

## Clinical Guideline on Stroke Rehabilitation

**Management of patients with stroke:** Rehabilitation, prevention and management of complications, and discharge planning

Ulaan Baatar 2013

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## **PREFACE**

This guideline was created by MOH and health project of MCC, WHO and professional committee of rehabilitation of MOH, Mongolian society of physical & rehabilitation medicine, University of Health Sciences Mongolia (HSUM), the Shastin and State hospital. The guideline has been reviewed by the Ministry of Social Welfare, the National Rehabilitation Centre, AIFO, Aimag- and Soum-level representative hospitals.

This guideline includes clinical rehabilitation, prevention and management of the complications and community based rehabilitation services.

The overall purpose of this guideline is to provide recommendations and evidence of the current best practise, which can guide the development of local protocols depending on the local situation, in order to ensure a standard service of stroke rehabilitation management.

### **Development of the Clinical Guideline**

This clinical guideline was produced on the basis of the National Clinical Guideline by Scottish Intercollegiate Guidelines Network (2010), the Clinical Guidelines for Stroke Management by the Australian National Stroke Foundation (2010), the Clinical Guidelines on Stroke by the National Institute for Health and Clinical Excellence in the UK (2008) and the American Clinical Practice Guideline, by the American Stroke Association (2005). This guideline states the recommendations for Stroke Management based on the current body of evidence and the recommended best practice based on clinical experience and expert opinion.

Following the international evidence, each section within this document has a related paragraph regarding the current situation in Mongolia as per 2012, in order to indicate the possible management within Mongolia at present. It is recommended that local protocols are developed to standardize the management possible at the local level (in terms of local human resources, patient management, referral network, where/how assistive and adaptive devices can be purchased/made). – As developments within staff capacity, organization of rehabilitation and equipment occur, the protocols should be reviewed and updated at regular intervals (ex. annually).

The Annex within this guideline includes examples of multidisciplinary assessment forms, discharge form and rehabilitation terminology. Furthermore the Annex includes a checklist guideline that can support the implementation of the national guideline and local protocols by guiding the healthcare professional through the patient management from admission to discharge to the community.

Finally in annex to this guideline is the National Community-Based Rehabilitation Strategy and information regarding CBR-Coordinators and community services in order to support the communication between tertiary-level, secondary, primary and community services.

## KEY RECOMMENDATIONS

The following recommendations were highlighted by the guideline development group as the key clinical recommendations that should be prioritized for implementation.

### Organisation of services

- Stroke patients requiring admission to hospital should be admitted to a stroke unit staffed by a coordinated multidisciplinary team with a special interest in stroke care.
- In exceptional circumstances, when admission to a stroke unit is not possible, rehabilitation should be provided in a generic rehabilitation ward on an individual basis.
- The core multidisciplinary team should include appropriate levels of nursing, medical (physiatrist), physiotherapy, occupational therapy, speech and language therapy, and social work staff.
- Patients and carers should have an early active involvement in the rehabilitation process.
- The multidisciplinary stroke team should meet regularly (at least weekly) to discuss assessment of new patients, review patient management and goals and plan for discharge.
- The stroke team should meet regularly with the stroke patient and their family/ carer to involve them in management, goal setting and planning for discharge.
- All patients, including those with severe stroke, who are not receiving palliative care, should be assessed by the specialist rehabilitation team prior to discharge from hospital regarding their suitability for ongoing rehabilitation.
- Telemedicine: Telestroke can be used to improve assessment and management of rehabilitation where there is limited access to on-site stroke rehabilitation expertise.
- All stroke services should be involved in quality improvement activities that include regular audit and feedback (at least every two years).

### Management and prevention strategies

- Stroke patients should be mobilized as early as possible after stroke.
- Personal ADL training by occupational therapists is recommended as part of an in-patient stroke rehabilitation program. In the situation of no occupational therapists, rehabilitation nurses and physiotherapists should be trained to complete personal ADL training. Rehabilitation doctors should be aware of the necessity for ADL training.
- Treadmill training may be considered to improve gait speed in people who are independent in walking at the start of treatment.
- Where the aim of treatment is to have an immediate improvement on walking speed, efficiency or gait pattern or weight bearing during stance, patients should be assessed for suitability for an ankle-foot-orthosis (AFO) by an appropriately qualified health professional.
- Physiotherapists should not limit their practice to one 'approach' but should select interventions according to the individual needs of the patient.
- Gait-oriented physical fitness training should be offered to all patients assessed as medically stable and functionally safe to participate, when the goal of treatment is to improve functional ambulation. Stroke patients should be assessed for their need of assistive devices such as wheelchair, walking aid etc. The clinician should ensure the appropriate prescription of the assistive device (size, explanation of safe usage, where to receive/ purchase assistive device).
- Rehabilitation should include repetitive task training, where it is assessed to be safe

- and acceptable to the patient, when the aim of treatment is to improve gait speed, walking distance, functional ambulation or sit-to-stand-to-sit.
- Where considered safe, every opportunity to increase the intensity of therapy for improving gait should be pursued.
  - Splinting is not recommended for improving upper limb function.
  - Stroke patients should have a full assessment of their cognitive strengths and weaknesses when undergoing rehabilitation or when returning to cognitively demanding activities such as driving or work.
  - Cognitive assessment may be carried out by occupational therapists with expertise in neurological care, although some patients with more complex needs will require access to specialist neuropsychological expertise. Where there is no access to either occupational therapists or neuropsychological expertise a basic cognitive assessment should be carried out by a rehabilitation doctor.
  - All stroke patients should be screened for visual problems, and referred appropriately.
  - Ongoing monitoring of nutritional status after a stroke should include a combination of the following parameters:
    - biochemical measures (ie low pre-albumin, impaired glucose metabolism)
    - swallowing status
    - unintentional weight loss
    - eating assessment and dependence
    - nutritional intake.
  - Every service caring for patients with stroke should develop and adhere to local urinary and faecal continence guidelines including advice on appropriate referral.
  - Electrical stimulation to the supraspinatus and deltoid muscles should be considered as soon as possible after stroke in patients at risk of developing shoulder subluxation.
  - Patients should be asked about pain and the presence of pain should be assessed (for example, with a validated pain assessment tool) and treated appropriately, as soon as possible.
  - Given the complexity of post-stroke shoulder pain consideration should be given to use of algorithms (such as the simple example shown in Annex 3) or an integrated care pathway for its diagnosis and management.
  - Appropriate referral to health and clinical psychology services should be considered for patients and carers to promote good recovery/adaptation and prevent and treat abnormal adaptation to the consequences of stroke.

### **Transfer from hospital to home**

- Prior to hospital discharge, all patients should be assessed to determine the need for a home visit, which may be carried out to ensure safety and provision of appropriate aids, support and community services.
- To ensure a safe discharge occurs, hospital services should ensure the following are completed prior to discharge:
  - Patients and family/carers have the opportunity to identify and discuss their post-discharge needs (e.g. physical, emotional, social, recreational, financial and community support) with relevant members of the multidisciplinary team
  - Family Group Practice Doctors, primary health care teams ( including CBR-Coordinators), community services are informed before or at the time of discharge.
  - All medication, equipment and support services are necessary for a safe discharge are organized.
  - Any continuing specialist treatment required is organized.
  - A documented post-discharge care plan is developed in collaboration with the patient and family and a copy provided to them. This may include relevant

community services (referral to CBR-Coordinator), self-management strategies (e.g. information on medications and compliance advice, goals and therapy to continue at home, stroke support services, any further rehabilitation or outpatient appointments and an appropriate contact number for any queries.

- A discharge planner (e.g. social worker) may be used to coordinate a comprehensive discharge program for stroke survivors.
- Relevant members of the multidisciplinary team should provide specific and tailored training for carers/family before the stroke survivor is discharged home. This should include training, as necessary, in personal care techniques, communication strategies, physical handling techniques, ongoing prevention and other specific stroke-related problems, safe swallowing and appropriate dietary modifications and management of behaviours and psychosocial issues.
- Health services with a stroke unit should provide comprehensive, experienced multidisciplinary community rehabilitation and adequate resources support services for stroke survivors and their families/carers. If services such as the multidisciplinary community rehabilitation services and carer support services are available, then early supported discharge should be offered for all stroke patients with mild to moderate disability.
- Patients with mild/moderate stroke should be able to access stroke specialist early supported discharge services in addition to conventional organized stroke inpatient services.
- Rehabilitation delivered in the home setting should be offered to all stroke survivors as needed. When home rehabilitation is unavailable, patients requiring rehabilitation should receive centre-based care.
- Stake holders should consider providing a specific local expert therapist to provide advice to rehabilitation teams including directing referral to relevant statutory services.
- A referral service network should be in place and actively used, in order to ensure appropriate referral to medical and social services following discharge. The aim being to minimize secondary medical complications and ensure optimal return home and social inclusion.
- Stroke survivors who have residual impairment at the end of the formal rehabilitation phase of care should be reviewed annually, usually by the general practitioner or rehabilitation provider to consider whether access to further interventions is needed. A referral for further assessment should be offered for relevant allied health professionals or general rehabilitation services, if there are new problems not present when undertaking initial rehabilitation or if the person's physical or social environment has changed.
- Stroke survivors with residual impairment identified as having further rehabilitation needs should receive therapy services to set new goals and improve task-oriented activity.

### **Roles of the Multidisciplinary team**

- Stroke inpatients should be treated 24 hours a day by nurses specialising in stroke and based in a stroke unit.
- Stroke inpatients should be treated by multidisciplinary team specialising in stroke and based in a stroke unit.

### **Provision of information**

- Information should be available to patients and carers routinely and offered using active information strategies, which include a mixture of education and counselling techniques using relevant language and communication formats..



## **A. INTRODUCTION**

### **A.1. The need for a guideline**

This is the first Clinical Guideline on Stroke Rehabilitation in Mongolia. There is evidence of an increase in Stroke incidence, morbidity and mortality, as well as a high burden of stroke estimating DALYs (disability adjusted life years or healthy years of life lost to stroke) within Mongolia. Recent statistics indicate that cerebrovascular disease is the leading cause of death and second-leading cause of DALYs in Mongolia (WHO, 2009). This clearly indicates the need for clinical guidelines for prevention and Stroke Rehabilitation, in order to facilitate a standardized assessment, treatment and overall management of stroke patients, which strives towards the international guidelines, based on current research and best clinical practice. Thereby aiming to ensure maximal functional independence post-stroke, improved quality of life and a reduction in DALYs.

### **A.2. Epidemiology**

- Stroke is the third commonest cause of death and the most frequent cause of severe adult disability in the World (ref number).
- Approximately 780 000 stroke events, in a year, from that 600 000 are new, 180 000 are re-stroke (ref number).
- By 2005, 5.8 million people have been living with stroke (ref number).
- 15-30% of all stroke survivors become functionally independent and approximately 40-50% are partially independent, approximately 15-30% of are totally independent after rehabilitation. (ref number).
- Recovery from stroke are dependent on medication, spontaneous recovery, rehabilitation and social services. Because every patients recovery process is different case by case and complex rehabilitation services is needed for all patients.
- Some stroke patients have spontaneous recovery, but most stroke survivors need rehabilitation to restore functional ability.

Mongolia has been experiencing a gradual epidemiological transition in morbidity and mortality patterns since 1990. Consequently, lifestyle and behavior-dependent diseases, such as circulatory system diseases, cancer and injuries have become the leading causes of morbidity. Cardiovascular and cerebrovascular diseases are the leading cause of death and one of the four major causes of disability. One every three deaths is due to these diseases. One of the few available studies prevalence in Mongolia shows that there is 60% increase during the 20 years from 1975 to 1993. Almost 58% of stroke cases in Mongolia were diagnosed among population under 60 years. According to the WHO data of 2002, Mongolia is considered as the country with highest burden of stroke estimating DALY's (disability adjusted life years or healthy years of life lost to stroke) as high as 20 years. In 2008, mortality due to diseases of the circulatory system was 32% in males and 39% in females.

Each year in Mongolia 270-290 cases of stroke in a 100.000 population are registered, therefore Mongolia has high rate of stroke incidence as compared with average stroke incidence rates in the world.

In developed countries cerebral infarction accounted for 87% of all stroke events, then in Mongolia the cerebral infarction versus intracerebral hemorrhage are 1:1, which show that the

control of hypertension and measures for prevention of stroke in Mongolia do not provide in necessary range. ref number).

### A.3. Definition of Rehabilitation – In relation to Stroke

The World Health Organization (WHO) International Classification of Functioning, Disability and Health (ICF) provides a universal framework that covers all human functioning and treats disability as a continuum, that is changeable depending on the internal and external circumstances. This framework provides the basis from which to consider the impact of stroke on the individual.

The ICF emphasizes environmental factors in creating disability, which is the main difference between this new classification and the previous *International Classification of Impairments, Disabilities, and Handicaps* (ICIDH). In the ICF, problems with human functioning are categorized in three interconnected areas:

- **Impairments** are problems in body function or alterations in body structure – for example, paralysis or blindness;
- **Activity limitations** are difficulties in executing activities – for example, walking or eating;
- **Participation restrictions** are problems with involvement in any area of life – for example, facing discrimination in employment or transportation.

**Disability** refers to difficulties encountered in any or all three areas of functioning. The ICF can also be used to understand and measure the positive aspects of functioning such as body functions, activities, participation and environmental facilitation. The ICF adopts neutral language and does not distinguish between the type and cause of disability – for instance, between “physical” and “mental” health. “**Health conditions**” are diseases, injuries, and disorders, while “impairments” are specific decrements in body functions and structures, often identified as symptoms or signs of health conditions.

**Disability** arises from the interaction of health conditions with contextual factors – environmental and personal factors as shown in the figure below.

A number of contextual factors may influence this framework as recognized in the International Classification of Functioning, Disability and Health (ICF). ICF has two parts, each with two components:

#### Part 1 Functioning and disability

- body functions and structures
- Activities and participation

#### Part 2 Contextual factors

- Environmental factor
- Personal factors.

The ICF also outlines nine domains of activity and participation which can provide the focus for rehabilitation efforts:

- Learning and applying knowledge
- General tasks and demands
- Communication
- Mobility
- Self care
- Domestic life
- Interpersonal interactions and relationships
- Major life areas

- Community, social and civic life.

Within this framework, rehabilitation aims to maximize the individual's activity, participation (social position and roles) and quality of life, and minimize the distress to carers (see annex for example of how to use the ICF model as a practical concept in "MDT Problem list and MDT Goals").

- Rehabilitation is an active, goal oriented and patient-centered approach and should start as soon after a stroke as possible. Rehabilitation involves assessment, treatment and multidisciplinary patient management, in order to ensure the individual with Stroke reaches their optimum level of function and independence from a physical, psychological, social and vocational stand point.
- Rehabilitation reduces the level of disability and dependence of the person with disability by developing, to the greatest extent possible, the abilities needed for adequate functioning in the individual's situation. Rehabilitation medicine aims to restore the functional ability as well as the social integration of the person with a disability.

The conventional approach to rehabilitation is a cyclical process:

- Assessment: patients' (and carers) needs and wishes are identified and quantified
- Goal setting: goals are defined for improvement (long/medium/short term)
- Intervention: to assist in the achievement of the goals
- Re-assessment: progress is assessed against the agreed goals.

Rehabilitation goals can be considered at several levels:

- Aims: often long term and referring to the situation after discharge
- Objectives: usually multiprofessional at the level of disability
- Targets: short term time-limited goals.

The process of rehabilitation can be interrupted at any stage by previous disability, co-morbidities and complications of the stroke itself.

#### **A.4. The code of disease**

**I63-I67:** Cerebral Infarction

**G45-G46:** Transient Ischemic attack

#### **A.5. Target user of the guidelines**

These guidelines are developed for the use of administrators, funders, policy makers, healthcare professionals, who plan, organize and deliver healthcare for people with stroke during all phases following stroke.

In particular this guideline will benefit the following professionals and stakeholders:

- Neurologist (Stroke physician)
- General physician, Physician in Geriatric Medicine Rehabilitation Doctors, Rehabilitation specialists Physiotherapists, speech and language therapists, occupational therapists, nurses caring for people with Stroke, dietitians, social worker, orthoptists, orthotists, pharmacists, psychologists.
- General physicians at Aimag and Soum Hospitals
- The Family Group Practice and family medicine doctor
- Government organizations, specialists in public health and healthcare service planners
- NGOs and civil service organizations with special interest in Stroke

Following the development of this guideline, there is a need for the development of a consumer version based on this guideline, for the use of people who have had a stroke and their carers and families.

## **A.6. The aims of the Guideline**

The aim of this national guideline is to assist individual clinicians at tertiary-, Aimag and Soum-level hospitals, hospital departments and Family Group Practices to optimize the quality and effectiveness of their management of stroke patients. The focus is on general management, rehabilitation, the prevention and management of complications and discharge planning, with an emphasis on the first 12 months after stroke.

In order to ensure these aims, this guideline has five main sections:

1. **Organization of services:** this section addresses the issue of how services should be configured to provide optimal care for people who have had a stroke. This section will be of most relevance to those responsible for planning and providing rehabilitation services.
2. **Management and prevention strategies:** this section addresses general rehabilitation principles, which are relevant to the majority of stroke patients. It also aims to inform the assessment and management of common impairments or complications resulting from a stroke. It is based on studies which have identified common and important impairments, disabilities and complications following stroke. It aims to be useful to multidisciplinary teams and individual clinicians when planning treatment of individual patients.
3. **Transfer from hospital to home:** this section addresses the planned transfer of care of patients from the hospital to the home setting.
4. **Roles of the multidisciplinary team:** this section is derived from clinical studies and supporting information and aims to provide guidance on the levels of care and expertise to be provided within stroke services.
5. **Provision of information:** This section reflects the issues likely to be of most concern to patients and their carers. It will be of most relevance to health professionals discussing rehabilitation after stroke with patients and carers and in guiding the production of locally produced information materials.

## **A.7. Statement of intent**

This guideline is not intended to be construed or to serve as a standard of medical care. Standards of care are determined on the basis of all clinical data available for an individual case and are subject to change as scientific knowledge and technology advance and patterns of care evolve. These parameters of practice should be considered guidelines only. Adherence to them will not ensure a successful outcome in every case nor should they be construed as including all proper methods of care or excluding other acceptable methods of care aimed at the same results. The ultimate judgement regarding a particular clinical procedure or treatment plan must be made in light of the clinical data presented by the patient and diagnostic and treatment options available. However, it is advised that significant departures from the national guideline or any local guidelines derived from it should be fully documented in the patient's case notes at the time the relevant decision is taken.

## **A.8. Date of guideline development**

2013

## A.9. Date of next revision

2017

## A.10. List and contact information of authors and persons that participated in the guideline development

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This guideline was also reviewed in draft form by the following Ministry, Organisations and representatives:

- Ministry of Social Welfare
- National Rehabilitation Council
- National Rehabilitation Centre
- Representative District-, Aimag- and Soum-level Hospitals
- AIFO (NGO: Italian Association Amici di Raoul Follereau)

The additions and feedback from the consulted parties have been included in the final Clinical Guideline on Stroke Rehabilitation.

### Guideline was discussed, approved and countersigned by:

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Meeting of Geriatric and Rehabilitation Medicine Professional sub-Committee, MOH, X/29, 2012	R. Oyuukhand, Chairman, Geriatric and Rehabilitation Medicine Professional sub-Committee, MOH
The Administrative Council of MOH, XI/15, 2012	J. Khatanbaatar, State secretary for Health

## A.11. Definitions and terminology used in guideline

### Used medical terminology

*Occupational therapy*: the treatment of by encouraging patients to undertake specific activities and occupation that will help them to reach their maximum level of function and independence in all aspects of daily life.

*Treadmill*: is a exercise device for walking and running

*Neglect syndrome*: the patient don't use their hemiplegic side for the activities or don't pay attention to that side.

*Participation*: is involvement in a life situation

*Cognition*: the mental processes by which knowledge is acquired.

**Orthosis**: is a orthopedic devices to improve or to correct the mechanical functioning of a limb or trunk.

**Constraint induced movement therapy**: is a form of rehabilitation therapy that improves upper extremity function in stroke victims by increasing the use of their affected upper limb.

**Physical therapy**: is a health care profession primarily concerned with the remediation of impairments and disabilities and the promotion of mobility, functional ability, quality of life and movement.

**Mobility**: it includes many activities such as rolling in a bed, transfer activity, sitting, standing, ambulation, stair climbing, use wheelchair ...

**ADL**: are defined as "the things we normally do...such as feeding ourselves, bathing, dressing, grooming, work, homemaking, and leisure

**TENS**: the use of electric current produced by a device to stimulate the nerves for therapeutic purposes and pain.

**Contracture** : restriction of the range of motion because of joint or soft tissue problems

**Electrical stimulation**: is a technique that uses electrical currents to activate nerves innervating extremities affected by paralysis resulting from spinal cord injury (SCI), head injury, stroke and other neurological disorders.

**Disability**: is a difficulty encountered by an individual in executing a task or action

**Ankle –foot orthosis** : A brace, usually made of plastic, that is worn on the lower leg and foot to support the ankle, hold the foot and ankle in the correct position and correct foot drop.

## A.12 How to use the Guideline and tools

The Stroke Guideline consists of the international evidence regarding the most effective Stroke rehabilitation management related to the local context. In addition tools have been completed, which can assist in the patient management from acute to long-term rehabilitation. Below table explains the use of the Stroke rehabilitation tools and who should be responsible for their implementation.

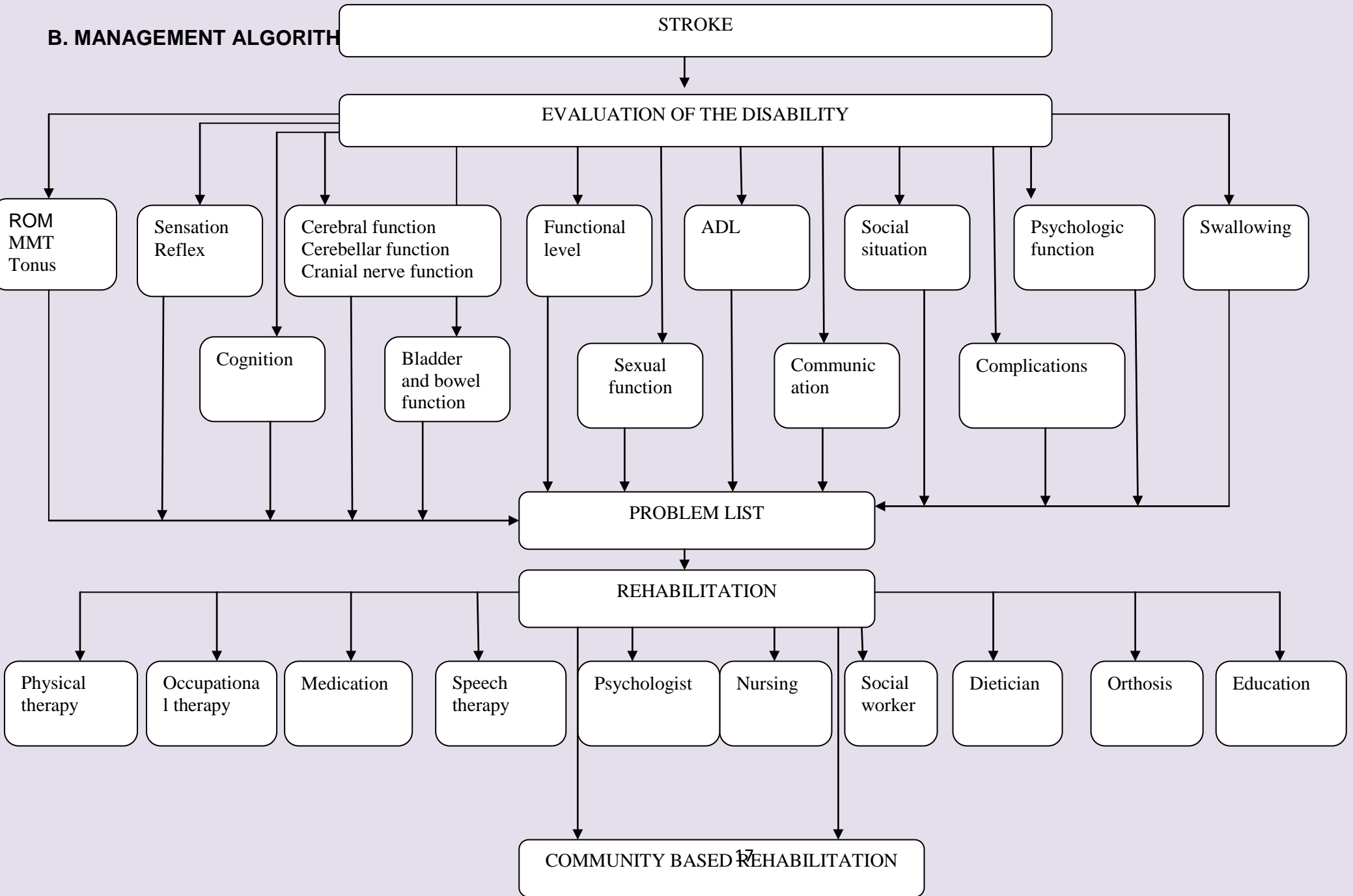
Tool (see tools in annex)	How should the tool be used?	Who is responsible?
Checklist Guideline	The Checklist – A tool that can support	Within the checklist guideline a column is

	<p>the practical implementation of the Stroke Clinical Guidelines on Rehabilitation</p> <ul style="list-style-type: none"> <li>– A tool to support standardizing rehabilitation care (patient care pathway) from early rehabilitation assessment and treatment till discharge planning and hospital discharge, to ensure that all aspects of rehabilitation has been</li> </ul>	<p>included, which outlines, who is responsible for which parts of the rehabilitation</p>
<b>Evaluation forms</b>	<p>The evaluation consists of forms for each of the main professions (Rehabilitation Doctor, Physiotherapist, Occupational Therapist and Speech and Language Therapist) involved in Stroke rehabilitation. The evaluation form is used to complete a detailed assessment of the impairments, activity limitations and participation restrictions that the patient faces.</p>	<p>A rehabilitation staff within each profession is responsible for completing a stroke evaluation form, which is specific to their discipline (Rehabilitation Doctor, Physiotherapy, Occupational Therapy and Speech and Language Therapy). Within the job description for each discipline it has been outlined, who should be responsible for completing the evaluation form in the situation, where there are no staff within that particular discipline (physiotherapy, occupational therapy, speech and language therapy etc.)</p>
<b>Multidisciplinary form</b>	<p>(1) Following the evaluation, a problem list is completed by each discipline, which is based on the principles of the International Classification of Functioning, Disability and Health (ICF). This problem list identifies and summarizes from the evaluation form the impairments, activity limitations and participation restrictions.</p> <p>(2) A multi-disciplinary team (MDT) meeting is held once a week, in which multidisciplinary goals are set. These goals are specific to the patient, set within a time scale and specific person allocated to be</p>	<ul style="list-style-type: none"> <li>- Each specific profession is responsible for completing a problem list which is part of the evaluation form.</li> <li>- The rehabilitation doctor is responsible for ensuring the multi-disciplinary goals get set during the MDT meeting.</li> </ul>

	responsible for ensuring the achievement of the goal.	
<b>Rehabilitation Discharge Letter</b>	A rehabilitation discharge letter summarises the diagnosis, rehabilitation treatment given within the hospital and the patient's function on discharge. The rehabilitation letter should also state what is required on discharge in terms of assistive devices, need for further rehabilitation, referrals (e.g. to CBR-Coordinator) and patient/carer information in order to avoid secondary complications after discharge.	The rehabilitation doctor is responsible for ensuring that the rehabilitation discharge letter has been completed correctly, with the provision of information from the various professions: Physiotherapist, Occupational Therapist, Speech and language Therapist, Social Worker.



**B. MANAGEMENT ALGORITHM**



## C. EVALUATION AND MANAGEMENT

### C.1. ORGANISATION OF REHABILITATION SERVICES

Access is one of the major barriers to equitable services and is influenced by geography, culture and spiritual beliefs. Particular challenges are therefore noted for rural and remote services where resources, particularly human resources may be limited. Whilst it is recognized that residents in rural and remote areas may have difficulty accessing health care as readily as people in urban areas, the aim in all settings must be to develop local solutions that ensure optimal practice and quality outcomes that are based on the best available evidence using the available resources.

Efficient and effective management of patients depends on a well organized expert service that can respond to the particular needs of each individual patient. To achieve this, the organization of stroke services must be considered at the national level, acute and primary level, in the patient's own home or care home.

The main issues in planning services for stroke patients are:

- Organization of hospital care (e.g urban or remote and rural)
- Hospital or home based care
- Discharge and post-discharge services (including an organized referral system)
- Ongoing rehabilitation and follow up (including specific needs of younger people).

The single most important recommendation for improving stroke management is the organization of hospital services to provide stroke unit care. Evidence from a large systematic review of a wide range of trials of organised stroke unit care indicates that stroke patients have better clinical outcomes in terms of survival, returning home and independence if they are managed in a stroke unit rather than admitted to a general ward or remaining at home (ref. 14).

An important part of the assessment process should include identifying whether there were any pre-stroke problems or co-morbidities.

Models of stroke unit care described in the literature include:

- Intensive care unit for the first 24-48 hours (depending on the condition)
- Acute stroke ward: acute unit in a discrete ward (usually discharged within seven days)
- Comprehensive stroke unit care: combined acute and rehabilitation unit in a discrete ward
- Stroke rehabilitation unit: a discrete rehabilitation unit for stroke patients who are transferred from acute care 1–2 weeks post-stroke
- Mixed rehabilitation ward: rehabilitation provided on a ward managing a general caseload.

The evidence for the benefits of stroke unit care is clearest for units that can provide several weeks of rehabilitation on a comprehensive stroke unit or stroke rehabilitation unit.

The stroke units that have been shown to deliver highly effective stroke care share a number of characteristics including:

- Location in a geographically discrete unit

- Comprehensive assessments
- A coordinated multidisciplinary team
- Early mobilisation and avoidance of bed-rest
- Staff with a special interest in the management of stroke, and access to ongoing professional education and training
- Clear communication, with regular team meetings to discuss management (including discharge planning) and other meetings as needed (e.g. family conferences)
- Active encouragement of stroke survivors and their carers/ families to be involved in the rehabilitation process (ref.14).

### **C.1.2. Referral to stroke services**

The early assessment, diagnosis and in-hospital treatment of patients with suspected stroke reduces mortality and morbidity (ref.12)

Mongolia has a geographically scattered population with patients with suspected stroke often presenting to rural and remote hospitals without a resident stroke physician. Telemedicine allows a distant stroke physician to interact with stroke patients, carers and a local doctor remotely.

All patients with suspected stroke (*irrespective of severity*) should be referred urgently to stroke services with a view to either:

- Admitting the patient to hospital
- Requesting urgent assessment.

Patients should receive information about the risk of recurrent stroke, the signs and symptoms of onset and the action they should take if stroke is suspected.

In areas without a local stroke specialist, telemedicine consultation should be considered.

### **C.1.3. Organization of hospital rehabilitation services**

Organized stroke unit care indicates that stroke patients have better clinical outcomes in terms of survival, returning home and independence if they are managed in a stroke unit rather than admitted to a general ward or remaining at home.

- Stroke patients requiring to hospital should be admitted to a stroke unit staffed by a coordinated multidisciplinary team with a special interest in stroke care.
- When admission to a stroke unit is not possible, rehabilitation should be provided in a generic rehabilitation ward on an individual basis.
- Stroke rehabilitation is a patient-centred process with a variety of professional staff contributing to the overall management of an individual patient. An important principle of rehabilitation is goal setting. Stroke unit care usually incorporates a process in which individual recovery goals are identified and monitored.
- The core multidisciplinary team should include appropriate levels of nursing, medical, physiotherapy, occupational therapy, speech and language therapy, and social work staff.
- Rehabilitation should start as soon as possible after stroke within 24-72 hours.

**The typical staffing structure internationally within stroke unit trials was as follows (approximated to a 10-bed stroke unit):**

- Psychiatrist 1-2 (full time)
- Nursing 10 (per 24 hour shift)
- Physical therapist 1-2 (full time)
- Occupational therapist 1-2 (full time)
- Speech and language therapist 0,5 (part time)
- Social worker 0,5 (part time)

Other disciplines are also regularly involved in the management of stroke patients including:

- Clinical psychologists
- Dietitians
- Ophthalmologists, orthoptists,
- Orthotists
- Psychiatrists.

Members of the core team should identify problems and ensure that the appropriate allied healthcare professionals contribute to the treatment and rehabilitation of their patients as appropriate.

Patients and carers should have an early active involvement in the rehabilitation process and the patient needs to actively participate in the treatment. Carers should be invited to attend therapy sessions at an early stage

- Stroke unit teams should conduct at least one formal multidisciplinary meeting per week at which patient problems are identified, rehabilitation goals set, progress, plateau or deterioration monitored and discharge is planned.
- Family conferences between the multidisciplinary team and the patient, carers and family should be arranged to discuss goal setting and discharge planning.
- Members of the multidisciplinary stroke team should be encouraged to take a continuing programme of specialist training and education. Effective stroke unit care includes programmes of education and training for staff to provide them with the knowledge and skills to deliver effective therapeutic care and rehabilitation. A variety of approaches have been described in the literature, from weekly short seminars to less frequent study days (ranging from informal weekly educational events, to a programme of formal education from one to six days per year).

In situations where it is not possible to have a multidisciplinary team with all the rehabilitation professionals available, other medical/rehabilitation staff may acquire skills and knowledge in the missing disciplines, in order to ensure the rehabilitation treatment will be as comprehensive as possible. This should be continued until there are qualified staff in all required disciplines.

## C.2. MANAGEMENT AND PREVENTION STRATEGIES

Stroke patients may experience a whole range of barriers to recovery of normal activities and participation. These can take the form of impairments directly caused by the stroke or other complications of the stroke (Table 1). This section looks at general rehabilitation principles and specific treatment strategies addressing commoner impairments, limitations and complications after stroke. A range of interventions are covered, many of which are viewed as profession-specific (i.e. PT, OT or ST), however, as stroke care is usually delivered by the multidisciplinary team it is useful to consider management and prevention strategies from a more holistic and shared care perspective.

Table 1: Common impairments, limitations and complications after stroke

<b>Common impairments after stroke include:</b>	
• Aphasia	• Gait, balance and coordination

<ul style="list-style-type: none"> <li>• Apraxia of speech</li> <li>• Arm/hand/leg weakness</li> <li>• Cognitive impairment</li> <li>• Dysarthria</li> <li>• Dysphagia</li> <li>• Facial weakness</li> </ul>	<ul style="list-style-type: none"> <li>• problems</li> <li>• Perceptual impairments, including visuospatial dysfunction</li> <li>• Sensory loss</li> <li>• Upper limb impairment</li> <li>• Visual problems</li> </ul>
<b>Common activity limitations include:</b>	
<ul style="list-style-type: none"> <li>• Bathing</li> <li>• Communication</li> <li>• Dressing and grooming</li> <li>• Eating and drinking</li> <li>• Participation restriction (eg returning to work)</li> <li>• Psychological (eg decision making)</li> </ul>	<ul style="list-style-type: none"> <li>• Sexual function</li> <li>• Toileting</li> <li>• Transferring</li> <li>• Urinary and/or faecal incontinence</li> <li>• Walking and mobility</li> </ul>
<b>Common complications for stroke patients include:</b>	
<ul style="list-style-type: none"> <li>• Anxiety</li> <li>• Confusion</li> <li>• Depression</li> <li>• Emotionalism</li> <li>• Falls</li> <li>• Fatigue</li> <li>• Infection (especially urinary tract and chest)</li> <li>• Malnutrition/under-nutrition</li> </ul>	<ul style="list-style-type: none"> <li>• Pain</li> <li>• Pressure sore/skin break</li> <li>• Recurrent stroke</li> <li>• Shoulder pain</li> <li>• Shoulder subluxation</li> <li>• Spasticity</li> <li>• Venous thromboembolism</li> </ul>

### C.2.1. General rehabilitation principles

<b>Recommended</b>
<ul style="list-style-type: none"> <li>• Early mobilisation</li> <li>• Therapeutic positioning</li> <li>• Personal ADL training</li> </ul>

#### Early mobilization

A number of post-stroke complications are associated with immobility such as; muscle weakness, cartilage degeneration, pneumonia, contracture, cardiac deconditioning, thrombotic complications osteoporosis, pressure sores, respiratory infection.

- **Stroke patients should be mobilized as early as possible after stroke**

#### Therapeutic positioning

The aim of positioning the patient is to try to promote optimal recovery by modulating muscle tone, providing appropriate sensory information and increasing spatial awareness and to prevent complications such as pressure sores, contractures, pain and respiratory problems and assist safer eating.

The five main positions recommended are lying on the unaffected side, lying on the affected side, lying supine, sitting up in bed and sitting up in a chair. The consensus from a literature review is that in the upper limb the affected shoulder should be protracted with the arm brought forward and the fingers extended to counteract the tendency for the shoulder to adduct and rotate internally. The trunk should be straight and in the midline avoiding forward or side flexion. For the lower limb there should be avoidance of external rotation and abduction of the hip through the use of support such as pillows. The affected hip should be

brought forward maintaining flexion of the affected hip to counteract increased extensor tone. Generally knee flexion advocated. Most commonly recommended sitting position are in an armchair and in a wheelchair

In the acute phase following stroke (the first 72 hours) there is evidence to support reducing the risk of hypoxia by sitting the patient in an upright position, if medically fit to do so. This position gave the highest oxygen saturation compared to other positions.

The traditional advice to nurse patients with head elevation between 30 and 45 degrees following large hemispheric stroke is largely based on studies of head trauma and reductions in intracranial pressure are likely to be at the expense of reduced cerebral perfusion pressure.

- **Patients should be placed in the upright sitting position as soon as possible, if their medical condition allows.**
- **Hypoxia inducing positions should be avoided.**

## Activities of Living

Activities of daily living (ADL) training is a frequently used intervention by occupational therapists in stroke rehabilitation. The intervention can be divided into personal activities (self care) and extended activities. Occupational therapists use the process of activity analysis to grade activities of daily living so that they are achievable, but challenging, in order to promote recovery after stroke. This may also include the supply and training in the use of adaptive equipment to compensate for the loss of ability to perform ADLs. Personal activities of daily living training provided by OT is effective for increasing independence.

- **Personal ADL training by Occupational therapist is recommended for patients with stroke**
- **Personal ADL training by occupational therapists is recommended as part of an inpatient stroke rehabilitation programme.**

### C.2.2. Gait, balance and mobility

**Table 2. Summary of Recommendations: Gait, Balance and Mobility**

<b>Recommended</b>
<ul style="list-style-type: none"> <li>• Ankle foot orthosis</li> <li>• individualised interventions</li> <li>• gait-oriented physical fitness training</li> <li>• repetitive task training</li> <li>• muscle strength training to improve muscle strength</li> <li>• increased intensity of rehabilitation</li> </ul>
<b>Consider</b>
<ul style="list-style-type: none"> <li>• treadmill training in people who are independent in walking</li> <li>• functional electrical simulation for drop-foot</li> <li>• electromechanical assisted gait training</li> <li>• walking aids</li> </ul>
<b>Not recommended</b>
<ul style="list-style-type: none"> <li>• routine treadmill training</li> <li>• routine EMG biofeedback</li> <li>• balance platform training with visual feedback</li> </ul>

### **Treadmill Training**

- Treadmill training is not recommended as a routine gait training intervention after stroke
- Treadmill training may be considered to improve gait speed in people who are independent in walking at the start of treatment.

### **EMG Biofeedback**

- EMG biofeedback is not recommended as a routine treatment for gait, balance or mobility problems after stroke.

### **Visual Feedback**

- Balance platform training with visual feedback is not recommended for the treatment of gait, balance or mobility problems after stroke.

### **Functional Electric Stimulation**

- Functional electrical stimulation may be considered as a treatment for drop-foot, where the aim of treatment is the immediate improvement of walking speed and/or efficiency.

### **Ankle-Foot-Orthosis**

- Where the aim of treatment is to have an immediate improvement on walking speed, efficiency or gait pattern or weight bearing during stance, patients should be assessed for suitability for an AFO by an appropriately qualified health professional.
- In patients prescribed AFOs, regular re-assessment is recommended, as the long term effects of AFO use are not known.

### **Approach of Intervention**

- Physiotherapists should not limit their practice to one 'approach', but should select interventions according to the individual needs of the patient.

### **Physical Fitness**

- Gait-oriented physical fitness training should be offered to all patients assessed as medically stable and functionally safe to participate, when the goal of treatment is to improve functional ambulation.

### **Electromechanical Assisted Gait Training**

- Electromechanical assisted gait training may be offered to selected patients where the necessary equipment is already available and healthcare professionals are competent in the use of the equipment.

### **Repetitive Task Training**

- Rehabilitation should include repetitive task training, where it is assessed to be safe and acceptable to the patient, when the aim of treatment is to improve gait speed, walking distance, functional ambulation or sit-to-stand-to-sit.

### **Walking Aids**

- Walking aids should be considered only after a full assessment of the potential benefits and harms of the walking aid in relation to the individual patient's stage recovery and presentation.
- Individual patients may gain confidence from using a walking aid. If walking aids improve gait, balance, quality of life and independence, or reduce falls, after stroke, they could provide a cost-effective intervention. However, walking aids may have adverse effects on gait pattern and the achievement of independent walking (without an aid). At present there is insufficient evidence to assess the size of these potential impacts.



### Muscle strengthening

- To improve muscle strength the patient should do goal oriented muscle strengthening exercise and electro stimulation. Muscle strengthening interventions do not have an adverse effect on spasticity.
- Muscle strength training is recommended when the specific aim of treatment is to improve muscle strength.

### Intensity of Intervention

- The average physical therapy time is approximately 45 minutes of physiotherapy and 1 hour of occupational therapy daily.
- If patients condition is safe, every opportunity to increase the intensity of rehabilitation therapy

### C.2.3. Upper limb function

**Table 3: Summary of Recommendations**

<b>Consider</b>
People with difficulty using their upper limb(s) should be given the opportunity to undertake as much tailored practice of upper limb activity (or components of such tasks) as possible. Interventions which can be used routinely involve: <ul style="list-style-type: none"><li>• Constraint induced movement therapy in selected people</li><li>• Repetitive task-specific training</li><li>• Mechanical assisted training</li></ul> One or more of the following interventions can be used in addition to the ones above: <ul style="list-style-type: none"><li>• Mental practice</li><li>• Electrical stimulation</li><li>• EMG biofeedback in conjunction with conventional therapy</li><li>• Bilateral training</li><li>• Mirror therapy</li></ul>
<b>Not recommended</b>
<ul style="list-style-type: none"><li>• Splinting</li><li>• Increased intensity of rehabilitation</li></ul>

- Constraint induced movement therapy may be considered for carefully selected individuals with at least 10 degrees of finger extension, intact balance and cognition. Up to 6 hours a day of intensive therapy in addition to restraint of the non affected limb for up to 90% of waking hours. Healthcare professional should be trained in CIMT before offering it on an individualized basis.
- Mental practice may be considered as an adjunct to normal practice to improve upper limb function after stroke.
- Electromechanical/robotic devices may be considered to improve arm motor function and motor strength in selected patients where the necessary equipment is already available and healthcare professionals are competent in the use of the equipment.
- Splinting is not recommended for improving upper limb function. For stroke patients at risk of or who have developed contractures and are undergoing comprehensive rehabilitation, the routine use of splints or prolonged positioning of muscles in a lengthened position is not recommended.
- Serial casting can be used to reduce severe, persistent contracture, when conventional therapy has failed.



- Increased intensity of therapy for improving upper limb function in stroke patients is not recommended.

#### C.2.4. Cognition

**Table 4: Summary of Recommendations**

Recommendations
<ul style="list-style-type: none"> <li>• All patients should be screened for cognitive or perceptual deficits using validated and reliable screening tools.</li> <li>• Patients identified during screening as having cognitive deficits should be referred for comprehensive neuropsychological investigations.</li> <li>• Cognitive rehabilitation can be used in stroke survivors with attention and concentration deficits.</li> </ul> <p>Any patient found to have memory impairment causing difficulty in rehabilitation or adaptive functioning, should:</p> <ul style="list-style-type: none"> <li>• Be referred for a more comprehensive assessment of their memory abilities.</li> <li>• Have their nursing and therapy sessions tailored to use techniques which capitalize on preserved memory abilities.</li> <li>• Be assessed to see if compensatory techniques to reduce their disabilities, such as notebooks, diaries, audiotapes, electronic organizers, audio alarms, are useful.</li> <li>• Be taught approaches aimed at directly improving their memory.</li> <li>• Have therapy delivered in an environment as like the patient's usual environment as possible to encourage generalization.</li> </ul>

- A full understanding of the patient's cognitive strengths and weaknesses should be an integral part of the rehabilitation plan.
- Stroke patients should have a full assessment of their cognitive strengths and weaknesses when undergoing rehabilitation or when returning to cognitively demanding activities such as driving or work.
- Cognitive assessment may be carried out by occupational therapists with expertise in neurological care, although some patients with more complex needs will require access to specialist neuropsychological expertise.

Cognitive changes after a stroke may be general (e.g slowing of information processing), or may occur within specific domains (e.g orientation, attention, memory, visuospatial and visuoconstructive, mental flexibility, planning and organization and language). It should also be recognized that cognitive impairment may have existed before the stroke. Some patients may experience problems with reasoning or limited awareness or lack of insight into their difficulties. Around one quarter of patients may sustain severe and generalized cognitive impairment. With less severe impairment, recovery occurs but residual deficits may be long lasting.

There is little consistent information on the frequency of these problems or their effect on everyday living, although they can be associated with slower progress in rehabilitation. Full assessment is important; an apparent lack of motivation in self care could be due to a problem of initiating or planning actions or a visuospatial disturbance or both.

Cognitive rehabilitation concerns efforts to help patients understand their impairment and to restore function or to compensate for lost function (e.g. by teaching strategies) in order to assist adaptation and facilitate independence. When cognitive problems are suspected and relatives report personality change, the patient can be referred to a clinical psychologist to provide assessment and where appropriate, psychological intervention which may include carer education and support. It is important that cognitive rehabilitation approaches address how cognitive difficulties are manifest in a patient's life and ensure that any gains made in a formal therapy setting generalize to the daily living environment.

### C.2.5. Visual problems

**Table 5: Summary of Recommendations**

<b>Recommended</b>
<ul style="list-style-type: none"> <li>• All stroke patients should be screened for visual problems, and referred appropriately.</li> <li>• For inpatients, orthoptic eye examinations should assess stroke-related visual problems in addition to assessing visual acuity and other ocular pathologies. For outpatients, optometric eye examinations are recommended.</li> <li>• Healthcare professionals should ensure that patients have and correctly wear their prescribed eyewear.</li> <li>• Fresnel Prism glasses (15-diopter) can be used to improve visual function in people with homonymous hemianopia.</li> <li>• Computer-based visual restitution training can be used to improve visual function in people with visual field deficits.</li> <li>• Patients with visuospatial neglect should be assessed and taught compensatory strategies.</li> </ul>

There are many visual problems associated with stroke, including visual field defects, disorders of eye movement and visuospatial neglect. Furthermore, given that the incidence of stroke increases with age, a significant proportion of stroke patients have concurrent age-related visual problems.

Poor visual acuity has a negative impact on rehabilitation of older people and in people with stroke. Uncorrected visual impairment resulting from age-related visual problems causes difficulties with performing activities of daily living, mobility tasks and driving. Visual field defects are common following stroke; the prevalence has been reported as being between 20 and 57% of patients.

Visual field loss may also impact on a patient's ability to participate in rehabilitation, to live in their own home, to perform dynamic tasks such as safe mobility, navigation, driving and may have an impact on levels of depression, anxiety, social isolation and quality of life following stroke.

It has been reported that over 70% of stroke patients may have eye movement disorders, which can cause a variety of problems. The result is a range of functional disabilities; a loss of depth perception; reduced hand-to-eye coordination and marked difficulties with near tasks and reading. Reduced ability to scan the visual environment may affect visual memory, recognition, the ability to formulate plans and decision

making. The disorders also impact on the effectiveness of rehabilitation therapy in regaining mobility and activities of daily living and cognitive therapy to aid memory. Visuospatial neglect is a perceptual disorder which can reduce a person's ability to look, listen or make movements towards one half of their environment. This can also affect their ability to carry out many everyday tasks, such as eating, reading and getting dressed.

### C.2.6. Communication

Table 6: Summary of Recommendations

<b>Recommendations</b>
<ul style="list-style-type: none"> <li>• All patients should be screened for communication deficits using a screening tool that is valid and reliable.</li> <li>• Aphasic and dysarthric stroke patients should be referred for speech and language therapy.</li> <li>• Where the patient is sufficiently well and motivated, a minimum of two hours per week should be provided.</li> <li>• Where a patient is found to have aphasia, the clinician should:               <ul style="list-style-type: none"> <li>- Document the provisional diagnosis</li> <li>- Explain and discuss the nature of the impairment with the patient, family/carers and treating team, and discuss and teach strategies or techniques which may enhance communication</li> <li>- In collaboration with the patient and family/carer, identify goals for therapy and develop and initiate a tailored intervention plan. The goals and plans should be reassessed at appropriate intervals over time.</li> </ul> </li> <li>• All written information on health, aphasia, social and community supports should be available in an aphasia-friendly format.</li> <li>• Alternative means of communication (such as gesture, drawing, writing, use of augmentative and alternative communication devices) should be used as appropriate.</li> <li>• Interventions should be individually tailored but can include:               <ul style="list-style-type: none"> <li>- Treatment of aspects of language (including phonological and semantic deficits, sentence level processing, reading and writing) following models derived from cognitive neuropsychology</li> <li>- constraint-induced language therapy</li> <li>- the use of gesture</li> <li>- supported conversation techniques</li> <li>- delivery of therapy programs via computer.</li> </ul> </li> <li>• Group therapy and conversation groups can be used for people with aphasia and should be available in the longer term for those with chronic and persisting aphasia.</li> <li>• People with chronic and persisting aphasia should have their mood monitored.</li> <li>• Environmental barriers facing people with aphasia should be addressed through training communication partners, raising awareness of and educating about aphasia in order to reduce negative attitudes, and promoting access and inclusion by providing aphasia-friendly formats or other environmental</li> </ul>

adaptations. People with aphasia from culturally and linguistically diverse backgrounds may need special attention, for example, from trained healthcare interpreters.

- The impact of aphasia on functional activities, participation and quality of life, including the impact upon relationships, vocation and leisure, should be assessed and addressed as appropriate from early post-onset and over time for those chronically affected.

Aphasia is an acquired multimodal language disorder. It can affect the person's ability to talk, write and understand spoken and written language leaving other cognitive abilities relatively intact. Aphasia is a long term, life changing condition which affects both the individual and others around them in terms of communication style, lifestyle, identity and life roles. It can coexist with other cognitive deficits. The reporting of the proportion of stroke cases demonstrating aphasia at initial assessment varies from 20% to 38%. The role of the speech and language therapist in aphasia includes assessment, differentiation of aphasia from other communication difficulties, advice and education about maximizing communication, counseling, provision of alternative or augmentative communication and direct intervention

Dysarthria is a motor speech impairment of varying severity affecting clarity of speech, voice quality and volume and overall intelligibility. Frequencies of between 20-30% have been reported for dysarthria following stroke and communication and quality of life can be significantly affected.

### C.2.7. Nutrition

Table 7: Summary of Recommendations

<b>Recommended</b>
<ul style="list-style-type: none"> <li>• All stroke patients should have their hydration status assessed, monitored and managed. Appropriate fluid supplementation should be used to treat or prevent dehydration.</li> <li>• All stroke patients should be screened for malnutrition.</li> <li>• Assessment of ability to eat independently</li> <li>• Ongoing monitoring of nutritional status</li> <li>• Patients who are at risk of malnutrition, including those with dysphagia, should be referred to a dietitian for assessment and ongoing management.</li> <li>• Screening and assessment of nutritional status should include the use of validated nutritional assessment tools or measures.</li> <li>• Nutritional supplementation should be offered to people whose nutritional status is poor or deteriorating.</li> <li>• Nasogastric tube feeding is the preferred method during the first month post-stroke for people who do not recover a functional swallow.</li> </ul>

<ul style="list-style-type: none"> <li>• Food intake should be monitored for all people with acute stroke.</li> </ul>
<b>Consider</b>
<ul style="list-style-type: none"> <li>• Nutritional supplementation should be offered to people whose nutritional status is poor or deteriorating.</li> </ul>

- Assessment of nutritional risk should be carried out within the first 48 hours with regular re-assessment thereafter during the patient’s recovery and be recorded prior to discharge. Assessment of a patient’s nutritional risk should include an assessment of their ability to eat independently and a periodic record of their food consumption. Ongoing monitoring of nutritional status after a stroke should include a combination of the following parameters:
  - biochemical measures (*ie low pre-albumin, impaired glucose metabolism*)
  - swallowing status
  - unintentional weight loss
  - eating assessment and dependence
  - nutritional intake.

Following nutritional screening, those identified as undernourished and those at risk of becoming undernourished, should be referred to a dietician and considered for prescription of oral nutritional supplements as part of their overall nutritional care plan. Poor nutritional status post stroke increases the length of hospital stay and risk of complications, and undernourishment on admission is an independent marker of poor outcome.

Dysphagia and sialorrhea are prominent symptom across the continuum of stroke recovery.

There is insufficient good quality evidence to recommend interventions to reduce sialorrhea. Biofeedback and positioning techniques (as used by physiotherapy and speech and language therapy) should support management of patients who experience drooling problems.

### C.2.8. Dysphagia

<b>Recommended</b>
<ul style="list-style-type: none"> <li>• Patients should be screened for swallowing deficits before being given food, drink or oral medications. Personnel specifically trained in swallowing screening using a validated tool should undertake screening.</li> <li>• Swallowing should be screened for as soon as possible but <u>at least within 24 hours</u> of admission.</li> <li>• All patients who have dysphagia for more than one week should be assessed to determine their suitability for a rehabilitative swallowing therapy programme. Consideration should be given to: <ul style="list-style-type: none"> <li>- the nature of the underlying swallowing impairment</li> <li>- patient suitability in terms of motivation and cognitive status.</li> </ul> </li> <li>• The gag reflex is not a valid screen for dysphagia and should NOT be used as a screening tool.</li> </ul>

- Patients who fail the swallowing screening should be referred to a speech pathologist for a comprehensive assessment. This may include instrumental examination e.g. Videofluoroscopic modified barium swallow (VMBS) &/or Fibre-optic endoscopic examination of swallowing (FEES). Special consideration should be given to assessing and managing appropriate hydration. These assessments can also be used for monitoring during rehabilitation.
- Compensatory strategies such as positioning, therapeutic manoeuvres or modification of food and fluids to facilitate safe swallowing should be provided for people with dysphagia based on specific impairments identified during comprehensive swallow assessment.
- One or more of the following methods can be provided to facilitate resolution of dysphagia:
  - therapy targeting specific muscle groups (e.g. 'Shaker' therapy)
  - thermo-tactile stimulation
  - electrical stimulation if it is delivered by clinicians experienced with this intervention, applied according to published parameters and employing a research or quality framework.
- Dysphagic patients on modified diets should have their intake and tolerance to diet monitored. The need for continued modified diet should be regularly reviewed.
- Patients with persistent weight loss and recurrent chest infections should be urgently reviewed.
- All staff and carers involved in feeding patients should receive appropriate training in feeding and swallowing techniques.
- Patients with dysphagia should have an oropharyngeal swallowing rehabilitation programme that includes restorative exercises in addition to compensatory techniques and diet modification.

Management of dysphagia is frequently based around a compensatory approach. Facilitatory therapy approaches are active therapeutic approaches which aim to have a direct and lasting effect on the swallowing physiology after stroke: muscle strengthening exercises, electrical stimulation, positioning techniques, diet modification, massage etc.

## **C.2.9. Continence**

### **C.2.8.1. Urinary incontinence**

#### **Recommendations**

- All stroke survivors with suspected urinary continence difficulties should be assessed by trained personnel using a structured functional assessment.
- A portable bladder ultrasound scan should be used to assist in diagnosis and management of urinary incontinence.
- Stroke survivors with confirmed continence difficulties should have a continence management plan formulated, documented, implemented and monitored.
- The use of indwelling catheters should be avoided as an initial management strategy except in acute urinary retention.
- A community continence management plan should be developed with the stroke



survivor and family/carer prior to discharge and should include information on accessing continence resources and appropriate review in the community. If incontinence persists the stroke survivor should be re-assessed and referred for specialist review.

- For people with urge incontinence:
  - anticholinergic drugs can be trialled
  - a prompted or scheduled voiding regime program/ bladder retraining should be trialled
  - if continence is unachievable, containment aids can assist with social continence.
- For people with urinary retention:
  - The routine use of indwelling catheters is not recommended. However if urinary retention is severe, intermittent catheterisation should be used to assist bladder emptying during hospitalisation. If retention continues, intermittent catheterisation is preferable to indwelling catheterisation.
  - If using intermittent catheterisation, a closed sterile catheterisation technique should be used in hospital.
  - Where management of chronic retention requires catheterisation, consideration should be given to the choice of appropriate route, urethral or suprapubic.
  - If a stroke survivor is discharged with either intermittent or in-dwelling catheterisation, they and their family/carer will require education about management, where to access supplies and who to contact in case of problems.
- For people with functional incontinence, a whole-team approach is recommended.
- Behavioral therapies for incontinence should be trialed on an individual basis after stroke.

Incontinence of urine and faeces is dramatically increased following stroke and is likely to impact heavily on the quality of life of the patient and their carers and family.

Dysfunction of the bladder and/or bowel may be caused by a combination of stroke-related impairments (e.g. weakness, cognitive or perceptual impairments).

The continence assessment of every patient with urinary incontinence should be documented and include:

- history of how long incontinence has been a problem
- a history of urinary and bowel symptoms experienced
- current drug history
- obstetric history for women
- prostatic symptoms for men
- abdominal examination to detect palpable bladder
- rectal examination (both sexes) for constipation, haemorrhoids, fissures and prolapse
- vaginal examination (to exclude prolapse, vaginitis and neoplasia)
- cognitive status
- urinalysis (for glucose, protein, blood, white cells, specific gravity)
- midstream urine if proteinuria or haematuria (for microscopy and culture)
- urea and electrolytes
- three day bladder diary or a frequency
- post-micturition bladder volume.

The available evidence suggests that behavioural strategies currently used in non-stroke patients can be effective in some stroke patients. For example: Toileting assistance programmes such as timed voiding or prompted voiding for stroke patients

unaware of their bladder status or those with cognitive impairment.

Bladder retraining with urge suppression for those with urge symptoms who are independent of caregivers and motivated (in combination with pelvic floor exercises in men).

### **C.2.8.2. Faecal incontinence**

#### **Recommendations**

- All stroke survivors with suspected faecal continence difficulties should be assessed by trained personnel using a structured functional assessment.
- For those with constipation or faecal incontinence, a full assessment (including a rectal examination) should be carried out and appropriate management of constipation, faecal overflow or bowel incontinence established and targeted education provided.
- Bowel habit retraining using type and timing of diet and exploiting the gastro-colic reflex should be used for people who have bowel dysfunction.
- If continence is unachievable, containment aids can assist with social continence.
- Education and careful discharge planning and preparation are required for any patient discharged with bowel incontinence.

There is no specific treatment for faecal incontinence. The assessment of patients with faecal incontinence is very similar to that of urinary incontinence and will identify most causes of faecal problems. Faecal incontinence after stroke can be improved in most patients after faecal loading and infective diarrhoea (eg due to *Clostridium difficile*) have been treated, and there are a number of management strategies that can help achieve continence. These include:

- manipulation of the gastrocolic reflex where bowel evacuation is common after meals
- helping the patient to sit on the toilet after meals and ensuring correct positioning to use the toilet
- in exceptional circumstances, regular use of a constipating agent and bowel care with an enema

## **C.3. MANAGING COMPLICATIONS**

### **C.3.1. Poor oral hygiene**

#### **Recommendations**

- All patients, particularly those with swallowing difficulties, should have assistance and/or education to maintain good oral and dental (including dentures) hygiene.
- Staff or carers responsible for the care of patients of stroke (in hospital, in residential care and in home care settings) can be trained in assessment and management of oral hygiene.



Routine oral care can present a considerable challenge after stroke due to a variety of factors including physical weakness, dysphagia, lack of coordination and cognitive problems.

There is little evidence for maintaining or improving oral hygiene after stroke and further research is needed.

### C.3.2. Spasticity

<b>Recommendations</b>
Interventions to decrease spasticity other than an early comprehensive rehabilitation programme should not be routinely provided for people who have mild to moderate spasticity (i.e. spasticity that does not interfere with a stroke survivor’s activity or personal care). In stroke survivors who have persistent moderate to severe spasticity (i.e. spasticity that interferes with activity or personal care):
<ul style="list-style-type: none"> <li>• <i>Clostridium botulinum</i> toxin type A should be trialled in conjunction with rehabilitation therapy which includes setting clear goals.</li> <li>• Electrical stimulation and/or EMG biofeedback can be used.</li> </ul>
<b>Not recommended</b>
<ul style="list-style-type: none"> <li>• routine resting splinting of the upper limb</li> </ul>

Spasticity is defined as intermittent or sustained involuntary hyperactivity of the skeletal muscles associated with an upper motor lesion.

There are conflicting views as to whether spasticity is a primary or secondary impairment. It may be present with other impairments such as contracture or shoulder pain. Spasticity is not a major determinant of activity limitation. Interventions to reduce spasticity should be considered when the level of spasticity interferes with activity or the ability to provide care to the stroke survivor.

- Routine use of resting splinting of the upper limb to reduce spasticity in the wrist and finger flexors following stroke is not recommended.
- *Clostridium botulinum* toxin type a (*Botox*®) may be considered for use to relieve spasticity following stroke where it is causing pain or interfering with physical function and the ability to maintain hand hygiene.
- Injections may need to be repeated every three to four months and should be discontinued if lack of efficacy.

### C.3.3. Contracture

<b>Recommendations</b>
<ul style="list-style-type: none"> <li>• Conventional therapy (i.e. early tailored interventions) should be provided for stroke survivors at risk of or who have developed contracture.</li> <li>• For stroke survivors at risk of or who have developed contractures and are undergoing comprehensive rehabilitation, the routine use of splints or prolonged positioning of muscles in a lengthened position is NOT recommended.</li> <li>• Overhead pulley exercise should NOT be used routinely to maintain range of</li> </ul>

motion of the shoulder.

- Serial casting can be used to reduce severe, persistent contracture when conventional therapy has failed.

Contracture is a shortening of soft tissues that results in reduced joint range of motion (ROM) due to impairments (e.g. weakness or spasticity). Particularly common is loss of shoulder external rotation, elbow extension, forearm supination, wrist and finger extension, ankle dorsiflexion and hip internal rotation. People with severe weakness are particularly at risk of developing contractures as any joint or muscle not moved or lengthened regularly is at risk of soft tissue complications which eventually will limit movement and may cause pain. Although it is considered that soft tissues must be lengthened to prevent contracture, the most appropriate intervention to prevent or manage contracture is currently unclear with expert opinion divided.

To ensure that range of motion is maintained, muscles at risk of shortening should be monitored.

#### **C.3.4. Prevention and treatment of shoulder subluxation**

##### **Recommendations**

- For people with severe weakness who are at risk of developing a subluxed shoulder, management should include one or more of the following interventions:
  - Electrical stimulation
  - Firm support devices
  - Education and training for the patient, family/carer and clinical staff on how to correctly handle and position the affected upper limb.
- For people who have developed a subluxed shoulder, management may include firm support devices to prevent further subluxation.

There is no evidence that subluxation can be reduced after it has occurred; prevention is therefore paramount. Subluxation commonly occurs along with shoulder pain. Management of subluxation consists of strategies to prevent it worsening. Patients with little or no active shoulder muscle activity should be considered for subluxation prevention strategies.

Interventions aimed at reducing trauma to the shoulder, such as educating all staff, carers and stroke survivors, should prevent the occurrence of shoulder subluxation and pain resulting from weakness. Such education may include strategies to care for the shoulder during manual handling and transfers and advice regarding positioning. Electrical stimulation to the supraspinatus and deltoid muscles should be considered as soon as possible after stroke in patients at risk of developing shoulder subluxation. Prevention is an important aspect of stroke rehabilitation as it is associated with poor upper limb function. Post-stroke incidence may range from 7% to 81%. Patients with greater active shoulder motion have a lower incidence.

### C.3.5. Pain

Patients should be asked about pain and the presence of pain should be assessed (for example, with a validated pain assessment tool. The Visual Analogue Scale is a widely used and easy to administer outcome measure for pain – see annex) and treated appropriately, as soon as possible. In patients with central post-stroke pain unresponsive to standard treatment, and where clinician and patient are aware of potential side effects, amitriptyline may be considered. If amitriptyline is ineffective, or contraindicated, lamotrigine or carbamazepine are alternatives although the high incidence of side effects should be recognized. Stroke patients are particularly prone to pain, most commonly associated with the musculoskeletal ramifications of paralysis and immobility, and particularly involving the hemiplegic shoulder. Age-related co-pathologies resulting from joint changes due to osteoarthritis cause added discomfort, particularly during handling and positioning procedures. Pain may develop many months after a stroke and may be related to movement. Headache and central post-stroke pain also occur in some stroke patients.

#### C.3.5.1 Prevention of post-stroke shoulder pain

<b>Not recommended</b>
<ul style="list-style-type: none"><li>• Overhead pulleys</li><li>• Functional electrical stimulation</li></ul>
<b>Consider</b>
<ul style="list-style-type: none"><li>• For people with severe weakness who are at risk of developing shoulder pain, management may include:<ul style="list-style-type: none"><li>- shoulder strapping</li><li>- interventions to educate staff, carers and people with stroke about preventing trauma.</li></ul></li></ul>

Shoulder pain is common in stroke patients, with a prevalence of 24% up to 16 months post-stroke. The cause of shoulder pain remains unclear. Shoulder pain often occurs secondarily or with other impairments. Post-stroke shoulder pain may contribute to poor upper limb recovery and prolonged hospital stay, as well as depression, sleeplessness and poor quality of life for patients following stroke. Prevention of the development of post-stroke shoulder pain is therefore an important aim.

- Proper positioning of the affected shoulder in the early phase is very important
- Overhead pulleys to prevent shoulder pain are not recommended.

Preventing contracture and subluxation should help to prevent pain. Interventions aimed at reducing trauma to the shoulder, such as educating all staff, carers and stroke survivors, should also help to prevent shoulder pain. Such education may

include strategies to care for the shoulder during manual handling and transfers, and advice regarding positioning.

### C.3.5.2. Treatment of post-stroke shoulder pain

<b>Not recommended</b>
<ul style="list-style-type: none"> <li>The routine use of the following interventions is NOT recommended for people who have already developed shoulder pain:             <ul style="list-style-type: none"> <li>- corticosteroid injections</li> </ul> </li> </ul>
<b>Consider</b>
<ul style="list-style-type: none"> <li>For people who develop shoulder pain, management should be based on evidence-based interventions for acute musculoskeletal pain.</li> </ul>

There are many causes of shoulder pain in stroke patients. Some are as a consequence of the stroke (possibly related to spasticity, subluxation, poor positioning, but others may be related to pre-existing joint disorders, inflammatory joint conditions (e.g. inflammatory arthritis, adhesive capsulitis) and associated trauma (fractures and soft tissue injuries, eg rotator cuff disorders).

It is important to consider potential causes of post-stroke shoulder pain and investigate and treat it accordingly. In the absence of pre-existing disorders or injury, in addition to analgesia, therapeutic strategies are usually based on the severity of upper limb weakness, amount of tone in the surrounding musculature (flaccid, normal or spastic), associated sensory impairment and/ or neglect, the degree of joint subluxation and the presence of adhesive capsulitis.

As there is no clear evidence for effective interventions once shoulder pain is already present in stroke patients, management should be based on evidence-based guidelines for acute musculoskeletal pain.

### C.3.5.3. Central post-stroke pain

<b>Recommendations</b>
<ul style="list-style-type: none"> <li>People with stroke found to have unresolved CPSP should receive a trial of:             <ul style="list-style-type: none"> <li>- tricyclic antidepressants e.g. amitriptyline first, followed by other tricyclic agents or Venlafaxine</li> <li>- anticonvulsants e.g. carbamazepine.</li> </ul> </li> <li>Any patient whose CPSP is not controlled within a few weeks should be referred to a specialist pain management team.</li> </ul>

Central post-stroke pain (CPSP) occurs in approximately 2–8% of stroke survivors and is a superficial and unpleasant burning, lancinating, or pricking sensation, often made worse by touch, water or movement. While the evidence for interventions for CPSP is inconclusive, a trial of different interventions should be considered where CPSP interferes with functional tasks.

Other forms of pain relief including transcutaneous electrical nerve stimulation, acupuncture or psychological interventions (e.g. desensitisation or cognitive behavioural therapy) have also been suggested and can be considered prior to or concurrently with medication but evidence for these is also limited.

### C.3.6. Swelling of the extremities

Recommendations
<ul style="list-style-type: none"> <li>• For people who are immobile, management can include the following interventions to prevent swelling in the hand and foot:               <ul style="list-style-type: none"> <li>- dynamic pressure garments</li> <li>- electrical stimulation</li> <li>- elevation of the limb when resting.</li> </ul> </li> <li>• For people who have swollen extremities, management can include the following interventions to reduce swelling in the hand and foot:               <ul style="list-style-type: none"> <li>- dynamic pressure garments</li> <li>- electrical stimulation</li> <li>- continuous passive motion with elevation</li> <li>- elevation of the limb when resting.</li> </ul> </li> </ul>

People who are upright (standing or sitting) with their arm or leg hanging and immobile as a result of weakness are at risk of developing swelling of the hand and foot. Limited robust evidence exists for interventions to prevent and treat swelling.

### C.3.7. Loss of Cardiorespiratory Fitness

Recommendations
<ul style="list-style-type: none"> <li>• Rehabilitation should include interventions aimed at increasing cardiorespiratory fitness once patients have sufficient strength in the large lower limb muscle groups.</li> <li>• Patients should be encouraged to undertake regular, ongoing fitness training.</li> </ul>

Severe cardiovascular de-conditioning occurs as a result of the immobility imposed early after stroke.

So far studies mainly used ergometry (cycle, treadmill or Kinetron) but task-related circuit training has also been used. Fitness training requires sufficient muscle mass to achieve a cardiorespiratory effect and hence sufficient strength in lower limb muscles is required to achieve intervention targets and benefits.

### C.3.8. Post Stroke Fatigue

Recommendations
<ul style="list-style-type: none"> <li>• Therapy for stroke survivors with fatigue should be organised for periods of the</li> </ul>

day when they are most alert.

- Stroke survivors and their families/carers should be provided with information and education about fatigue including potential management strategies such as exercise, establishing good sleep patterns, and avoidance of sedating drugs and excessive alcohol.
- Patients with post-stroke fatigue should be screened for depression.

Fatigue is a common long-term problem after stroke with estimates of prevalence ranging from 16% to 70%. Fatigue is defined here as abnormal (or pathological) fatigue which is characterised by weariness unrelated to previous exertion levels and is usually not ameliorated by rest. Normal fatigue, which is a general state of tiredness, can be improved with rest. The aetiology of fatigue after stroke is uncertain.

Post-stroke fatigue is present in 68% of patients at six months after a stroke, 74% at 12 months and 58% at three years. Fatigue is significantly associated with limitation in instrumental activities of daily living but this association is mostly related to associated depression.

There is insufficient evidence to recommend interventions for management of post-stroke fatigue. Health professionals should recognise patients with excess levels of fatigue and provide information and practical strategies such as negotiating therapy times and times for rest on a case-by-case basis. Enforced rest periods should not be used.

### C.3.9. Disturbance of mood and emotional behaviour

<b>Consider</b>
<u>Identification</u> <ul style="list-style-type: none"><li>• All patients should be screened for depression using a validated tool.</li><li>• Patients with suspected altered mood (e.g. depression, anxiety, emotional lability) should be assessed by trained personnel using a standardised and validated scale.</li><li>• Diagnosis should only be made following clinical interview.</li></ul>
<u>Prevention</u> <ul style="list-style-type: none"><li>• Psychological strategies (e.g. problem solving, motivational interviewing) can be used to prevent depression after stroke.</li></ul>
<u>Intervention</u> <ul style="list-style-type: none"><li>• Antidepressants can be used for stroke patients who are depressed (following due consideration of the benefit and risk profile for the individual) and for those with emotional lability.</li><li>• Possible side effects of antidepressant treatment should be explained to patients prior to commencing treatment.</li><li>• Psychological (cognitive-behavioural) intervention can be used for stroke patients who are depressed (education programmes)</li></ul>
<b>Not recommended</b>
<ul style="list-style-type: none"><li>• Use antidepressants to prevent post stroke depression</li></ul>



Mood disturbance is a very common problem after stroke, although there is some uncertainty about just how frequent different types of mood problems are, and about the precise psychosocial and physical factors associated with their onset. Diagnosis may be complicated by the similarity of symptoms of depression and anxiety to physical and cognitive changes associated with the stroke.

Depression is particularly common, affecting one in three people who have had a stroke at some point during follow up, and is associated with slower progress in rehabilitation and a longer stay in hospital. It is common in the acute, medium and long-term phases and often resolves within a few months of onset without any specific antidepressant therapy or active management.

Anxiety, with or without panic, may be generalised or may be associated with specific issues such as fear of falling or social embarrassment, which can lead to avoidance of certain situations.

Anxiety and emotional lability, which includes rapid fluctuation in mood and/or decreased inhibition of emotional expression, may also occur, either separately or in combination. Whilesome people with mood disturbances may recover spontaneously over a few months, others may have problems that persist despite active interventions.

### C.3.10. Behavioural change

<b>Consider</b>
<ul style="list-style-type: none"> <li>• The impact of chronic behavioural changes (irritability, aggression, perseveration, adynamia/ apathy, emotional lability, disinhibition and impulsivity) on functional activities, participation and quality of life, including the impact on relationships, employment and leisure, should be assessed and addressed as appropriate over time.</li> <li>• Stroke survivors and their families/carers should be given access to individually tailored interventions for personality and behavioural changes e.g. participation in anger-management therapy and rehabilitation training and support in management of complex and challenging behaviour.</li> </ul>

Personality and behavioural changes (e.g. irritability, aggression, perseveration, adynamia/apathy, emotional lability, perseverative behaviours, disinhibition and impulsivity, lack of insight) are common after stroke and can lead to significant impediments to community participation and reintegration. Such changes also pose difficulties for family, friends and carers, significantly contributing to carer burden and stress. There is limited specific research on assessment and rehabilitation of behaviour management.

Information and education for both the stroke survivor and their family/carer is important for behaviour change.

### C.3.11. Deep vein thrombosis (DVT) or pulmonary embolism (PE)

<b>Recommended</b>
<ul style="list-style-type: none"> <li>• Aspirin in the first two weeks following stroke</li> </ul>

<ul style="list-style-type: none"> <li>• Early mobilisation and adequate hydration should be encouraged in all acute stroke patients to help prevent DVT and PE.</li> <li>• Antiplatelet therapy should be used for people with ischaemic stroke to help prevent DVT/PE.</li> <li>• Low molecular weight heparin or heparin in prophylactic doses can be used with caution for selected patients with acute ischaemic stroke at high risk of DVT/PE. If low molecular weight heparin is contraindicated or not available, unfractionated heparin should be used.</li> </ul>
<b>Not recommended</b>
<ul style="list-style-type: none"> <li>• Above-knee graduated compression stockings are NOT recommended for the prevention of DVT/PE post-stroke.</li> <li>• Antithrombotic therapy is NOT recommended for the prevention of DVT/PE in haemorrhagic stroke patients.</li> </ul>
<b>Consider</b>
<ul style="list-style-type: none"> <li>• Below-knee graduated compression stockings</li> </ul>

DVT and the associated complication of PE are significant risks in the first few weeks post stroke with PE accounting for 5% of deaths and the third most common cause of deaths after stroke. Reported risk factors include reduced mobility, stroke severity, age, dehydration, increasing time between stroke and the introduction of preventive measures, haemorrhagic stroke and cryptogenic ischaemic stroke.

Hospital care in an organised stroke unit is likely to reduce and prevent the incidence of thromboembolism due to:

- Early mobilisation rehabilitation policies
- Early hydration with normal saline
- Specialised nursing care

Anticoagulant therapy in the first two weeks after ischaemic stroke can cause haemorrhagic stroke or haemorrhagic transformation of the ischaemic stroke and has no net benefit. Low dose aspirin has been shown to be safe and effective in preventing deep vein thrombosis (DVT) and pulmonary embolism.

- Aspirin should be given to all patients with acute ischemic stroke in the first two weeks following stroke.

Aspirin can be given by nasogastric tube or rectally for those who are unable to swallow. Patients at a particularly high risk of early DVT following an ischaemic stroke (eg those with a history of previous DVT, known thrombophilia or active cancer) can be given prophylactic heparin.

- Two weeks following acute ischaemic stroke, clinicians should re-assess the patient's risk for DVT and consider starting additional prophylactic medical treatment (eg heparin).

### C.3.12. Pressure care

<b>Recommended</b>
<ul style="list-style-type: none"> <li>• All stroke survivors at risk (e.g. stroke severity, reduced mobility, diabetes, incontinence and nutritional status) should have a pressure care risk assessment</li> </ul>



and regular evaluation completed by trained personnel.

- All stroke survivors assessed as high risk should be provided with appropriate pressure relieving aids and strategies, including a pressure-relieving mattress as an alternative to a standard hospital mattress.

Pressure ulcers are ‘areas of localised damage to the skin and underlying tissue due to pressure, shear or friction’. Age, stroke severity, immobility, incontinence, nutritional status and diabetes are contributing risk factors. The skin of those deemed at high risk should be examined on admission and reviewed as regularly as needed based on individual factors.

With adequate nursing resources and expertise, pressure ulcers should not develop during immobility after stroke. Proper assessment, frequent position change, education to patients and family members about pressure sore and prevention are important preventative strategies.

For details of assessment and treatment of pressure sores refer to the guidelines and protocols on management of pressure sores.

### **C.3.13. Infection**

Infections are relatively common during stroke rehabilitation, particularly chest infection or urinary tract infection while in hospital. Staff providing rehabilitation services should be aware of the possibility of infection.

Stroke unit staff should recognise, assess, investigate and treat common infections such as chest or urinary tract infections.

### **C.3.14. Falls**

#### **Recommended**

- Falls risk assessment should be undertaken using a valid tool on admission to hospital. A management plan should be initiated for all those identified as at risk of falls.
- Multifactorial interventions in the community, including an individually prescribed exercise program, should be provided for people who are at risk of falling.

Falls are a common feature for patients after stroke. As some falls can lead to devastating complications, measures should be taken to minimize the risk of falling. Assessment of falls needs to consider the specific underlying cause. Where problems are stroke-specific (e.g. difficulty standing), interventions should target these difficulties. Fear of falling (e.g. cognitive and emotional factors as well as physical factors) should also be considered.

Individually prescribed muscle strengthening and balance retraining programme, withdrawal of psychotropic medication and home hazard assessment and modification in people at high risk, for example with severe visual impairment, have been shown to be of benefit in reducing falls. These interventions are likely to be an

integral component of well organised stroke care.

Osteoporosis needs to be recognised and guidance is available on the management of osteoporosis.

### **C.3.15. Sleep apnoea**

<b>Recommended</b>
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- |   |
|---|
| <ul style="list-style-type: none"><li>• CPAP or oral devices should be used for stroke survivors with sleep apnoea.</li></ul> |
|---|

Observational studies have reported incidences of obstructive sleep apnoea (OSA) between 32% and 80% following stroke. There is debate as to whether OSA is a risk factor for stroke, a consequence of stroke, or both.

## **C.4. TRANSFER FROM HOSPITAL TO HOME**

When the patient is discharged from hospital the Community Based Rehabilitation program for the persons with disabilities (CBR) can play a role to continue the rehabilitation therapy in their living area with the support of family members and/or care givers.

CBR was initiated by the World Health Organization following the Declaration of Alma-Ata in 1978. Over the past 30 years through collaboration with other UN organizations, non-governmental organizations and Disabled People's Organizations, CBR has evolved into a multisectoral strategy to address the broader needs of people with disabilities, ensuring their participation and inclusion in society and enhancing their quality of life. In 2004 International Labor Organization (ILO), United Nations Educational, Scientific and Cultural Organization (UNESCO) and World Health Organization (WHO) developed Joint position paper on CBR. In 2010 WHO, ILO, UNESCO and International Disability and Development Consortium (IDDC) produced CBR Guidelines. The Guidelines promote CBR as a strategy which can contribute to implementation of the UN Convention on the Rights of Persons with Disabilities, and of disability inclusive national legislation, and which can support community-based inclusive development. CBR ensures the people with disabilities and their family members are able to access the benefits of the health, education, livelihood and social sectors and empowerment of persons with disabilities through facilitation of the inclusion and participation of disabled people, their family members and communities in all development and decision-making processes.

Mongolia implements CBR program since 1991. National Rehabilitation Center is the implementing agency of CBR. The program is implemented in all 21 aimags and Ulaanbaatar 9 districts with Order No 216 of Minister of Health. Every aimag and district there is local CBR coordinator and local CBR committee. /List of local CBR coordinators/ Family doctors, somon doctors and bag feldshers are CBR workers is in Annex 12. Rehabilitation doctors and neurologists are also trained on CBR as well. Mongolia CBR program contributes its effort to health, education, livelihood, social and empowerment according to the CBR matrix.

Discharge planning should be divided into three parts:

- pre-discharge
- discharge
- post-discharge.

#### **C.4.1. Pre-discharge**

##### **Pre-discharge home visits should be undertaken for patients who require them.**

For many stroke patients and their carers the transition between the protective environment of the hospital to independence at home can be an overwhelming and challenging experience.

- The pre-discharge process should involve the patient and carer(s), the primary care team, social services and allied health professionals as appropriate. It should take account of the domestic circumstances of the patient or, if the patient lives in residential or sheltered care, the facilities available there.
- Essential alterations to the patient's home should be completed and necessary aids installed prior to discharge.

Pre-discharge home visits are often considered a vital part of the discharge planning process. Pre-discharge home visits performed by various members of the multidisciplinary team (usually an OT) aim to give staff (hospital and community), stroke patients and carers the opportunity to identify actual and likely problems, as well as to address any other needs that the stroke patient/carer may have. Occupational Therapists defines a home visit as a visit to the home of a hospital inpatient which involves an occupational therapist accompanying the patient to assess his/her ability to function independently within the home environment or to assess the potential for the patient to be as independent as possible with the support of carers.

In situation, where pre-discharge home visits are not possible due to financial, transport or human resource constraints or geography, it is important to ensure a full assessment of the patient's home situation, local environment, carer support is completed during the hospital admission. Based on this assessment, clear advice and recommendations regarding assistive devices, home adaptations, carer support and referral to other services, should be given.

If there is no Occupational Therapist, then another rehabilitation staff (i.e. the responsible Rehabilitation Doctor) with knowledge and skills in this type of assessment, should be advocated for this role. CBR workers and local CBR coordinators can play important role in pre-discharge planning. They can make assessment in home situation of the patients.

#### **C.4.2. Discharge**

The following information should be accurately and legibly displayed in the

discharge documents:

- Diagnosis
- Investigations and results
- Medication and duration of treatment if applicable
- Levels of achievement, ability and recovery
- Team care plan
- Further investigations needed at primary care level with dates
- Further investigations needed at hospital and dates
- Further hospital attendance with dates
- Transport arrangements
- The hospital name, hospital telephone number, ward name or number, ward telephone number
- Consultant's name and named nurse
- The date of admission and discharge.
- It is important to ensure the discharge letter details any further rehabilitation needs. Any referral to medical or social services or follow-up rehabilitation should be detailed within the discharge letter.

Consideration should be given to such information being retained by the patient as a patient-held record, to allow all members of the primary care team, rehabilitation staff and care agencies to clearly see what the care plan for the patient should be. The wishes of the patient in respect of the confidentiality of this record should be paramount. Patient-held records may enhance the patient's understanding and involvement in their care. There is also evidence to show that discharge planning increases patient satisfaction. Patient-held records should have a minimum font size of 12 or larger as appropriate for those with visual impairment and be available in easy-access format for patients with aphasia. Medical information given to patients or their carers should be in layman's language and discussed with the patient and family/carer. The form must be signed by the staff member giving the information. Any information that has been given to the patient or their carer(s) should be included in the information given to the general practitioner.

When the patient is discharged from hospital, the local CBR coordinators can play following roles:

- Assess the needs in terms of CBR matrix (health, education, livelihood, social and empowerment) and provide support and advice through the CBR workers and local DPOs;
- Support for accessing disability certificate and pension
- Information about local Disabled People's Organisations (DPO)
- Information about vocational training, loan for income generation, possibility to become a member of a Self-help group
- Support for getting assistive devices
- Refer to other services

CBR workers can play following roles:

- Assess the need for home care and teach family about how to take care, how to do exercise at home
- Follow-up the progress of the patient
- Give advices on other possibilities to empower them
- Refer to other services

#### **C.4.3. Early supported discharge (ESD) and post-discharge support**

Patients with mild/moderate stroke should be able to access stroke specialist early supported discharge services in addition to conventional organized stroke inpatient services.

Early supported discharge teams should consist of a specialist multidisciplinary group including nursing, medical, physiotherapy, speech and language therapy and occupational therapy staff.

Early supported discharge reduces death and dependency in patients with mild/moderate stroke when compared to conventional treatment.

Where early supported discharge is unavailable, patients requiring rehabilitation should receive centre-based care.

#### **C.4.4. Home based or outpatient rehabilitation**

Home based or hospital based (*outpatient or day hospital*) rehabilitation should be considered for people after discharge.

Physiotherapy, speech and language therapy and occupational therapy should be considered based on the patient needs.

In situations where home-based rehabilitation is not possible, the patient should be recommended to complete further rehabilitation at a local rehabilitation department. Due to transport, geography and personal reasons, this may not be realistic and therefore a patient should also be given an individualized home exercise programme (written information/drawings) relating to their physical, cognitive, speech impairments as well as advice on return to social and community activities.

#### **C.4.5. Longer term stroke rehabilitation in the community**

<b>Recommended</b>
<ul style="list-style-type: none"><li>• Stroke survivors who have residual impairment at the end of the formal</li></ul>

rehabilitation phase of care should be reviewed annually, usually by the general practitioner or rehabilitation provider to consider whether access to further interventions is needed. A referral for further assessment should be offered for relevant allied health professionals or general rehabilitation services if there are new problems not present when undertaking initial rehabilitation, or if the person's physical or social environment has changed.

- Stroke survivors with residual impairment identified as having further rehabilitation needs should receive therapy services to set new goals and improve task-orientated activity.
- Stroke survivors with confirmed difficulties in performance of personal tasks, instrumental activities, vocational activities or leisure activities should have a documented management plan updated and initiated to address these issues.
- Stroke survivors should be encouraged to participate long-term in appropriate community exercise programs.

Access to long-term rehabilitation is often raised by stroke survivors and their families/carers. Limited health resources need to be managed in the most equitable way and ongoing rehabilitation is not feasible unless the stroke survivor has clear and realistic goals. However, current rehabilitation services after the first six months are rarely available although evidence demonstrates further improvements can be made after this time.

The major part of physical recovery following stroke occurs within the first six months, but further input can prevent the decline that frequently occurs after stroke.

- Stroke patients in the community should have access to specialist therapy-based rehabilitation services.

In situations where long-term rehabilitation is not possible, due to human and financial resources, transport and geography or personal reasons, patients should be given an individualized home exercise programme (written information/drawings) relating to their physical, cognitive, speech impairments as well as advice on return to social and community activities.

#### **C.4.8. Driving after a Stroke**

##### **Recommended**

- Patients with stroke should be advised that they must not drive for at least one month after their stroke.
- Patients with residual activity limitations at one month must inform the DVLA (particularly if there are visual problems, motor weakness or cognitive deficits) and can only resume driving if their physician/GP agrees, or after formal assessment.
- When assessing whether a patient has made a satisfactory recovery, clinicians should be vigilant to possible executive function impairment.
- If there is doubt about a patient's ability to drive, patients should be referred to



the local Disabled Drivers' Assessment Centre (*details available from the DVLA*).

- Doctors have a duty to inform patients of the rules regarding driving. Patients have a responsibility to act on this advice. Patients need to inform their insurance company.

Stroke can have a major impact on a person's ability to drive and/or their ability to use public transport, as well as their ease of use of both. Stroke teams should focus on maximising both mobility and safety. An inquiry should be made about pre-stroke driving and transport, and an assessment and rehabilitation should address the impact of stroke on transportation and implement strategies to advise, remediate, and where appropriate, compensate for any relevant deficits. This may require access to specialist on-road driving assessment.

#### **C.4.9. Physical Activity after Stroke**

A stroke may have a considerable impact on a person's ability to participate in physical activity. After stroke physical fitness may be reduced to a level that is insufficient for undertaking even basic household tasks. Impaired physical fitness after stroke presents a risk for recurrent stroke, cardiac disease and fall-related fractures, while it may also affect reintegration into the community.

People who were ambulant, and who did not have severe cognitive or communication difficulties found that people who have had a stroke may benefit from physical fitness training. Although there is insufficient evidence for the effectiveness and feasibility of exercise for people, who are more severely disabled, national clinical guidelines recommend that people with stroke should be encouraged to participate in regular exercise and aerobic training where possible, and that this be promoted as part of a long term strategy. Advice to increase physical activity, even if this is repeated, is not sufficient to increase actual physical activity.

- Exercise classes provided by physiotherapists and stroke nurses in rehabilitation settings
- Exercise services run by community based leisure centers. These may be stroke-specific or mixed
- It is recommended that exercise practitioners have completed accredited training on exercise
- Exercise must be safe, effective and enjoyable for participants and trainer should encourage the patients.

#### **C.4.10. Return to work**

##### **Recommended**

- Stroke survivors who wish to work should be offered assessment (i.e. to establish their cognitive, language and physical abilities relative to their work demands), assistance to resume or take up work, or referral to a supported employment service.

Almost 58% of stroke cases in Mongolia were diagnosed among population under 60 years.

The Vocational rehabilitation, defined as ‘the process of overcoming the barriers an individual faces when accessing, remaining in or returning to work’, is therefore important not only to people who have had a stroke and their families but also to the wider community. Work may be paid employment or other purposeful activities barriers to return to work identified by patients include lack of access to specialist vocational rehabilitation staff, pessimistic healthcare professionals, and insufficient scope of rehabilitation. Fatigue, memory impairment and difficulty concentrating can be as important as physical disabilities in decisions about appropriate work. Part-time work may be achievable even if full-time employment is not.

- Early in the rehabilitation pathway patients should be asked about vocational activities and liaison initiated with employers. Once work requirements are established patients should have appropriate assessments made of their ability to meet the needs of their current or potential employment.
- People wishing to return to work should have access to advice on benefits, employment and legal rights and referral to social work if appropriate.
- Employers should be encouraged to provide skills retraining and flexible work opportunities to people returning to work after a stroke.

#### **C.4.11. Sexuality**

<b>Recommended</b>
<ul style="list-style-type: none"><li>• Stroke survivors and their partners should be offered:<ul style="list-style-type: none"><li>- the opportunity to discuss issues relating to sexuality and sex after stroke with an appropriate health professional</li><li>- written information addressing issues relating to sexuality post stroke.</li></ul></li><li>• Any interventions should address psychosocial aspects as well as physical function.</li></ul>



Having a stroke does not mean an end to a sex life for the patient. The wider concept of sexuality encompasses expression of attractiveness and intimacy, as well as sexual relations. The effects of stroke, such as motor or sensory impairment, urinary problems, perceptual alterations, tiredness, anxiety, depression, and changes in self image, self confidence and self worth can cause sexually-related difficulties. Medication, particularly antihypertensives, can also interfere with sexual function. The most common fear is that resuming sex may cause another stroke. After a stroke sexual activity can be resumed as soon as the patient feels ready to do so. During sex, heart rate rises no more than in normal daily activity and blood pressure does not rise significantly. Patients with known hypertension should be advised to take their medication as prescribed, and consult their doctor if they have any problems.

#### **C.4.12. Support**

Social support has been shown to correlate directly with outcomes post stroke. It is common for people with stroke to comment on a “black hole” period when returning home, as they confront the difficulty adjusting to life after stroke, especially when formal interventions have been completed. Support during this phase would seem to be particularly important.

Three important aspects of support have been reported in descriptive studies: emotional, instrumental (practical support such as home help), and informational.

#### **C.4.12.1. Peer support**

<b>Recommended</b>
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| <ul style="list-style-type: none"> <li>• Stroke survivors and family/carers should be given information about the availability and potential benefits of a local stroke support group and/or other sources of peer support before leaving hospital and when back in the community.</li> </ul> |
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Peer support is a process by which stroke survivors may share their experiences with others with similar experience. Peer support may be structured via groups, online or telephone. Many stroke survivors are active in establishing and maintaining peer support groups in the community. Furthermore they report that peer support is beneficial for sharing experience, for education and for socialisation (leading to improved self-esteem and self-confidence) and is therefore critical to recovery of good quality of life after stroke. Individual peer support may also be of value, either to supplement groups or for people who do not want involvement in a group.

#### **C.4.12.2. Carer support**

<b>Recommended</b>
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| <ul style="list-style-type: none"> <li>• Carers should be provided with tailored information and support during all stages of the recovery process. This includes (but is not limited to) information provision and opportunities to talk with relevant health professionals about the stroke, stroke team members and their roles, test or assessment results, intervention plans, discharge planning, community services and appropriate contact details.</li> <li>• Where it is the wish of the person with stroke, carers should be actively involved in the recovery process by assisting with goal setting, therapy sessions, discharge planning, and long-term activities.</li> <li>• Carers should be provided with information about the availability and potential benefits of local stroke support groups and services, at or before the person’s return to the community.</li> <li>• Carers should be offered support services after the person’s return to the community.</li> <li>• Such services can use a problem-solving or educational-counselling approach.</li> <li>• Assistance should be provided for families/carers to manage stroke survivors who have behavioural problems.</li> </ul> |
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The physical and emotional aspects of caring for someone with stroke can frequently alter the family roles and dynamics and may result in significantly higher anxiety and depression and lower perceived QOL in carers. Carers, along with stroke survivors, need long-term practical, emotional, social and financial support. Access and availability of carer support services is critical.

Different modes of delivering support to carers, for example using the telephone or the internet have been used, and have potential benefits in reducing stress. Such interventions may be particularly useful for carers in more rural and remote areas, where there still is access to telephone or internet.

#### **C.4.13. General Practitioner Care**

The GP also has an integral role in the multidisciplinary management of patients with stroke.

GPs have particular strengths in problem solving, treating co-morbidities in the patient, and helping carers who may have illnesses of their own to cope with the additional burden of caring. GPs have knowledge of services available both in the hospital and in the community, giving them a role in coordinating the various services including hospital based services, social services and AHPs. The GP is responsible for key decisions at certain points in the patient journey, such as whether and where to admit the patient.

- **If the patient is to be admitted, the GP should communicate with the hospital staff the basis of the diagnosis, the pre-morbid condition of the patient, any relevant social factors and past medical history, including current medication and known allergies**

The GP also plays a pivotal role in the discharge of patients back to the community. These patients often have a complex treatment and rehabilitation strategy with multiple co-morbidities.

- **For successful discharge, the GPs and community staff should receive adequate information from the hospital prior to discharge (such as a medical and rehabilitation discharge letter).**

Detailed information on continuing medication as well as prescribing changes made in hospital and the reason for such changes should be provided.

Secondary prevention, medication and lifestyle interventions for patients after stroke should also be monitored in primary care.

#### **C.5. ROLES OF THE MULTIDISCIPLINARY TEAM**

This section addresses the important components of multidisciplinary team care in terms of the roles of the team members. Table 3 emphasizes the importance of communication within the multidisciplinary team.

Table 3: Role of multidisciplinary team members

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| <ul style="list-style-type: none"><li>• Attending multidisciplinary meetings and case conferences</li></ul> |
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- Specific liaison with other professionals, teaching staff, patients and relatives
- Setting and meeting appropriate goals
- Supporting patients and families
- Liaison with other healthcare professionals through networks and specific training in the management of stroke.

### C.5.1. Nursing care

Stroke nursing focuses on the holistic needs of the patient and family, involving the physical, psychological, cognitive, emotional, spiritual and social care. The impact of these aspects is varied and unique to each patient and family. The nurse considers the individual's needs working collaboratively with the patient and their families to involve them in a meaningful way with decision making and their recovery. Stroke nursing is delivered within a context of multidisciplinary working enabling the sharing and integration of clinical practice. Nursing people with stroke requires nurses with knowledge, clinical skills, confidence and interest to deliver effective therapeutic care and rehabilitation. Nurses require education, training and practice development in stroke care.

The nurse's main role is to care stroke patient, to prevent of pressure sore, proper positioning and to assist doctor and one of the member of stroke team.

Nurses can provide specialist stroke care in the acute, rehabilitation and community context as well as deliver palliative and terminal care.

<b>The role of the Stroke Nurse</b>	
<ul style="list-style-type: none"> <li>• Comprehensive nursing assessment</li> <li>• Patient observations</li> <li>• Swallowing screen</li> <li>• Pressure sore risk assessment and management of skin integrity</li> <li>• Assist with mobility</li> <li>• Ensure pain control</li> <li>• Bladder and bowel assessment and management of incontinence, including patient management strategies.</li> <li>• Prevent secondary complications</li> </ul>	<ul style="list-style-type: none"> <li>• 24-hour nursing care</li> <li>• Participate in discharge planning</li> <li>• Support and education to patients and family/carers.</li> </ul>

**Stroke inpatients should be treated 24 hours a day by nurses specialising in stroke and based in a stroke unit.**

### C.5.2. Physiatrist (Physician) Care

<b>The role of the stroke physiatrists</b>	
<ul style="list-style-type: none"> <li>• Diagnosing stroke syndrome</li> <li>• Providing acute stroke treatment</li> <li>• Investigating stroke aetiology</li> <li>• Preventing secondary stroke</li> <li>• Providing information</li> <li>• Diagnosing and treating complications arising from stroke, inter-current illness or comorbidity</li> </ul>	<ul style="list-style-type: none"> <li>• Leadership of the stroke team</li> <li>• Advice</li> <li>• Service development</li> <li>• Education</li> <li>• Audit</li> <li>• Research</li> <li>• Providing local clinical guidelines</li> <li>• Translating up-to-date research into clinical practice</li> </ul>

The general role of the physician is to carry out appropriate responsibilities and in many cases to lead, coordinate and develop the skills and decisions of the multidisciplinary team:

- A. To improve functional level medical services must be integrated**
- B. To provide information to the patients and family**
- C. To assess needs for orthotics**
- D. To prevent from deconditioning syndrome**
- E. To prevent recurrent stroke**
- F. To prevent and treat complications after stroke**
- G. To give psychological advice**
- H. To support have a job again and social activity**
- I. To help organize safety environment to improve functional ability when discharge**

Consultants with an interest in stroke, after adequate training and with appropriate continuing professional development, should be available to coordinate every stroke service or unit.

### **C.5.3. Physiotherapy**

Physiotherapists are experts in the assessment and treatment of movement disorders. Physiotherapy involves the skilled use of physical interventions in order to restore functional movement, reduce impairment and activity limitations and maximise quality of life after a stroke. These interventions commonly involve exercise, movement and the use of electrical treatments. Physiotherapists are generally involved in the care and rehabilitation of patients from the onset of the stroke, often daily and for many months and, in some cases, years. Physiotherapists work with stroke patients in a variety of settings, including stroke units, acute admission wards, general medical wards, rehabilitation units, day hospitals, community day centers, outpatient clinics and their own homes.

#### **The key elements of physiotherapy**

<b>Assessment:</b>	<b>Intervention:</b>
<ul style="list-style-type: none"> <li>• Identifying current movement capabilities and movement potential               <ul style="list-style-type: none"> <li>○ respiratory function</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• providing planned, staged rehabilitation to meet agreed goals</li> <li>• liaising and involving</li> </ul>



<ul style="list-style-type: none"> <li>○ muscle tone</li> <li>○ body alignment and range of joint motion</li> <li>○ movement status</li> <li>○ sensation</li> <li>○ visuospatial awareness</li> <li>○ undesirable compensatory activity</li> <li>○ balance</li> <li>○ mobility, eg walking, transfers, stair climbing</li> </ul>	<p>family/carers in rehabilitation</p> <ul style="list-style-type: none"> <li>● providing rehabilitation leadership skills</li> <li>● service development</li> <li>● education</li> <li>● clinical audit and research</li> <li>● translating up-to-date research into clinical practice</li> <li>● participating in development of local clinical guidelines</li> </ul>
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As stroke frequently results in physical deficits which impair the ability to move, a main aim of physiotherapists will be to work with other team members to promote the recovery of movement and mobility. Physiotherapists will plan and implement treatments for individual patients, based on the assessment of their unique problems. Physiotherapists should set and meet relevant short and long term goals, which have been discussed, where appropriate, with patients, carers and other team members.

Physiotherapists work closely and intimately with stroke patients and should have the ability to empathise and communicate with patients in the most challenging of circumstances. Physiotherapists should aim to achieve an evidence based approach to stroke management through regular training and updating and should be involved in appropriate investigation, audit and research activity.

In situations where there are no physiotherapists, it is recommended that the basic role of physiotherapists is taken on jointly by the rest of the multidisciplinary team **after they have received training**, e.g. transfer training, mobility, muscle strengthening, functional exercises etc.

After training has been received then:

- Rehabilitation Doctor should assess for any neurological and musculoskeletal impairments and how this relates to limitations in function.

- The Rehabilitation Doctor should be responsible for the rehabilitation relating to the skills of physiotherapy (see above description) and prescribe the training needed to the Rehabilitation Nurse.

In Annex, please see the Physiotherapy job description and example of Physiotherapy assessment form.

#### **C.5.4. Occupational Therapy**

All patients who have problems with activities of daily living following stroke should have access to an occupational therapist with specific knowledge and expertise in neurological care. Occupational therapy treatment should be based on an assessment of each patient's unique problems.

Occupational therapists treat people who have impairments, restricted activity levels and limited ability to participate as a result of injury or illness, in order to achieve the highest level of independence possible. The state registered occupational therapist works in partnership with the patient, carer and other healthcare and voluntary personnel at all stages from acute through to outpatient and community care. The occupational therapist will identify the individual aspects that make up a person's ability to carry out selected activities, (i.e. physical, cognitive, perceptual, psychological, social, environmental and spiritual) and will include jointly agreed goals and purposeful activity in their interventions. They will use purposeful activity to promote the restoration of function and to maximise participation in meaningful activities, i.e. occupations of self care, domestic, social and work roles.

### The key elements of occupational therapy

<b>Assessment:</b>	<b>Intervention:</b>
<ul style="list-style-type: none"> <li>• Using activity analysis, in which the components of an activity are identified, along with the individual's limitations in carrying it out</li> <li>• Assessing skills which impact on present activity (eg sensorimotor, cognitive, perceptual and psychosocial impairments)</li> <li>• Assessing skills for the performance of self care (eg washing, dressing, feeding), domestic (eg shopping, cooking, cleaning), work and leisure occupations</li> <li>• Assessing social environment (eg family, friends, relationships)</li> <li>• Assessment of physical environment (eg home and workplace)</li> </ul>	<ul style="list-style-type: none"> <li>• Helping each patient achieve the highest level of independence possible</li> <li>• Redeveloping physical, sensory, cognitive, and perceptual skills through activity and practice</li> <li>• Promoting the use of purposeful, goal orientated activity</li> <li>• Teaching new strategies to aid optimum level of function</li> <li>• Assessing and advising on appropriate equipment and adaptations to enhance independent function</li> <li>• Assessing for and providing appropriate seating and advising on positioning</li> <li>• Assessing, advising and facilitating transport and mobility issues such as driving</li> <li>• Facilitating the transfer of care from acute stages through rehabilitation and discharge</li> <li>• Liaising, working with, and referring to other professionals as part of a multidisciplinary team</li> <li>• Educating the patient and carer in all relevant aspects of stroke care liaising with support groups, and voluntary</li> </ul>

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In situations where there are no Occupational Therapists, it is recommended that the basic role of Occupational Therapists is taken on jointly by the rest of the multidisciplinary team **after they have received training**, e.g. , mobility, muscle strengthening, assisting and adapting activities of daily living etc.

After training has been received then:

- Rehabilitation Doctor and/or Physiotherapist should assess for the patient’s social and environmental situation and their ability to perform activities of daily living, depending on the patients motor, cognitive and perceptual impairments.

- The Rehabilitation Doctor should be responsible for the rehabilitation relating to the skills of Occupational Therapy (see above description) and prescribe the training needed to the Physiotherapist and/or Rehabilitation Nurse, depending on the assessment findings.

In Annex, please see the Occupational Therapy job description and example of a occupational therapy assessment form.

### C.5.6. Speech and Language Therapy

Speech and language therapists are an integral part of the stroke care team. Their particular field of expertise lies in the assessment and management of communication disorders and dysphagia following stroke.

Speech and language therapists should be involved in stroke management at all stages in the recovery process and should liaise closely with all related healthcare professionals, with outside agencies, both statutory and voluntary, with the individual who has had a stroke and with his/her carers.

#### The key elements of speech and language therapy

<b>Providing a diagnostic service:</b>	<b>Identifying an individualized speech and language therapy care programme and/or dysphagia programme eg:</b>
<ul style="list-style-type: none"> <li>For disorders of communication and swallowing</li> </ul>	<ul style="list-style-type: none"> <li>rehabilitating specific processes</li> <li>teaching compensatory strategies</li> <li>supporting achievement in personal short and longer term goals</li> <li>supporting patients and family during a period of adjustment</li> </ul>
<b>Providing information:</b>	<b>Facilitating access to information regarding:</b>
<ul style="list-style-type: none"> <li>to patients, carers and healthcare staff about impairments/disabilities, related abilities and management of disorders of communication and</li> </ul>	<ul style="list-style-type: none"> <li>coping strategies</li> <li>therapies available</li> <li>Collaboration with NGO</li> </ul>

swallowing	
<b>Detailed assessment:</b>	<b>Facilitating referral:</b>
<ul style="list-style-type: none"> <li>using both formal and informal approaches to identify strengths and weaknesses, impact on the individual and family and psychosocial situation and general well-being</li> </ul>	<ul style="list-style-type: none"> <li>to other professional support</li> </ul>

In situations where there are no Speech and Language Therapists, it is recommended that the basic role of a Speech and Language Therapists is taken on jointly by the rest of the multidisciplinary team **after they have received training.**

After training has been received then:

-Rehabilitation Doctor should assess for any impairment of language and swallowing.

- The Rehabilitation Doctor should be responsible for the basic management of language and swallowing impairments, depending on the assessment findings.

- It is of benefit that the Physiotherapist and Rehabilitation Nurse should also have a basic awareness of swallowing and language/communication problems and understand the basic management, depending on the assessment findings.

In Annex, please see the Speech and Language Therapy job description and example of a occupational therapy assessment form.

### **C.5.5. Social Work**

- A social worker should be a member of the multidisciplinary team and should have a key role in the discharge planning process.

The social worker, who is employed by the local authority, should have an understanding of the illness and its effect on the patient, the carers and family. As well as being aware of the physical problems of a stroke, the social worker should also be aware of the psychological and emotional effects of stroke illness so that he/she can best understand the patient's needs.

The social worker works closely with individual members of the multidisciplinary team and is especially aware of therapist's reports in thinking about the needs of the patient. Social workers become involved with patients at different stages of the rehabilitation process, depending on what problems the patient, carers and family may have. Some patients will need advice and information from the social worker early in their journey of care because of financial, relationship or housing problems. The social worker requires a wide knowledge of resources in the community so that he/she is able to advise the team and the patient about what is available for the patient on discharge. It is the social worker's role to advise the team about the timescale for implementing care packages and for discussing alternative forms of care if that is required.

### **C.5.7. Clinical Psychology**

- Each multidisciplinary stroke team should have access to a clinical psychologist.

Emotional and personality changes and some degree of cognitive impairment are present in many patients after a major stroke. These problems can be a significant concern for relatives and a source of stress-related illness.

The role of the clinical psychologist working within this field is to define neuropsychological impairment, to alleviate psychological distress and promote well-being and quality of life by developing, applying and promoting the proper application of psychological knowledge, skills and expertise. This is carried out through direct clinical work or indirect. Indirect work may include supervision, teaching, research and audit.

Other professionals are also qualified to work with patients with mood disorders or emotional changes after a stroke. For example psychiatrists have a role in working with complex mood and behavioural disorders while counselling may be generic or may be offered by a more highly trained professional using specific theoretical models.

### The key elements of clinical psychology

<b>Direct work with people after a stroke includes:</b>	<b>Services to carers and professionals include:</b>
<ul style="list-style-type: none"> <li>• A detailed neuropsychological assessment of intellectual/cognitive impairment, behaviour, daily functioning, difficulties with interpersonal relationships and emotional problems</li> <li>• Teaching of new skills and strategies to circumvent intellectual/cognitive impairments including difficulties with attention, memory and perception</li> <li>• Using skilled therapeutic interventions to alleviate mental health problems such as depression, anxiety in patients and their carers and to manage changes such as mood disturbance if these become a problem</li> <li>• Using appropriate techniques to manage difficult behaviour which can result in reduced stress to the individual, their carers and health professionals</li> </ul>	<ul style="list-style-type: none"> <li>• Working within a multidisciplinary team to use the results of psychological assessments in order to develop appropriate individual care programmes</li> <li>• Training, supervising or consulting with other professionals to aid them in their direct clinical work</li> <li>• Working with families on adjusting and understanding the cognitive deficits experienced by their relatives</li> </ul>
	<p><b>Services to planners include</b></p> <ul style="list-style-type: none"> <li>• Designing service evaluation and audit projects to identify psychological needs within a service and to provide information about service use and outcome</li> <li>• Undertaking research aimed at improving the understanding of psychological problems in this client group and the efficacy of assessment and treatment methods</li> </ul>

### C.5.8. Dietetic Care

Dietitians can offer specialist advice to patients with nutritional problems post stroke. This may include assessing patients who are deemed nutritionally at risk during an initial nutrition screen, advising on the nutritional adequacy of modified texture diets, advising on the transition from artificial nutrition onto oral diet, and addressing secondary prevention.

Dietitians are able to deliver complex dietary advice in layman’s terms, and are experts in advising patients who may have multifaceted dietetic needs (eg diabetes mellitus, hyperlipidaemia, hypertension as well as dysphagia);

#### The key elements of dietetic care

<b>The role of the dietitian</b>	
<ul style="list-style-type: none"> <li>•</li> <li>• Raising awareness of the impact of malnutrition on recovery post stroke</li> <li>• Overseeing the implementation and monitoring of nutritional screening</li> <li>• Assessing nutritional requirements, and advising patients on how to achieve good nutrition using artificial nutrition, food fortification or supplements as appropriate</li> <li>• Advising staff, patients and carers on meeting nutritional requirements on a texture modified diet</li> <li>• Reviewing, monitoring and advising patients and carers during the transition from artificial nutrition support to oral diet</li> </ul>	<ul style="list-style-type: none"> <li>•</li> <li>• Advising patients and carers on secondary prevention of stroke</li> <li>• Adapting the nutrition care plan to take into account existing/newly diagnosed medical conditions (ie diabetes mellitus, hyperlipidaemia, coeliac disease, renal impairment)</li> <li>• Liaising with catering departments to ensure provision of appropriate, nutritionally adequate meals for dysphagic patients</li> <li>• Facilitating discharge for patients requiring ongoing artificial nutrition</li> </ul>

Adapted from The Value of Nutrition and Dietetics for Stroke Survivor, produced by British Dietetic Association, 2007 ([www.bda.uk.com](http://www.bda.uk.com))



### C.5.8. Orthoptic Care

Orthoptists are experts in the assessment and treatment of eye movement disorders and visual impairment following stroke. Diplopia, reduced vision, ocular muscle imbalance, visual field deficits and visual inattention are common visual deficits that occur following stroke. Orthoptists can assist with many of these problems by providing information on compensatory strategies, suggesting reading aids, using prisms and occlusion for diplopia or visual disturbances and advising on visual search techniques for visual field loss and inattention. Orthoptists can provide quantitative assessment of vision required for driving standards.

#### The key elements of orthoptic care

<b>Assessment:</b>	<b>Intervention:</b>
<ul style="list-style-type: none"><li>• Using quantitative and qualitative tests to investigate the visual status of the patient</li><li>• Providing an explanation regarding the presence of nystagmus and explaining the symptoms of oscillopsia, vertigo or blurring</li><li>• Assessing visual field loss and arranging formal visual field assessment; providing the patients with the option of referral to ophthalmology</li><li>• Assessing and identifying the extent of visual inattention/spatial neglect</li><li>• Providing written/verbal information to the MDT on the ocular status of the patient such as: identifying the patient's glasses that are required for reading and distance tasks; identifying if the patient has any difficulty with their vision that may affect balance, judging distances and mobility.</li></ul>	<ul style="list-style-type: none"><li>• Advising, in the presence of ocular motility disorders and in particular gaze palsies, how to use residual visual functions including compensatory head postures/ movements and positioning of objects</li><li>• Helping to alleviate symptoms of diplopia or asthenopia using prisms, occlusion, orthoptic exercises or compensatory head postures</li><li>• Advising on the strategies available to manage visual field loss and visual inattention/spatial neglect</li><li>• Providing advice, in the presence of nystagmus, on compensatory head postures or positioning and using prisms or occlusion where appropriate to lessen symptoms.</li></ul>

### C.5.9. Pharmaceutical Care

Pharmacists work as part of the multidisciplinary team to provide patient-focused medication-related care. This “pharmaceutical care” has been defined as ‘The responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient's quality of life’.

In providing medicines, pharmacists share the responsibility of ensuring best use of the medicines, whilst protecting the patient from harm from those medicines.

Pharmacists aim to ensure the exact purpose of drug treatment and the desired patient outcomes are clear and shared by doctors, patients and other multidisciplinary team members.

## The key elements of pharmaceutical care

<b>The role of the pharmacist</b>	
<ul style="list-style-type: none"> <li>• Providing information to patients, carers and healthcare staff about medicines and their safe use</li> <li>• Providing individualized pharmaceutical care plans e.g.:               <ul style="list-style-type: none"> <li>- appropriate and evidence based medicines</li> <li>- safe administration of medicines, eg liquids or by enteral feeding tubes</li> <li>- minimising side effects</li> <li>- avoiding medicine interactions</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Assessing an individual's ability to manage their own medicines, and identifying suitable support to enable this, eg:               <ul style="list-style-type: none"> <li>- medication charts</li> <li>- easy-open containers</li> <li>- large print labels</li> </ul> </li> <li>• Facilitating transfer of care for patients by communicating with both health and social care staff about individual needs</li> <li>• Ensuring the continued provision of medicines from both secondary and primary care, eg               <ul style="list-style-type: none"> <li>- organising delivery of medication</li> <li>- weekly supply if necessary</li> </ul> </li> </ul>

Adapted from the United Kingdom Clinical Pharmacy Association (UKCPA) Statement on Pharmaceutical Care.

### C.6. PROVISION OF INFORMATION

This section reflects the issues likely to be of most concern to patients and their carers. These points are provided for use by health professionals when discussing rehabilitation after stroke with patients and carers and in guiding the production of locally produced information materials.

A characteristic feature of stroke unit care is the provision of information about stroke and stroke rehabilitation to patients and carers.

Active information provision was defined as an intervention which, following the provision of the information, includes a purposeful attempt to allow the participant to assimilate the information and which incorporates planned follow up for clarification and consolidation or reinforcement, for example offering repeated opportunities to ask questions. Active information provision has been shown to improve knowledge of stroke, increase aspects of patient satisfaction and reduce patient depression scores.

#### C.6.1. Information needs of patients and carers

- Stroke patients and their carers should be offered information about stroke and rehabilitation.
- Information should be available to patients and carers routinely and offered using active information strategies, which include a mixture of education and counseling techniques.

- Information should be tailored to the information needs of individual patients and carers, followed up to check understanding and ensure clarity, and repeated as appropriate.
- Information should be tailored to the communication needs and visual needs of individual patients and carers. Patients with aphasia should be provided with accessible and easy to read material, be given sufficient time for assimilation and be followed up by health professionals to ensure understanding.
- Information needs should be monitored and information should be provided at appropriate time points during the recovery trajectory, as information needs change over time

**Box: Examples of Leaflets providing useful information**

<b>Topics</b>
General information regarding Stroke
Positioning
Sexuality
Speech and language
Swallowing and diet
Exercise
ADL
How to make small adaptive and assistive devices
Home adaptations
Return to Society
Urinary and Faecal Management

**C.6.2. Checklist for Provision of Information**

<b>Diagnosis and assessment</b>
<ul style="list-style-type: none"> <li>• Ensure patients (and their carers) who have not been admitted to hospital are aware of the reasons and the alternatives to hospital admission (eg neurovascular clinic review).</li> <li>• Fully inform patients and carers of the purpose and results of all investigations.</li> <li>• Inform patients that they may be asked to take part in a clinical trial. Explain what this involves and ensure patients and carers are aware of the risks involved.</li> </ul>
<b>Acute care and rehabilitation</b>
<ul style="list-style-type: none"> <li>• Advise patients and carers of the treatment setting, eg stroke unit or general rehabilitation ward. <ul style="list-style-type: none"> <li>○ Ensure patients are aware that regardless of the treatment setting, they will be treated by staff who have specialist knowledge and skills in stroke.</li> </ul> </li> <li>• Discuss the following problems with patients and carers: <ul style="list-style-type: none"> <li>○ shock and disbelief</li> <li>○ anxiety</li> <li>○ fear</li> <li>○ depression</li> <li>○ frustration</li> <li>○ fatigue</li> <li>○ difficulty in comprehending what has happened.</li> </ul> </li> </ul>

- Discuss the following with patients and their carers at the appropriate times during rehabilitation:
  - employment issues/vocational rehabilitation
  - driving
  - impact on children and families
  - finances
  - sex
- Ensure patients and carers are aware of the importance of early mobilisation.
- Actively involve patients and carers in setting and meeting rehabilitation goals. Patients and their carers need to understand:
  - the rehabilitation process and the probable course of recovery
  - the patient's and carer's role in their recovery
  - the action taken to reduce the risk of future strokes (FAST).
- Advise carers of the need for encouragement from them at home to help with the patient's recovery.
- Offer reassurance to patients and carers that exercise and 'getting out' will not cause another stroke.
- Provide a range of information in a variety of formats suited to their individual needs, eg booklets, DVDs, CDs
- Inform patients that they may be asked to take part in a clinical trial. Explain what this involves and ensure patients and carers are aware of the risks involved.

#### **Communication**

- Provide information to patients with communication difficulties or cognitive dysfunction in an appropriate manner (eg, accessible and easy to read information resources and communication aids, as appropriate).
- Provide encouragement to patients and carers that the condition may improve.
- Ensure that time is made available to discuss the conditions and answer questions.
- Give written information to patients and carers to read in their own time.
- Ensure patients and carers are aware of what help is available in the community for people who have had a stroke, including communication partners and, where appropriate, telerehabilitation services, including speech and language therapy.

#### **Discharge planning**

- Keep patients and carers fully informed and involved at each stage of the discharge process.
- Ensure patients and carers are aware of the importance of attending follow-up appointments.
- Advise patients that their GP and primary care team will be fully informed about their hospital admission and will provide long term follow up at home. In situations where this is not possible, the patient and carers should be advised to visit their family doctor and inform them of their discharge report following hospital stay.
- Encourage patients and carers to make and attend appointments with their GP or practice nurse as necessary.
- Advise patients and carers of the need to carry out assessments for assistive devices for activities of daily living, adaptations and equipment, eg bath rails, toilet frames, hand rails.

- Advise that recovery can go on for a long time and that patients and carers should try to remain active in their recovery even if progress seems slow.
- Provide telephone contact details for a nominated member of the MDT to deal with any immediate problems following discharge.

#### **Community support**

- Encourage patients to take responsibility for their own recovery with the help and support of healthcare professionals.
- Supply information about how to self refer at a later stage for further therapy.
- Provide information about statutory benefits
- Ensure information is provided about vocational rehabilitation services.
- Ensure patients with communication problems are aware of voluntary groups
- Advise patients and carers of how they can access stroke services, Exercise after Stroke, day centres and other stroke or leisure clubs.

## **C.7. IMPLEMENTING THE GUIDELINE**

This section provides advice on the resource implications associated with implementing the key clinical recommendations, and advice on audit as a tool to aid implementation. The reasons for any differences should be assessed and addressed where appropriate. Local arrangements should then be made to implement the national guideline in individual hospitals, units and practices.

### **C.7.1. Resource implications of key recommendations**

<b>Recommendation</b>	<b>Section</b>	<b>Resource implication</b>
The core multidisciplinary team should include appropriate levels of physiatrists, nursing, medical, physiotherapy, occupational therapy, speech and language therapy, and social work staff.		Possible resource implication in some areas due to staffing numbers especially in AHP and social work.
Stroke patients should be mobilised as early as possible after stroke.		Resource implication in terms of staff time especially nurses and AHPs. Furthermore staff knowledge, until training provided systematically.
Personal ADL training by occupational therapists is recommended as part of an in-patient stroke rehabilitation programme.		Resource implication in terms of staff (OT) but may incur a saving in terms of length of hospital stay.
Treadmill training may be considered to improve gait speed in people who are independent in walking at the start of treatment.		Resource implication in terms of staff time (physiotherapy) and on location of therapy (eg in hospital in physiotherapy department or in

Where the aim of treatment is to have an immediate improvement on walking speed, efficiency or gait pattern or weight bearing during stance, patients should be assessed for suitability for an AFO by an appropriately qualified health professional.		Resource implication in terms of cost of the AFO and staff to fit AFO, but may incur a saving in terms of length of hospital stay.
Gait-oriented physical fitness training should be offered to all patients assessed as medically stable and functionally safe to participate, when the goal of treatment is to improve functional		Resource implication in terms of staff time (physiotherapy) and on location of therapy (eg in hospital in physiotherapy department or in the leisure service).
Rehabilitation should include repetitive task training, where it is assessed to be safe and acceptable to the patient, when the aim of treatment is to improve gait speed, walking distance, functional ambulation or sit-to-		Resource implication in terms of staff time (physiotherapy) and on location of therapy (eg in hospital in physiotherapy department or in the leisure service).
Where considered safe, every opportunity to increase the intensity of therapy for improving gait should be pursued.		Resource implication in terms of staff (physiotherapy).
Splinting is not recommended for improving upper limb function.		Cost saving in terms of reducing inappropriate
Stroke patients should have a full assessment of their cognitive strengths and weaknesses when undergoing rehabilitation or when returning to cognitively demanding activities such as driving or work. Cognitive assessment may be carried out by occupational therapists with expertise in neurological care, although some patients with more complex needs will require access to specialist neuropsychological		Resource implication in terms of staff time (especially nursing, OT and psychology), but adequate assessment of cognitive issues is likely to improve rehabilitation outcomes.
All stroke patients should be screened for visual problems, and referred appropriately.		Resource implication in terms of staffing (orthoptics and ophthalmology).



	<p>Ongoing monitoring of nutritional status after a stroke should include a combination of the following parameters:</p> <ul style="list-style-type: none"> <li>• biochemical measures (ie low pre-albumin, impaired glucose metabolism)</li> <li>• swallowing status</li> <li>• unintentional weight loss</li> <li>• eating assessment and dependence</li> </ul>		<p>Possible resource implication in terms of dietetic staff time.</p>
	<p>Every service caring for patients with stroke should develop and adhere to local urinary and faecal continence guidelines including advice on appropriate referral.</p>		<p>Short term resource implications in terms of local guideline development, printing and implementation strategies.</p>
	<p>Electrical stimulation to the supraspinatus and deltoid muscles should be considered as soon as possible after stroke in patients at risk of developing shoulder subluxation.</p>		<p>Resource implication in terms of equipment purchase and maintenance, staff training and time.</p>
	<p>Given the complexity of diagnosis and management of post-stroke shoulder pain consideration should be given to use of algorithms or use of an integrated care pathway.</p>		<p>Resource implication in implementing an algorithm. May be offset by preventing inappropriate use of strapping and other interventions.</p>
	<p>Appropriate referral to health and clinical psychology services should be considered for patients and carers to promote good recovery/adaptation and prevent and treat abnormal adaptation to the consequences of stroke.</p>		<p>Resource implication in terms of psychological services</p>
	<p>Patients with mild/moderate stroke should be able to access stroke specialist early supported discharge services in addition to conventional organised stroke inpatient services.</p>		<p>Resource implication in terms of specialised stroke services in the community. May be offset in terms of length of hospital stay.</p>
	<p>Stake holders should consider providing a specific local expert therapist to provide advice to rehabilitation teams including signposting to relevant statutory services providing opportunities for people with disabilities</p>		<p>Resource implication in terms of appointing new staff and/or training staff.</p>

	Information provision should be available to patients and carers routinely and offered using active information strategies, which include a mixture of education and counselling techniques.		Resource implications in terms of staff time developing and delivering information, printing and other production costs.
	Community-Based Rehabilitation should be provided if there is any possibility to refer to such services. This includes referral to return-to-work support, vocational training, support to return to school, introduction to peer-support groups and self-help groups, if available. Monitoring the patient by the “local community support” (this can be the family doctor” for any new or ongoing needs).		Resource implication regarding knowledge of Stroke services and where/how to refer.
	The use of a rehabilitation outcome measure to predict rehabilitation outcome. An example could be Barthel Index (shown to be a prognostic indicator of ability following stroke (ref.16)		Resource implication regarding countrywide staff knowledge may limit the use of such an outcome measure.

### C.7.2. Auditing Current Practice

A first step in implementing a clinical practice guideline is to gain an understanding of current clinical practice. Audit tools designed around guideline recommendations can assist in this process. Audit tools should be comprehensive but not time consuming to use. Successful implementation and audit of guideline recommendations requires good communication between staff and multidisciplinary team working.

The minimum data required for audit provide information on:

- Patient demographics
- The process of care and its appropriateness
- The performance of services in relation to the national clinical standards.

#### Key points to audit

The guideline development group has also identified the following as key points to audit to assist with the implementation of this guideline:

	Recommendation		
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	Patients and carers should have an early active involvement in the rehabilitation process.	Document when patients and carers are involved in decision making and what the participation involves (define early and active).
	Stroke patients should be mobilized as early as possible after stroke.	Document when patients are mobilized (define early and mobilization).
	Personal ADL training by occupational therapists is recommended as part of an in-patient stroke rehabilitation programme.	Document the frequency of ADL training (define the distinction between training and assisting a patient to get washed and dressed).
	Splinting is not recommended for improving upper limb function.	The proportion of patients receiving an upper arm splint (define the purpose of the splint).
	Every service caring for patients with stroke should develop and adhere to local urinary and faecal continence guidelines including advice on appropriate referral.	Audit practice against local guideline.
	Given the complexity of diagnosis and management of post-stroke shoulder pain consideration should be given to use of algorithms or use of an integrated care pathway.	Audit practice against key stages in an algorithm.
	Appropriate referral to health and clinical psychology services should be considered for patients and carers to promote good recovery/adaptation and prevent and treat abnormal adaptation to the consequences of stroke.	Document how many patients require psychological service, how many are referred and the time between referral and appointment.
	Referral to medical and social services following discharge. Referral to services include: community nursing care, outpatient rehabilitation, Traditional Mongolian National Rehabilitation Centre for Orthotics, social services (social worker), referral to NGO or voluntary services.	Document the number of patients requiring referral to services on discharge from inpatient rehabilitation at hospital.

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## ANNEX

- Annex 1. Example of local Stroke Care Protocol
- Annex 2. Model of the International Classification of Functioning, Disability and Health
- Annex 3. Example of Rehabilitation Doctor Assessment Form.
- Annex 4. Example of Physiotherapy Assessment Form
- Annex 5. Example of Occupational Therapy Assessment Form
- Annex 6. Example of Speech and Language Assessment Form
- Annex 7. Example of Rehabilitation Discharge Letter
- Annex 8. Example of Multidisciplinary Problem list and goal setting (using the ICF)
- Annex 9. Stroke Checklist Guideline (to aid implementation of Clinical Guideline and local protocol)
- Annex 12. Contact information of CBR-Coordinators in Mongolia

## ANNEX1

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### Protocol on Stroke Rehabilitation

Hospital Name : \_\_\_\_\_

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<b>1. Organisation of Services</b>
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#### **1.1. Overview**

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This protocol will serve as a local rehabilitation protocol post-stroke for the 1st Hospital/No. 3 Hospital. The protocol is based on the (national) clinical guideline, which has drawn on the evidence-base from international guidelines.

This protocol will take starting point in the current local hospital situation and what is realistically possible to implement at present. – As the Rehabilitation Department develops (human resources, capacity, skills, knowledge, equipment, other resources), the protocol must be reviewed and updated.

The Protocol on Stroke Rehabilitation needs to be used in line with the Medical Stroke Protocol.

Review Date: (write date) - *annually*

#### **1.2. Organisation of Human Resources**

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Evidence from international clinical guidelines on stroke recommend the following staffing per 10 bed Stroke Unit: 1-2 PTs (divided between qualified and unqualified staff)

1-2 OTs (divided between qualified and unqualified staff)

0.2-0.6 ST

Part-time Social Worker

Medical Doctors: 0.6-1.5 (divided between junior doctor and consultant)

Staff nurses: 10 nurses per 24-hour shift (divided between trained and untrained)

The pilot Stroke Unit in No. 1 /No. 3 Hospital will have the following number of beds:

Acute Stroke Unit (equivalent to intensive care unit): **11 beds**

Comprehensive Care Unit: **20 beds**

Therefore the ideal human resource structure for a 31-bed Stroke Unit, using the current available evidence suggests:

3-6 x PT

3-6 x OT

0.6 - 1.8 x ST

Medical Doctors: 1.8 – 4.5 (divided between junior doctor and consultant)

Staff nurses: 30 nurses per 24-hour shift (divided between trained and untrained. 2 trained:1untrained nurse)

Psychologist, dietician and orthotist-prosthetist are also required. Currently no optimum staffing levels in international guidelines, however there should be specialized staff in (neuro)psychology, dietetics and orthotics-prosthetics to meet the departments/patients' needs.

First human resource structure to be implemented in the stroke rehabilitation department (possible with current human resources):

No. 1 Hospital	No. 3 Hospital
<ul style="list-style-type: none"><li>➤ 2 Rehabilitation Doctors (physicians)</li><li>➤ 3 x PT</li><li>➤ 3 x Rehab Nurses (OT)</li><li>➤ 1 x ST ( Rehabilitation Doctor after training abroad)</li></ul>	<ul style="list-style-type: none"><li>➤ 2 Rehabilitation Doctors (physicians)</li><li>➤ 1 x PT</li><li>➤ 2 x Rehab Nurses (PT)</li><li>➤ 3 x Rehab Nurses (OT)</li><li>➤ 1 x ST (Rehabilitation Doctor after training abroad)</li></ul>

### 1.3. Overview of the Stroke Rehabilitation Department Structure

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**The Clinical Guidelines on Stroke Rehabilitation** will be the evidence for which the local protocol will be implemented. The rehabilitation staff should be aware of the clinical guidelines and their content (see Annex 1).

**The Local Protocol on Stroke Rehabilitation** will guide the local practices in terms of the overall stroke rehabilitation management of the patient, taking into consideration the international evidence-base and current best practise. However the local protocol is based upon the local context in terms of human resources, knowledge and skills and equipment. The local protocol is reviewed and amended regularly (annually), when there is a development within the local situation (i.e. more staff, new treatments after increased knowledge and skills from training and purchase of equipment).



**The Checklist Guidelines** will guide the management of rehabilitation from admission to discharge, ensuring that all aspects of the patient care pathway are covered. Furthermore it will act as a reference for where more information can be sought within the local Stroke protocol and the National Stroke guideline. Finally the checklist guideline can be part of the audit process, as it will be clear from the checklist guideline, how soon after admission a patient was assessed by the rehabilitation team, how soon the patient sat up in bed, how soon after the patient was able to mobilise, any secondary complications etc. (see Annex 3).

**Stroke Registry** is the Stroke database in which all patients will be included to ensure a comprehensive information on Stroke patients at the local hospital and nationally.

**Standard Rehabilitation Assessment Forms and Discharge Form** are the evaluation forms that will be used with each stroke patient in order to ensure that the assessment and discharge is standardised within the hospital.

**Weekly MDT Meeting** in the Neurology Department will include the whole Stroke Unit Multidisciplinary Team: Neurologist, Rehabilitation Doctors, Physiotherapist and Rehabilitation Nurses. Dietician may also be involved as required. When other members of the Multidisciplinary Team are recruited to the hospital, they should be included to this meeting (Social Worker, Psychologist, Occupational Therapist, Orthotist-Prosthetist etc.).

MDT meetings should be held weekly. The duration should be 1 ½ - 2 hours depending on the amount of Stroke patients admitted. Normally there may only be time for a 10-15 minute discussion on each patient. For this reason, often there may not be time to include the patient to the MDT meeting. If more time is required as well as a particular meeting with patient and family, then a family conference should be arranged, in which some designated members of the MDT will participate in the meeting with the family.

The meeting will include short update on the current medical status, identification of patient problems (using the International Classification of Functioning, Disability and Health), setting rehabilitation goal, review progress, plateau or deterioration within already set goals and finally discharge is planned. It is important already to start discussing discharge plans from admission as there may be issues (social, environmental, economic) that take time to solve. Issues that may require solving could be ensuring that the patient has a wheelchair or walking aid before discharge, that the family have been able to ensure a toilet chair for the patient or the bed/chair height needs to be raised etc.

**Family conferences/meeting** between the multidisciplinary team and the patient, carers and family should be arranged to discuss goal setting and discharge planning.

**Participation in Daily Neurology Department Ward Round.** One rehabilitation Doctor should participate every morning to the Neurology Ward Round in order to know of any new patients and the current medical status of all other Stroke patients.

#### **1.4. Rehabilitation Staff Capacity Building**

In-service training

<b>2. Management and Prevention Strategies</b>
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Medical outcome measure

Glasgow Coma Scale score for prognostic indicator

Rehabilitation Staff Responsible:

## Respiratory **Assessment**

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Rehabilitation Staff Responsible:

## **Swallowing Assessment**

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Rehabilitation Staff Responsible:

## **Sit-up-in-bed as soon as medically stable**

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Rehabilitation Staff Responsible:

## **Positioning**

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**Positioning (prevention of respiratory complications, pressure sore, contracture management, stimulation):**

Advice and education on positioning and manual handling to family

Rehabilitation Staff Responsible:

## **Initial Assessment by Rehabilitation Doctor**

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When : within first 72 hours following a Stroke

Rehabilitation Staff Responsible:

## Rehabilitation Risk Assessment – For active movement and mobilisation

### REHABILITATION RISK ASSESSMENT

Definition of "medically stable": Vital signs are stable (GCS, HR, BP, SpO<sub>2</sub>, RR, temperature). The vital signs are highlighted in the below table. Use Risk assessment form to identify patients where rehabilitation is absolutely contra-indicated, relatively contra-indicated or precaution only and write this into their treatment records. The figures in brackets are the normative values.

<b>Absolute Contraindications</b>  <b>A1)</b> Acute MI  <b>A2)</b> Unstable angina  <b>A3)</b> Acute PE  <b>A4)</b> Acute pericarditis / endocarditis / myocarditis  <b>A5)</b> Uncompensated heart failure  <b>A6)</b> Serious arrhythmias  <b>A7)</b> Severe aortic stenosis  <b>A8)</b> Uncontrolled systemic hypertension  <b>A9)</b> Acute thrombophlebitis / DVT  <b>A10)</b> ICP bolt > 20mmHg (7-15mmHg)	<b>Relative Contraindications</b> (depending on your clinical assessment of the patient, very controlled gentle rehabilitation can be completed)  <b>R1)</b> Pulmonary hypertension  <b>R2)</b> Brady / tachyarrhythmias  <b>R3)</b> Moderate valvular disease  <b>R4)</b> Temporary pacing  <b>R5)</b> Open abdomen  <b>R6)</b> Uncontrolled pain  <b>R7)</b> Inadequate sleep  <b>R8)</b> Encephalopathy (grade I or II)	<b>Precautions</b> (rehabilitation can be completed, paying attention to the below signs and symptoms and any worsening)  <b>P1)</b> Blood glucose < 3.0 or > 6.0 mmol/L (4.4-6.1mmol/L)  <b>P2)</b> RR > 30 (12-20 per minute)  <b>P3)</b> Medications requiring cardiac monitoring  <b>P4)</b> Low Hb < 10g/dL (male:13-17.5g/dL female:12-16g/dL)  <b>P5)</b> WBC > 11.0 x 10 <sup>9</sup> /L (4-11*10 <sup>9</sup> /L)  <b>P6)</b> Platelets < 150 or > 450 x 10 <sup>9</sup> /L (150-450*10 <sup>9</sup> /L)  <b>P7)</b> Hyperthermic  <b>P8)</b> Lightheadedness / vertigo

<p><b>A11)</b> RR &gt; 40 (12-20 per minute)</p> <p><b>A12)</b> Uncompensated ABGs (pH &lt; 7.34 or &gt; 7.46 ) (normal value: pH 7.35-7.45)</p> <p><b>A13)</b> Presence of IABP</p> <p><b>A14)</b> Medication necessitating continuous cardiac monitoring</p> <p><b>A15)</b> O<sub>2</sub> saturations &lt; 85% on air or oxygen(97-99%)</p> <p><b>A16)</b> HR &lt; 30–35 bpm and &gt; 150–180 bpm (60-100)</p> <p><b>A17)</b> Resting BP</p> <ul style="list-style-type: none"> <li>- systolic &lt; 90 or &gt; 200mmHg (90-120)</li> <li>- diastolic &gt; 110mmHg (60-80)</li> </ul> <p><b>A18)</b> Acute abdomen</p> <p><b>A19)</b> Electrolyte imbalance</p> <p><b>A20)</b> Encephalopathy (grade III or IV)</p> <p><b>A21)</b> Patient sedated</p> <p><b>A22)</b> Sengstaken-Blakemore tube</p> <p><b>A23)</b> Suspected or known dissecting aneurysm</p>	<p><b>R9)</b> Respiratory weaning</p>	<p><b>P9)</b> Acute infection with fever (37.7°C and ↑ WBC)</p> <p><b>P10)</b> Nausea, vomiting, headache, visual disturbances</p> <p><b>P11)</b> Drop in systolic BP &gt; 20mmHg below pre-exercise level</p> <p><b>P12)</b> Rise in systolic BP to &gt; 250mmHg or &gt; 20mmHg above resting level</p> <p><b>P13)</b> Rise in diastolic BP to &gt; 120mmHg</p> <p><b>P14)</b> Postural hypotension</p> <p><b>P15)</b> Femoral vascath</p> <p><b>P16)</b> Albumin &lt; 20 (36-50g/L)</p> <p><b>P17)</b> Poor ejection fraction</p> <p><b>P18)</b> Continuous diarrhoea</p> <p><b>P19)</b> Patient non-compliance</p> <p><b>P20)</b> Weight of patient</p> <p><b>P21)</b> Non absorption of feed</p> <p><b>P22)</b> BMI&lt;20 , &gt;30</p>
--	---------------------------------------	--

Adapted from F Oliver 1998, St Georges Guidelines 2003 and King's College Hospital NHS Trust Guidelines, UK, August 2005

Rehabilitation Staff Responsible:

Comprehensive Rehabilitation Assessment

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Rehabilitation Staff Responsible:

**Basic Communication Assessment**

---

Rehabilitation Staff Responsible:

**Physiotherapy Exercise**

---

Rehabilitation Staff Responsible:

**Mobility and Transfers**

---

Rehabilitation Staff Responsible:

**Functional Exercise**

---

Rehabilitation Staff Responsible:

Cognitive Treatment and Stimulation

---

Rehabilitation Staff Responsible:

**Basic Communication Management**

---

Rehabilitation Staff Responsible:

**Bowel and Bladder Assessment and Management**

---

Rehabilitation Staff Responsible:

Rehabilitation Staff Responsible:

**Other treatments to add...specific to the hospital**

---

Rehabilitation Staff Responsible:

**Other treatments to add**

---

Rehabilitation Staff Responsible:

**Other treatments to add**

---

Rehabilitation Staff Responsible:

**Assessment and Management of Secondary Complications**

---

Rehabilitation Staff Responsible:

**Pressure Sore**

---

Rehabilitation Staff Responsible:

Deep Vein Thrombosis (DVT)

---

Rehabilitation Staff Responsible:

**Oedema**

---

Rehabilitation Staff Responsible:

**Shoulder Subluxation**

---

Rehabilitation Staff Responsible:

**Contracture**

---

Rehabilitation Staff Responsible:

**Spasticity**

---

Rehabilitation Staff Responsible:

**Central Post-stroke Pain**

---

Rehabilitation Staff Responsible:

**Shoulder Pain**

---

Rehabilitation Staff Responsible:

**Complex Regional Pain Syndrome**

---

Rehabilitation Staff Responsible:

<b>3. Transfer from Hospital to Home</b>
--

**Current Situation**

---

**Discharge Planning**

---

**Referral to community services**

---

<b>4. Provision of Information</b>
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**Information and education to Family during hospital stay**

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Manual handling

Positioning

Exercises

Functional activity

Cognitive stimulation

Communication

Bowel and bladder management

Management of swallowing impairment

Management of language impairment

The method of giving information

Rehabilitation Staff Responsible:

**Information to Family before discharge**

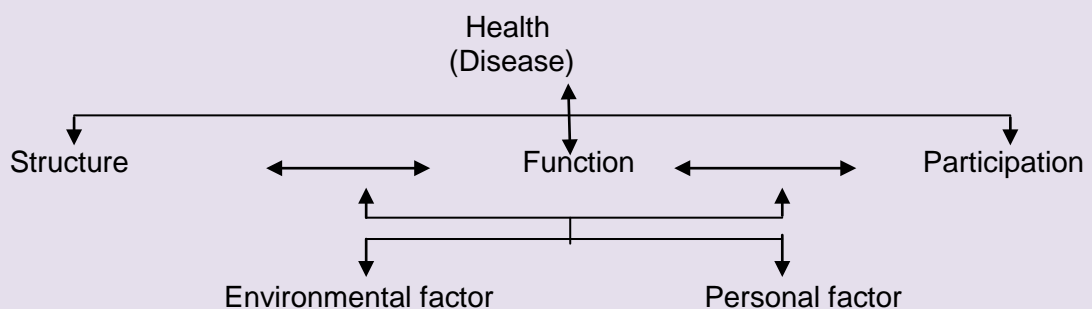
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Where to buy assistive devices (mobility aid, ankle-foot-orthosis)

Where to buy/ how to make adaptive devices

## **ANNEX 2**

Model of the International Classification of Functioning, Disability and Health



### ANNEX 3. Example of Rehabilitation doctor assessment form

#### Rehabilitation Doctor – Neurological Assessment

Card No \_\_\_\_\_ Ward \_\_\_\_\_ Room \_\_\_\_\_

Age: \_\_\_\_\_ Gender: \_\_\_\_\_ Date of stroke \_\_\_\_\_ Admission date \_\_\_\_\_

Diagnosis	PMH/ Family History	
Reason for referral		
HPC		
Medications		
How is the medication Managed?:		

Problem with communication

No

Need for communication Ax: Yes

Problem with swallowing

Need for swallow Ax: Yes  No

If yes, complete the ST form

#### B: OBJECTIVE ASSESSMENT

##### I. Cerebral (Cognitive) Function (filled in by Rehab Doctor or OT)

Does the person	Y/N	Comments:
Respond to your requests/questions and make appropriate		

eye contact?		
Know his date of birth?		
Know where he is? Know his home address? Know his telephone number?		
Know the date and day of the week? Know the approximate time? Know the season?		
Attends to your conversation without getting distracted?		
Remember his breakfast this morning? Remember your name and surname?		
Know the number to call when in emergency? Know what to do when the house is on fire?		
Able to identify his own difficulties?		
<u>Mental Capacity</u> Able to understand the purpose of your visit? Able to retain information and use them to identify and communicate own goals?		
<b>Alternatively, complete standardised cognitive screening tool: MMSE/ GP Cog    Score:</b>		
Further Cognitive Test needed: Yes    No    Details of the Outcome Measures:		

**II. Cerebellar function**

Nystagmus \_\_\_\_\_ Tremor: (intentional/resting); Heel to shin \_\_\_\_\_  
 Finger to nose \_\_\_\_\_ Tandem \_\_\_\_\_ Romberg \_\_\_\_\_  
 Rapid alternating movements \_\_\_\_\_ Gait ataxia \_\_\_\_\_

**III. Cranial nerve function**

Ptosis \_\_\_\_\_ Isocoria \_\_\_\_\_ Pupillary light reflex \_\_\_\_\_  
 Eyeball movement \_\_\_\_\_ Corneal reflex \_\_\_\_\_  
 Facial sensation \_\_\_\_\_ Facial weakness \_\_\_\_\_ tongue movement/uvular deviation  
 gag reflex \_\_\_\_\_ shoulder elevation \_\_\_\_\_

**IV. Range of Motion**

Upper extremity: \_\_\_\_\_  
 \_\_\_\_\_  
 Lower extremity : \_\_\_\_\_  
 \_\_\_\_\_

**V. Manual muscle testing**

Upper extremity: \_\_\_\_\_  
\_\_\_\_\_

Lower extremity: \_\_\_\_\_  
\_\_\_\_\_

**VI. Muscle tonus**

Upper extremity: \_\_\_\_\_  
\_\_\_\_\_

Lower extremity: \_\_\_\_\_  
\_\_\_\_\_

**VII. Sensation**

\_\_\_\_\_  
\_\_\_\_\_

**VIII. Reflex**

Bj \_\_\_\_\_ Babinski \_\_\_\_\_  
Tj \_\_\_\_\_ Hoffman \_\_\_\_\_  
Kj \_\_\_\_\_ Ankle clonus \_\_\_\_\_  
Aj \_\_\_\_\_

**IX. Bladder and bowel function** (See Neurologist assessment for full details)

Voiding desire \_\_\_\_\_ fullness sense \_\_\_\_\_ passage sense \_\_\_\_\_ voiding  
method \_\_\_\_\_

bowel passage sense \_\_\_\_\_ anal tone \_\_\_\_\_ voluntary anal  
contraction \_\_\_\_\_

defecation  
method \_\_\_\_\_

**X. Vision**

Assessment of:	Comments
Acuity (glasses)	
ROM/ nystagmus	
Visual fields	
Scanning	
Further assessment needed: Y/ N If yes, refer to Ophthalmologist	

**XI. Perceptual** (filled in by Rehab Doctor or OT)

Assessment of:	Problem Y/N	Comments
Body schema		
Sequencing (ideational dyspraxia)		

Inattention/Neglect		
Spatial relations (R/L, above/below)		
Stereognosis		
Clock drawing		
Further assessment needed: Y/ N Outcome measures:		

**XII. Activities of daily living** (See PT/OT assessment for full details)

Washing\_\_\_\_\_ Dressing\_\_\_\_\_ Grooming\_\_\_\_\_ Toileting\_\_\_\_\_  
 Feeding\_\_\_\_\_ Drinking\_\_\_\_\_

**XIII. Functional level** (See PT/OT assessment for full details)

Bed mobility\_\_\_\_\_ Lie-to-sit\_\_\_\_\_ Sitting balance\_\_\_\_\_ Sit-to-stand\_\_\_\_\_  
 Standing\_\_\_\_\_ Transfers\_\_\_\_\_ Mobility/ gait (+/- aids/orthoses)\_\_\_\_\_

Social \_\_\_\_\_

Psychologic \_\_\_\_\_

**XIV. Lab, studies, investigations**

Results: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

ANNEX 4. Example of Physiotherapy assessment Form

**Physiotherapy – Neurological Assessment**

Card No \_\_\_\_\_ Ward \_\_\_\_\_ Room \_\_\_\_\_

Age: \_\_\_\_\_ Gender: \_\_\_\_\_ Date of stroke \_\_\_\_\_ Admission date \_\_\_\_\_

Diagnosis:

Reason for referral:

Investigation results(CT/MRI/Other:)

**I. Objective Assessment**

Hand Dominance: Right / Left

		LEFT				RIGHT					
		Movement Direction	ROM		MMT						
			Admission	Discharge	Admission	Discharge					
UPPER LIMB	Muscle Power/ROM	shoulder	Extension								
			Flexion								
			ER								
			IR								
			AB								
			ADD								
		Elbow	Extension								
			Flexion								
		Forearm	Pronation								
			Supination								
		Wrist	Flexion								
			Extension								
			Ulnar deviation								
			Radial deviation								



	Finger	Flexion																		
		Extension																		
		Grasp																		
		Opposition																		
	Thumb	MP flexion																		
		IP flexion																		
		Adduction																		
		Abduction																		
Tone	Modified Ashworth Scale										Modified Ashworth Scale									
	UE										UE									
	Specify Muscle group										Specify Muscle group									
	(write muscle tested)										(write muscle tested)									
Reflexes	Bj Tj Hoffman										Bj Tj Hoffman									
Sensation (LT/ PP & Temp)  proprioception, two-point discrimination																				
Coordination  FNF  RAM																				
Prehension patterns (gross, fine)																				
Bilateral activities																				
Other (Neurological/	Synergy/Associated reactions/ pain syndromes/ Subluxation/ oedema/ contracture etc.																			

	Non Neurological)	
--	-------------------	--

**Need for Specific U/L Ax:**      Yes     No

<b>LOWER LIMB</b>	<b>Muscle Power/ROM</b>	Movement Direction	ROM				MMT				
			Admission		Discharge		Admission		Discharge		
		Hip	Extension								
			Flexion								
			ER								
			IR								
			AB								
			ADD								
		Knee	Extension								
			Flexion								
Ankle	DF										
	PF										
Tone  (see Modified Ashworth Scale below)	<b>Modified Ashworth Scale</b>					<b>Modified Ashworth Scale</b>					
	LE					LE					
	Specify Muscle group (write muscle tested)					Specify Muscle group (write muscle tested)					
<b>Reflexes</b>	Babinski Kj Aj Ankle clonus					Babinski Kj Aj Ankle clonus					
Sensation (LT/ PP & Temp)/  Proprioception											
Coordination  HSH											

	RAM		
	Other (Neurological/ Non Neurological )	Synergy/Associated reactions/ pain syndromes/ Subluxation/ oedema/ contracture etc.	
Key scale: <i>Tone</i> : Flaccid/Mild/Moderate/Severe; <i>ROM</i> : Degrees or Normal/Limited/Severe; <i>Strength</i> : MMT: <i>Sensation</i> : absent/diminished/normal; <i>Distal/Proximal</i> .			

**II. Physical presentation on Body Chart**

(Draw selective movement/gross movement, tone, involuntary movement, deformity, sensation, reflexes as appropriate)

TONE (cf to Normal)	Mild	Moderate	Severe
Increased tone	+	++	+++
Decreased tone	-	--	---
Overuse	*	**	***
Pain	Mark as ////		
Areas left blank = normal			

**POSITION assessed in:**

SUPINE / SITTING / STANDING

Head and neck

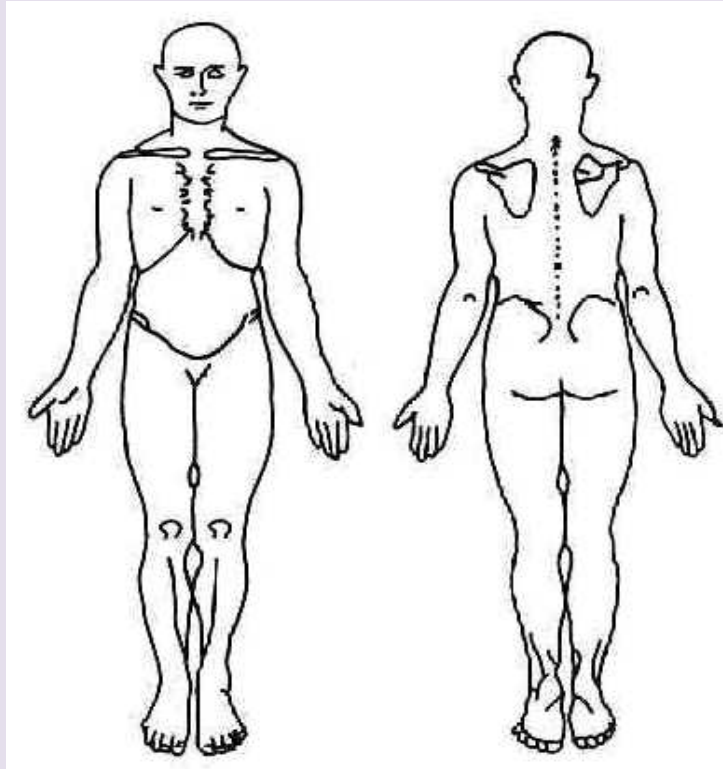
Right upper limb

Left upper limb

Trunk and pelvis

Right lower limb

Left lower limb



**III. Observations** (for details see Rehab Doctor and OT assessment)

Impairments of:	Y/N	Comments:
Vision		
Hearing		
Cognition		
Neglect/ inattention		
Other perceptual problems		
Communication		
Swallow		

**IV. Functional Activities**

Assessment of:	<p>Note: Quality of movement in relation to 'normal' (balance, symmetry, alignment, etc) and level of independence</p> <p>I = Independent    S= Supervised    A1= Assistance of 1    A2=Assistance of 2D= Dependent N/A=Not applicable N/T=Not tested</p>
----------------	---

"Pre-admission" see Rehab Doctor/ OT assessment	On Admission	On Discharge
<b>BED MOBILITY</b> (rolling/bridging/lie-to-sit)		
<b>SITTING</b> (balance/posture/trunk/pelvis)		
<b>SIT-TO-STAND</b> <b>STANDING</b> (balance/alignment/WB)  <i>Objective Markers (time standing, tandem stance, single leg stance, amount of sit-to-stand in 1 minute)</i>	Rhombergs: +ve / -ve  Single leg stance: Time on right    Time on left  Tandem stance: Time L. in front of R Time R in front of L	Rhombergs: +ve / -ve  Single leg stance: Time on right    Time on left  Tandem stance: Time L. in front of R Time R in front of L
<b>TRANSFERS</b> (bed/wch/toilet)		
<b>MOBILITY/GAIT</b> (+/- aids/orthoses)  <i>Objective Markers (10m timed walk test, Timed-Up-And-Go)</i>	<input type="checkbox"/> Independent <input type="checkbox"/> Walking stick <input type="checkbox"/> walker <input type="checkbox"/> Crutch <input type="checkbox"/> Wheelchair <input type="checkbox"/> Other:	<input type="checkbox"/> Independent <input type="checkbox"/> Walking stick <input type="checkbox"/> walker <input type="checkbox"/> Crutch <input type="checkbox"/> Wheelchair <input type="checkbox"/> Other:
<b>STAIRS</b> (rail/no. steps/reciprocal gait)		

ANNEX 5.Example of Occupational therapy assessment form

**Occupational Therapy – Neurological Assessment**

Card № \_\_\_\_\_ Ward \_\_\_\_\_ Room \_\_\_\_\_

Age: \_\_\_\_\_ Gender: \_\_\_\_\_ Date of stroke \_\_\_\_\_ Admission date \_\_\_\_\_

Diagnosis	PMH/ Family History	
Reason for referral		
HPC		
Medications		
How is the medication Managed?:		

**I. Social Support/Current Care:** (filled in by Rehab Doctor or OT)

Lives with family: Y / N \_\_\_\_\_

Married/ Single etc.: \_\_\_\_\_ Children: \_\_\_\_\_

Services involved: Medical care Y / N If yes, which \_\_\_\_\_

Nursing Y / N If yes, which \_\_\_\_\_

Outpatient Rehabilitation Y / N If yes, which \_\_\_\_\_

TMM Treatment Y / N If yes, which \_\_\_\_\_

Day centre: \_\_\_\_\_

Type of benefit: Disability Card Y / N

Care Package: \_\_\_\_\_

Other support network/details: \_\_\_\_\_

Voluntary sector Y / N If yes, which \_\_\_\_\_

Social Worker  Psychology  Mental Health Services  Transportation Services

## II. Environment:

Type of property	House	Apartment	Ger	...Anythingelse to add??	Other	
Ownership	Owner-occupied	Council	Privately rented	Other		
Access to property	Level	Steps No:	Ramp	Rail	Lift	Other
Accom. on 1 <sup>st</sup> Floor (circle)	Living room	Dining room	Bedroom	Kitchen	Bathroom	Toilet
Stairs	Bannister	L/R asc.	Additional rail	Other:		
Accom. upstairs	Bedroom	Bathroom	Toilet	Other:		
Access to toilet	Outside	Sitting toilet	Hole in the ground	Other (e.g. toilet chair):		
Equipment in situ:	Toilet frame	Raised toilet seat	Chair raised	Bed raised	Bathing equipment	Other:

## III. Physical Function (for details see Rehab Doctor and PT assessment)

Impairments of:	Y/N	Comments:
Muscle strength		
ROM		
Tone		
Balance		
Sensation		
Coordination		
Vision		
Hearing		

## IV. Cerebral (Cognitive) Function (filled in by Rehab Doctor or OT)



Does the person	Y/N	Comments:
Respond to your requests/questions and make appropriate eye contact?		
Know his date of birth?		
Know where he is? Know his home address? Know his telephone number?		
Know the date and day of the week? Know the approximate time? Know the season?		
Attends to your conversation without getting distracted?		
Remember his breakfast this morning? Remember your name and surname?		
Know the number to call when in emergency? Know what to do when the house is on fire?		
Able to identify his own difficulties?		
<u>Mental Capacity</u> Able to understand the purpose of your visit? Able to retain information and use them to identify and communicate own goals?		
<b>Alternatively, complete standardised cognitive screening tool: MMSE/ GP Cog    Score:</b>		
Further Cognitive Test needed: Yes    No    Details of the Outcome Measures: write below		

Cognitive Outcome Measure		Admission	Discharge
1	FIM (cognitive part)		
2	MMSE/GP Cog		
4			
5			

**V. Perceptual** (filled in by Rehab Doctor or OT)

Assessment of:	Problem Y/N	Comments
Object recognition (exclude expressive dysphasia)		
Body schema		
Sequencing (ideational dyspraxia)		
Transitive & intransitive limb movements (Ideo-motor dyspraxia)		
Inattention/Neglect (Line Bisection)		
Figure ground		
Spatial relations (R/L, above/below)		
Stereognosis		
Clock drawing		
Further assessment needed: Y/ N		Outcome measures:

**Functional assessment after stroke**

No		Admission	Discharge
1	Barthel Index		
2	Functional independence measurement		
3	SS-QOL(stroke specific quality of life)		
4	9-hole peg		
5	Box&Block		





<b>Leisure</b>		
<b>Prior to admission</b>	<b>Current</b>	<b>Discharge</b>
<b>Indoor</b> (creative, social)		
<b>Outdoor</b> (sports)		
<b>Productivity</b>		
<b>Prior to admission</b>	<b>Current</b>	<b>Discharge</b>
Employed/retired/voluntary/studies		

## SHEFFIELD SCREENING TEST

**SECTION 1:** FUNCTIONAL COMMUNICATION (no score for this section)

		QUESTION	RESPONSE
1	a	What is your name?	
	b.	What is your address?	
	c.	Do you have any family? Please tell me about them	
	d.	What is / was your job?	
2	a.	What about hobbies? Do you read much/ watch much TV	
	b.	What are you read / watching on T.V. at the moment?	
	c.	What would you have read / watched on T.V. before that you don't now?	
3	a	Do you find it hard to think of words you want to say?	
	b	Do you feel you sometimes miss the point of a conversation?	

**SECTION 2:** RECEPTIVE LANGUAGE SKILLS

When administering the following items, please say each instruction once, at a fairly normal rate. Ensure each command is presented loudly and clearly. Each sub-test must be answered with 100% accuracy to score one point.

ITEM			Date	Date	Date
			1	2	3
1	a	<b>Verbal comprehension of single words.</b>			
		<p>I'm going to ask you to point to some of the things in the room –</p> <p>Door [ ]    Ceiling [ ]    Light [ ]    Corner [ ]    Chair [ ]</p>			
2	a	<b>Comprehension of sequential commands.</b>			
	b	Point to the window and then to the door			
		Before pointing to the ceiling, touch the chair.			

3	<b>Comprehension of a complex command.</b> Tap the chair twice with a clenched fist whilst looking at the ceiling.			
4	<b>Recognition of differences in meaning between words</b> I'm going to read you a list of words and I want you to tell me which is the odd one out.			
a	chicken      duck      apple      turkey			
b	run            drink      walk      sprint			
c	small        large      massive    huge			
5	Comprehension of a narrative I'm going to read you a short paragraph and then ask you a question about it.			
a	<b><i>"John went to the shop to buy a pen. When he got there, he found that he had forgotten his wallet, so he came home and made himself a cup of tea."</i></b>  What should he have brought with him?			
b	<b><i>"Mrs Smith visited several shops. She brought a newspaper, a cauliflower, a stamp and some sausages."</i></b>  What was the second shop she visited?			
<b>TOTAL</b>		<b>/9</b>		

## SHEFFIELD SCREENING TEST

### **SECTION 3: EXPRESSIVE LANGUAGE SKILLS**



ITEM	
6	<p>Word Finding</p> <p>Tell me the names of three well-known places (in the client's home town)</p>
7	<p>Abstract word finding</p> <p>Tell me another word that means the same as –</p> <p>beautiful</p> <p>angry</p> <p>ridiculous</p>
8	<p>Sequencing</p> <p>Describe how you would make a cup of tea. (A correct answer contains two or more phrases in the right order).</p>
9	<p>Definitions</p> <p>Describe what the following words mean.</p> <p>home</p> <p>search</p> <p>ambitious</p>
10	<p>Verbal reasoning</p> <p>I'd like you to tell me –</p> <p>Why you would use an umbrella</p> <p>Why people go on holiday</p> <p>What you would do if you were locked out of the house.</p>
TOTAL	

**SECTION 4: SUMMARY**

SECTION	SCORE DATE 1	COMMENTS
Functional communication		

(No score)		
Receptive Language (Max 9)		
Expressive Language (Max 11)		
<b>TOTAL (Max 20)</b>		
Signature		

CUT OFF POINTS: Age < 59: Score 17    Age 60-69: Score 16    Age > 70: Score 15

COMMENTS:            Within Normal Limits [    ]            Needs further assessment [    ]

Other

**ANNEX 7.Example of Rehabilitation Discharge Letter**

Name: \_\_\_\_\_ DOB \_\_\_\_\_ Hospital No. \_\_\_\_\_

Gender: \_\_\_\_\_ Hospital Admission Date: \_\_\_\_\_ Discharge Date: \_\_\_\_\_

Diagnosis	HPC
PMH/ Family History	Reha
Further investigations needed at hospital/ primary care level with dates	Furth
<u>Levels of achievement, ability and recovery (using International Classification of Functioning, Health and Disability</u>	
Current impairment:	
Current limitation in activities:	
Participation restriction:	

Environmental and personal barriers:

**Specific Activity-level on Discharge**

Activity	Level of ability	Tick Level	Not applicable (tick)
1. Feeds himself or herself? (including eating and drinking)	Alone With some help or sometimes Not at all	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
2. Keeps himself or herself clean) (including washing, bathing and cleaning teeth)	Alone With some help or sometimes Not at all	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
3. Uses the latrine	Alone With some help or sometimes Not at all	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
4. Dresses and undresses	Alone With some help or sometimes Not at all	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
5. Understands simple instructions	Easily With difficulty Not at all	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
6. Expresses needs	Easily With difficulty Not at all	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
7. Understands movement and signs for communication?	Easily With difficulty Not at all	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
8. Uses movements and signs for communication which others understand?	Easily With difficulty Not at all	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
9. Lip reads?	Easily With difficulty Not at all	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
10. Speaks?	Easily With difficulty Not at all	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
11. Sits? (including sitting up from lying)	Alone With help Not at all	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
12. Stands? (including standing up from sitting)	Alone With help Not at all	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
13. Moves inside the home? (including walking, crouching, crawling or using trolley)	Alone With help Not at all	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
14. Moves around the village? (including walking, crouching, crawling or using trolley)	Alone With help Not at all	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>

15. Walks at least 10 steps?	Alone With bars, frame, crutches or cane With help of a person Not at all		
16. Has aches and pains in the back and joints?	Very rarely or not at all Sometimes but can still work Disturb work but not sleep Disturb sleep		
17. Breast-feeds and grows like other babies	Yes No		
18. Plays like other children of the same age?	Yes No, plays like children below his or her age No, does not play at all		
19. Goes to school?	Yes, does normal school work Yes, yes, but does school work below his or her age Yes, but does not do school work No		
20. Joins in family activities?	Yes Sometimes Not at all		
21. Joins in community activities?	Yes Sometimes Not at all		
22. Does household activities?	Yes, all Some, but not all None		
23. Has a job or has an income?	Full-time job or income adequate for his or her needs Part-time or seasonal job or some income No job and no income		

**Needs on discharge:**

Walking Aid Y / N if yes, which: Crutches  Walking stick  Walker

Need for wheelchair Y/N

Need for orthotics Y/N if yes, which: AFO  Foot-up splint  Knee brace  Other  \_\_\_\_\_

Adaptive devices Y/N if yes, which: Adaptive tools eating and drinking  Washing and dressing  Toilet chair

Home adaptations needed Y/N Rail  Ramp  Steps  Raised bed/chair  Wheelchair access door width  Other  \_\_\_\_\_

**Services which need to be involved:**

Medical care Y / N If yes, which \_\_\_\_\_ Nursing Y / N If yes, which \_\_\_\_\_

Outpatient Rehabilitation Y / N If yes, which \_\_\_\_\_

TMM Treatment Y / N If yes, which \_\_\_\_\_

Psychology Y/N if yes, what purpose \_\_\_\_\_

Mental Health Services Y/N if yes, what purpose \_\_\_\_\_

Referral to: CBR-Coordinator Y/N if yes, what purpose \_\_\_\_\_

Recommendations for rehabilitation after discharge:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

Advice on discharge regarding support needed (ex. Positioning, pressure relief, bowel and bladder, mobility, swallowing,

**Information**

**Who to contact:**

Name of Rehab Doctor from discharging hospital: \_\_\_\_\_

Contact telephone number for discharging rehabilitation department: \_\_\_\_\_

Contact details of CBR-Coordinator in local Aimag: \_\_\_\_\_

ANNEX 8. Example of Multidisciplinary Problem list and goal setting (using the ICF)

**Multidisciplinary Team (MDT) Meeting – Stroke Unit**

Date:

**PROBLEM LIST, ANALYSIS and PLAN**

DATE	IMPAIRMENTS (ie pain, tone, sensation)
DATE	ACTIVITY LIMITATIONS
DATE	PARTICIPATION RESTRICTIONS
DATE	ENVIRONMENTAL & PERSONAL FACTORS

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Checklist Guideline completed  MDT GOALS SET





**MDT Goals**

Date set	Goal	Time scale	Treatment/Action to be taken	Person responsible	Date signed off	Reason, if unable to achieve
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## ANNEX 9. Stroke checklist guideline

### Rehabilitation Checklist Guidelines – Stroke (CVA)

Date of stroke

Date of admission

Registration number

Diagnosis

When	Action to be taken	Person responsible	Done (Date)	If not done, why?	Where to find information (Clinical Guideline/ Local Protocol )
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Within first 24 hours	<b>Medical outcome measure</b> Glasgow Coma Scale score for prognostic indicator	Doctor	<input type="checkbox"/> (____)		Glasgow Coma Scale
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Within first 24 hours	<b>Respiratory assessment</b> Respiratory treatment	Rehab Doctor	<input type="checkbox"/> (____)		p. p.
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ASAP	<b>Swallowing screen</b>	Neurologist	<input type="checkbox"/> (____)		p.
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ASAP	<b>Sit up in bed as soon as medically stable</b>	Department nursing staff	<input type="checkbox"/> (____)		p.
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ASAP	<b>Positioning (prevention of respiratory complications, pressure sore, contracture management, stimulation):</b> Advice and education on positioning and manual handling to family	Department nurses and PTs	<input type="checkbox"/> (____)		p.
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Within first 72 hours	<b>Initial Rehabilitation Assessment</b> (including general assessment and swallow assessment)	Rehab Doctor	<input type="checkbox"/> (____)		p. Use rehab doctor assessment form
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**Prior to any rehabilitation : Rehabilitation Doctor to complete a rehabilitation risk assessment (refer to rehabilitation risk assessment form)**

(\_\_\_\_)

Within 72 hours	<b>Rehabilitation assessment by PT and OT</b> Musculoskeletal Assessment	Rehab Doctor/ Rehab Staff	<input type="checkbox"/> (____)		p. Use PT and OT
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	Neurological Assessment	(PT/OT/ Rehab Nurses)	assessment forms
	Functional Assessment:		
	1. FIM/ Barthel Index		
	2. Positioning		
	3. Transfers and mobility		
	4. ADLs		
	5. Assessment for mobility aid or assistive device for ADLs		

		Rehab Doctor/	
Within 72 hours	<b>Basic Communication Assessment</b>	Rehab Staff	<input type="checkbox"/> (____) p. Use ST assessment form

	<b>Physiotherapy Exercise</b>		
	Mobilization : passive and active-assisted		<input type="checkbox"/> (____) p.
After Rehab Assessment	Mobilization : active and resisted	PT/ Rehab	<input type="checkbox"/> (____) p.
	Stretching	Nurse	<input type="checkbox"/> (____) p.
	Desensitizing techniques/ sensory stimulation		<input type="checkbox"/> (____) p. <input type="checkbox"/> (____)

	<b>Mobility and transfers</b>		
	Sit over edge of bed(sitting balance training)		<input type="checkbox"/> (____)
	Sit-to-stand practice		
	Standing balance training		<input type="checkbox"/> (____)
After Rehab Assessment	Transfer practice	PT/ Rehab	<input type="checkbox"/> (____)
		Nurse	<input type="checkbox"/> (____) p.
	Mobility		<input type="checkbox"/> (____)
	Provision of mobility aid (crutch, quad cane, walker, walking stick, wheelchair)		<input type="checkbox"/> (____)
	Balance Training		<input type="checkbox"/> (____)

	<b>Functional Exercise</b>		
	Encourage participation and training in all activities of daily living:		
After Rehab Assessment	1. Washing	Rehab staff or nurses (if trained)	
	2. Brushing teeth, combing hair		<input type="checkbox"/> (____) p.
	3. Dressing		
	4. Eating and drinking		<input type="checkbox"/> (____)

	Bilateral hand activity training		<input type="checkbox"/> (___)	
	Hand fine motor coordination training (manual tasks: writing, keyboard, keys...)		<input type="checkbox"/> (___)	
			<input type="checkbox"/> (___)	
			<input type="checkbox"/> (___)	p.
				p.

After Rehab Assessment	<b>Cognitive treatment and stimulation</b>	Rehab staff or nurses (if trained)	<input type="checkbox"/> (___)	p.
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After Rehab Assessment	<b>Basic Communication Management</b>	Rehab Doctor	<input type="checkbox"/> (___)	p.
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Within first week/each week thereafter	<b>MDT meeting</b>		<input type="checkbox"/> (___)	
	(medical status, set patient-specific goals, review goals, discharge planning)	All Rehab staff and department neurologist	<input type="checkbox"/> (___)	
			<input type="checkbox"/> (___)	p.
			<input type="checkbox"/> (___)	

ASAP	<b>Bowel and Bladder Assessment and Management</b>	Rehab Doctor	<input type="checkbox"/> (___)	p.
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	<b>Assessment for secondary complications:</b>			
	Pressure sore			
	DVT		<input type="checkbox"/> (___)	p.
	Oedema		<input type="checkbox"/> (___)	p.
	Shoulder subluxation		<input type="checkbox"/> (___)	p.
On-going Assessment	Contracture	Rehab Doctor	<input type="checkbox"/> (___)	p.
	Spasticity UL		<input type="checkbox"/> (___)	p.
	Spasticity LL		<input type="checkbox"/> (___)	p.
	Central post-stroke pain		<input type="checkbox"/> (___)	p.
	Shoulder pain		<input type="checkbox"/> (___)	p.
	Complex regional pain syndrome		<input type="checkbox"/> (___)	p.
			<input type="checkbox"/> (___)	p.

Treatment (if required)	Pressure sore		<input type="checkbox"/> (___)	p.
	DVT	Rehab Doctor	<input type="checkbox"/> (___)	p.
	Oedema		<input type="checkbox"/> (___)	p.

	Shoulder subluxation		<input type="checkbox"/> (____)	p.
	Contracture		<input type="checkbox"/> (____)	p.
	Spasticity UL		<input type="checkbox"/> (____)	p.
	Spasticity LL		<input type="checkbox"/> (____)	p.
	Central post-stroke pain		<input type="checkbox"/> (____)	p.
	Shoulder Pain		<input type="checkbox"/> (____)	p.
	Complex regional pain syndrome		<input type="checkbox"/> (____)	p.

<b>Information to Patient and Family</b>				
ASAP	Show exercise, mobility and transfer techniques and provide exercise cards		<input type="checkbox"/> (____)	
		Rehab Doctor/		
ASAP	Show patient and family how the patient can participate as much as possible in their activities of daily living	Rehab Staff (PT/OT/ Rehab Nurses)	<input type="checkbox"/> (____)	p.
Before d/c	Give information brochure		<input type="checkbox"/> (____)	
Before d/c	Where to buy assistive devices (mobility aid, ankle-foot-orthosis)		<input type="checkbox"/> (____)	p. (Annex....)
Before d/c	Where to buy/ how to make adaptive devices		<input type="checkbox"/> (____)	p. (Annex....)
Before d/c	Ensure referral to community services (as needed)	Rehab Doctor	<input type="checkbox"/> (____)	p.

## ANNEX 12. Contact information of CBR Coordinators in Mongolia