healthcare providers with training in brain stroke rehabilitation under the leadership of physicians trained in rehabilitation of acquires non traumatic brain damage. It permits the better level of knowledge and practice in stroke rehabilitation
2. The Rehabilitation Program is patient –oriented and includes:
    a. Prevention and medical management of co-morbidities
    b. Assessment, focused on the body function/structure level of
3. the International Classification of Functioning, Disability, and Health (ICF);
    a. Treatments and interventions are focused primarily on the body function and later on the activity level of the ICF
    b. Transitions in Care and Community Rehabilitation, focused primarily on the participation level of the ICF

4. A very good communication and coordination among the team members on line (e.g. physician–social worker, physiotherapist-occupational therapist) in order to maximize the effectiveness and efficiency of rehabilitation of each patient and achieve his full potential

5. Our research Lab is located within the department. It is well-equipped (tDCS, TMS, Upper-limb robot, EMG and more) and offers ideal setting stroke recovery research. We enjoy a fruitful collaboration with scientists from local and international universities.

B. WHAT ARE THE POINTS TO IMPROVE IN YOUR PROGRAMME?

1. In our current setting, we treat 52 to 54 patients after acute stroke with complex medical needs (combination of acute and chronic conditions: ischemic heart disease, arterial hypertension, diabetes, various infections, tracheostomy complications) without specialist physicians in house. Increasing the number of rehabilitation physicians and nurses will allow more time for family support, teaching and research.

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2. Out outpatient facilities are not sufficient for our patients needs. This limits the ability to offer outpatient rehabilitation and follow-up clinics in our program in the difficult period after discharge (home crisis)

3. We lack a dedicated space for self-training (motor sensory, cognitive, language…), which is crucial to allow patients who can engage in self-treatment improved rehabilitation as well as increased involvement in the rehabilitation program and feeling of capacity.

C. WHAT ACTION PLAN DO YOU INTEND TO IMPLEMENT IN ORDER TO IMPROVE YOUR PROGRAMME?

1. Extrinsic conditions that you wish to obtain

- More clinical and research equipment. Our department is actually in renovation. We have a new research lab and we plan to dedicate another space for self-training. Both need equipment for managing these spaces (some has already been ordered)

- More staff, especially rehabilitation physicians and nurses to allow more time for developing new techniques, conducting research and educational activities. This subject is in negotiation with the managements of the institute and the HMO.

- Increased beds availability. Stroke patients benefit a lot from a dedicate stroke program like ours. While most of the admitted patients suffer from stroke or related conditions, there are also patients admitted for de-conditioning. We strive to increase the number of admitted stroke patients by directing de-conditioning and other patients suffering from other diseases to other departments that do not specialize in stroke.

2. Intrinsic improvement of the programme

- Programs implementation (some of them are being implemented in these days) – need educational and training of staff, patient and family patient:

  a) Sphincter control

  b) Guidance before first discharge at home and feedback as a preparation to smooth discharge process

  c) Improvement patients education and compliance with secondary prevention and cerebrovascular risk factors modification

  d) Dysphagia management: earl identification of patients requiring special intervention for safe feeding (e.g., brainstem stroke) – vertical feeding during the day, early PEG insertion and more.

  e) Motor and sensory training education for patients and families to improve range and promotion, motor and sensory function.

  f) Increasing awareness of our medical and nursing team for early prevention of pain, spasticity, depression and immobilization-induced osteoporosis.

  g) Establishing a multi-disciplinary service for comprehensive but focused assessment of outpatients, to improve rehabilitation in outpatient setting (suited for mild stroke patients, patients that for some reasons are not fit for inpatient rehabilitation and some chronic patients).

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