

# PATIENTS WITH CEREBRO-VASCULAR ACCIDENTS IN BRITISH HOSPITALS: MAIN DIRECTIONS OF REHABILITATION

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## SUMMARY

*Although medicine is developing very rapidly, Western countries still struggle with many diseases characteristic for modern societies. Strokes may cause more deaths than any other disorder. It is considered the third most common cause of death in Great Britain, after cancer and heart disease (LSRU, 2007). In the past 20 years, new technologies have been introduced for imaging the brain. All of these, such as computer tomography (CT), magnetic resonance imaging (MRI), or radioisotope scanning, can show the exact regions of the brain affected by stroke. They can also indicate whether the stroke was caused by blockage (ischaemia) or leakage (haemorrhage). Because this disease is becoming more common, it is important to know what may cause strokes, what kinds of strokes there are, how they can be treated, and what are the main directions of rehabilitation. The state of the problem in Great Britain, which has developed an advanced programme of medical treatment for stroke (Rehabilitation for maximum independence, 2007), will be discussed in the present study.*

## INTRODUCTION

According to the Stroke Association (2007a), every five minutes someone in the UK has a stroke, and every year approximately 150,000 people in this country suffer because of stroke. Around 1000 people under 30 have a stroke each year. Stroke can happen suddenly to anyone at any time in their life, including even children; however, most people affected by stroke are over 65. The Stroke Association is a national British charity organization whose main

goal is to help people who are suffering after a stroke. It has offices in Scotland, Wales, the nine English regions, and Northern Ireland. To increase people's awareness of stroke, its early symptoms, causes, first aid, help and rehabilitation, the Stroke Association distributes two million free leaflets and factsheets every year.

Some patients may have significant recovery from stroke in the first month after the event. According to the Stroke Association (2007b), this may be a third of all people with stroke. For the vast majority of patients, however, there may be permanent damage to the brain, resulting in long-term disability. For some people stroke can be fatal.

Most stroke patients need a long-term process of recovery and rehabilitation. Rehabilitation is defined as "the development of a person to his fullest physical, psychological, social, vocational, avocational and educational potential, consistent with his physiology or anatomic impairment and environmental limitations" (The Lewin Stroke and Rehabilitation Unit, LSRU, Student Information and teaching package, unpublished, 2007, p. 2)

## **TYPES AND CAUSES OF STROKES**

A cerebro-vascular accident (CVA), popularly known as a stroke, happens when the blood supply to the brain is suddenly stopped or restricted and reduced. Blood may not flow to a certain part of the brain because there is a clot or a burst blood vessel. A stroke usually results in structural damage to some brain tissue. This is called cerebral infarction (Parr et al, 2004; Rehabilitation for maximum independence, 2007).

There are two main types of CVA, resulting from two mechanisms or causes of stroke: blood vessels can break and leak, or they can become blocked in some way. Therefore there are two main reasons for stroke:

- 1) ischaemia;
- 2) haemorrhage.

When a blood clot blocks a vein or artery in the brain there can be two kinds of blockage:

- a) thrombus, when the vein is blocked from the inside, or
- b) embolus, which may travel in the vein and eventually stick in a particular place, blocking blood flow downstream from that point (see Fig. 1).

A person may also suffer from an aneurysm, which results from a weak spot in the wall of an artery or vein. The thin or weak blood vessel may burst, which causes leaking of blood into the brain or other vessels, leading to cell death (cerebral infarction). This type of stroke is called cerebral haemorrhage. One common type of haemorrhage is the subarachnoid haemorrhage, which occurs when blood leaks into the space between two meninges of the brain, the arachnoid and the pia mater.

Another way to classify a CVA is by the dimensions of the damaged area. In this respect strokes can range from acute stroke (massive damage) to

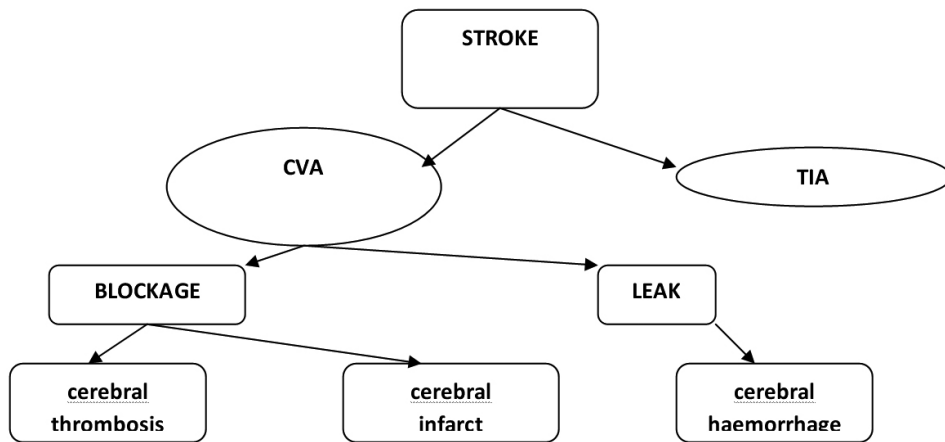


Fig. 1. Schematic view of the main types of strokes (based on LSRU, 2007; Parr et al, 2004)

a transient ischaemic attack (TIA), when stroke-like symptoms occur for 24 hours or less and slowly disappear.

There are some commonly known factors that increase the risk of stroke, such as a family history of stroke, hypertension, aging, a fatty diet, lack of physical exercise, smoking, alcohol abuse, a high level of cholesterol, and diabetes.

## **SYMPTOMS AND EVIDENCE OF BRAIN DAMAGE IN PATIENT BEHAVIOUR AFTER STROKE**

Typical symptoms of stroke include one or more of the following:

- numbness, weakness, or paralysis, mostly of one side of the body;
- slurred speech, difficulty in finding words or understanding other people's speech;
- blurred vision, double vision, or even loss of sight;
- confusion or loss of orientation in time and place.

Since different parts of the brain have greater or lesser significance for particular functions, the ability to perform actions after stroke may be variously affected. Stroke patients have problems with mobility, communication, swallowing (eating and drinking), continence, constipation, eyesight (blurred, double vision, hemianopia), motor coordination (dyspraxia), emotions, depression, pain (Herzyk & Oszwa 1993, 1994; Parr et al., 2004). Not all of these symptoms occur altogether in one person, but important life functions may be affected after stroke to different extents, depending on how severe the stroke was, which areas of the brain it damaged, and what type of stroke it was.

To increase awareness of the early symptoms of stroke, the Stroke Association (2007a,b; 2008) has developed and popularized a short test for

Letter	Problem	Question	YES	NO
F	Facial weakness	Can the person smile?		
A	Arm weakness	Can the person raise both arms?		
S	Speech problems	Can the person speak clearly and understand what you say?		
T	Test all three!	If there are any difficulties, dial 999.		
		Total score		

Fig. 2. Assessment for early diagnosis of stroke – Face Arm Speech Test /FAST/ (on the basis of Nor et al., 2004; The Stroke News, 2008)

quick assessment, called FAST: *"Act fast to check whether someone has had a stroke"* (see Fig. 2).

The symptoms of a stroke may last for a short time (up to 24 hours – TIA) and disappear spontaneously, or for a longer time, when they lead to long-term disabilities requiring long-term rehabilitation.

## **DIFFERENT KINDS OF HELP IN HOSPITAL – THE HOLISTIC APPROACH**

When a stroke occurs, it is crucial to assess the patient to establish the proper diagnosis and course of medical treatment. First of all, initial hospital assessment will test the following (LSRU 2007; Parr et al. 2004; SA 2007a,b):

- the type of stroke (ischaemia or haemorrhage);
- the area of damage of the brain (verified by CT or MRI scans);
- how serious the event was (CVA, TIA).

Additional assessment includes:

- the condition of the patient's heart (ECG, blood tests; carotid Doppler);
- the condition of the lungs (chest X-ray);
- swallowing (without choking and coughing).

Difficulty with swallowing (dysphagia) may cause aspiration, which can lead to pulmonary infection or pneumonia. A further investigation by a qualified speech and language therapist or using video x-ray (videofluoroscopy) can help to find out the main cause of swallowing problems.

The movement of a stroke patient in British hospitals is shown in Fig. 3. After the ambulance has been summoned, the patient is transferred to an Accident and Emergency Unit located in hospital. The stroke team is immediately called for medical assessment. There are two possible general diagnoses after this initial examination – stroke or non-stroke. When the diagnosis is positive (yes, this a stroke), then the patient is sent to the acute stroke

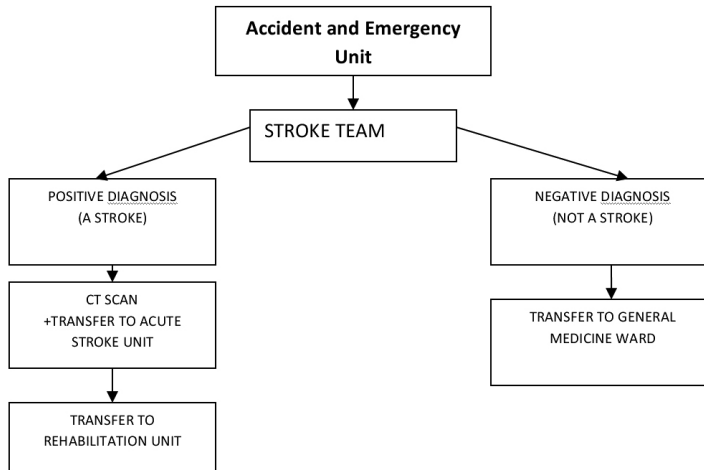


Fig. 3. Patient with stroke in the hospital – stroke flow chart (based on unpublished LSRU materials)

ward, after a CT scan of the head. After a period of intensive treatment and monitoring in this unit, when the patient is stable, she is transferred to a rehabilitation unit for further medical treatment and intensive rehabilitation. When it is not a stroke, the patient is transferred from the AEU to a general medicine ward for further diagnosis and treatment.

Some people need to have a neurosurgical operation after a stroke. An operation may be performed by a neurosurgeon in three main cases. First of all, it may be necessary to remove fatty clots from the blood vessels in the patient's neck to decrease the probability of another stroke. This kind of medical action is called carotid endarterectomy (Parr et al. 2004). Very rarely doctors may decide to run another kind of operation for removing a blood clot from the brain after stroke. This practice is not used so often nowadays. The aim of the third kind of neurosurgery is to strengthen a weak point in a blood vessel in the brain. This type of operation is applied after haemorrhage caused by an aneurysm (LSRU 2007).

### ***Multidisciplinary Team***

The stroke team is made up of many different kinds of specialists trained in caring for people who have had a stroke. They cooperate in many ways, and communication takes place within the whole team among all the different members. This very large multidisciplinary team may include two main groups of persons:

- 1) a **stroke care team**, formed by members of staff for everyday care in hospital, such as doctors (consultants, registrars, specialists), nurses, health-care assistants, nutrition assistants;
- 2) a **rehabilitation team**, consisting of occupational therapists, speech and language therapists, physiotherapists, assistant practitioners, and neuro-

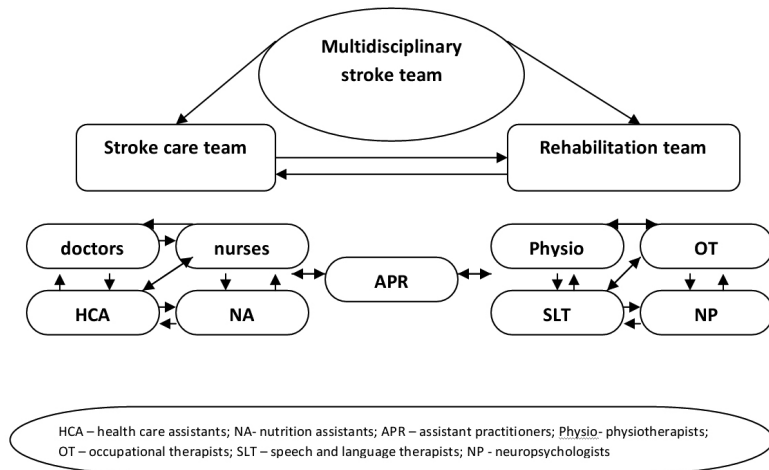


Fig. 4. The structure of care and rehabilitation of CVA patients in British hospitals (based on own observations and experience gained on the ward)

psychologists (see Fig. 4).

### **Stroke care team**

This team includes both stroke specialists and auxiliary staff who looks after general and personal patient care.

**Physicians.** There are three types of doctors involved in care for patients with stroke. The most senior doctor, called a consultant, is in charge of the whole medical team. Apart from him, middle-grade doctors, called registrars, and junior doctors check and assess patients every day on the ward. They come for a short visit in the morning from the neurosciences block where they usually work, and make the main decisions concerning patients' medical care. Additionally specialists such as neurologists are involved in caring for patients with stroke in the ward (Parr et al. 2004; SA 2007 a,b).

**Nurses.** The main caregivers for the patient in hospital are nurses and auxiliary staff called health care assistants. The nurses provide everyday care, administer medication, keep patients comfortable, help them moving, monitor their bowel and bladder functions.

**Healthcare assistants.** These help the nurses in everyday care by checking the patient's heart and respiratory rates, saturation (the level of oxygen in the blood), blood pressure, and temperature. They help patients with eating and drinking, going to the toilet, and cooperating during assessment (CT, MRI scans). They move patients regularly to avoid pressure ulcers, sores and blood clots. They help patients dress and put on compression stockings against thrombosis. They reposition patients to make sure paralysed arms and legs are positioned correctly. They help patients avoid further damage to the body and provide pain relief.

**Nutrition assistants.** These specialists, together with dietitians and speech and language therapists, develop a nutritional diet which is safe and easy to swallow for the patient. They take into account the patient's choices, including personal, cultural, and religious preferences. They check why the patient has lost her appetite or is under or overweight. They give patients high protein meals and supplements, including special nutritional needs in such cases as diabetes, allergy, or problems with swallowing (puree, soft diet). Some patients may need a thicker drink than usual because they have problems with swallowing. Thickened drinks move slower in the mouth and throat. They may be swallowed more safely for the lungs and more easily. Soft and pureed food is also easier to chew and swallow. To prepare thicker drinks, nutrition assistants use a special thickener made of rice, which is easy to add to juice, tea or even water to make a drink like syrup or custard, according to the patient's needs and the speech and language therapist's advice. In cases of problems with swallowing, the patient may not receive food by mouth (be "nil by mouth"). Then, to make sure he gets enough nourishment, the doctor suggests liquid food through a tube into the stomach. There are two kinds of feeding this way: a) naso-gastric tube (NGT), passed through the nose and down to the stomach, or b) percutaneous endoscopic gastrostomy (PEG), passed under general anaesthesia directly into the stomach. Both of these can be removed when swallowing improves (Parr et al. 2004; SA, 2007,a,b).

### ***Rehabilitation team***

The main goal of hospital rehabilitation for patients with stroke is to help them regain independence, relearn skills they have lost, learn new skills, adapt to their limitations after stroke, prepare them for discharge from hospital, and help them find practical, emotional and social support at home (SA 2007a). Rehabilitation is a very important part of stroke treatment. For best effect it should begin as soon as possible after the patient has had a stroke.

**Physiotherapists.** Physiotherapy starts very soon after stroke, with an initial assessment regarding the patient's preserved capabilities in moving, balance and coordination. This helps to regain mobility and muscle control. In therapy exercises and massages are applied to keep muscles and joints working properly and stop weak limbs from becoming stiff and painful because of spasticity. Most of these exercises are performed in the hospital gymnasium with special equipment that helps the patient sit up, regain balance, stand, and move around. They regularly make sure the patient is in correct position when she lies, sits or stands (Parr 2004; SA 2007a,b). Physiotherapy of weak and paralyzed limbs begins with simple exercises and small movements. When the person is stronger, more complicated tasks are performed for both sides of the body to work together.

**Occupational therapists.** This team helps the patient with basic tasks, such as washing, using the toilet, dressing, eating, and later other daily activities, like shopping or cooking. They may help the person return to their previous

hobbies and leisure activities, overcome their problems and return to work. They use numerous techniques adapted to different situations and disabilities (SA 2007a,b). Therapy begins with simple tasks and moves on to more complicated ones, along with the patient's improvement and progress. Occupational therapy applies useful equipment which may be recommended to the patient according to her needs and the level of movement and coordination: for example, wheelchairs, special plates, spoons, toilet seats, etc. The goal of this kind of therapy is to find practical solutions which let the person live a full, satisfying, and independent life.

**Speech and language therapists.** Speech and language therapists (SLT) assess the patient's difficulties in swallowing, speaking, understanding, writing, reading, calculation and communication. They develop appropriate methods to help the patient, which can be applied in individual sessions or as practical recommended solutions hanging on a board behind and above the patient's bed on the ward. In this way other members of staff can join the therapy, as well and develop an effective way of communicating with the patient and serving her the proper food according to the SLT's suggestions (Better Conversation 2006).

There are several main disabilities after stroke when the SLT may be of help:

- a) aphasia – difficulty in using and comprehending spoken and written language;
- b) dysarthria – when the facial muscles affected by stroke make it difficult to form speech sounds;
- c) dysphonia – when the muscles in the voice box affected by stroke make it hard to moderate the voice;
- d) dysphagia – when the muscles involving in swallowing affected by stroke make it difficult to swallow food properly and appropriately (Parr et al. 2004).

Generally speaking, the SLT's work on the stroke ward is to recommend solutions for the patient to communicate effectively and swallow appropriately. They help patients with talking, understanding, reading and writing. They also talk to family and friends about communication problems and give useful advice, such as how to use props (photos, maps) to make conversation easier, drawing and writing, listing key words, confirming (by yes and no questions and answers) (Better Conversation 2006; Stroke Talk 2006). They always inform the patient that speech and language therapy, like other kinds of therapy, cannot cure aphasia thoroughly, but it can help her to communicate more easily and get on with her life.

**Assistant practitioners.** This is a new role on stroke wards in the United Kingdom. They support the work of therapists by adopting techniques from different separate kinds of therapies. They use a combination of methods applied by physiotherapists, speech and language therapists and occupational therapists together. Their focus is to provide continuous care by incorporating ther-



apy into routine activities without restriction to therapy sessions alone. In this way patients can practice their skills continuously. The goal is to achieve independence faster and go home sooner (Hospital Review of the Year 2007).

**Neuropsychologists.** These specialists help patients with psychological problems after stroke. They assess their cognitive functions (reasoning, memory, attention, verbal skills, reading, writing, visuo-spatial and motor abilities, executive functions, planning, solving problems, calculation, etc), emotions, stress, anxiety, mood swings, depression, tiredness, and the like (Bremner & Narayan 1998; De Bellis at al. 1999; Herzyk & Oszwa 1993, 1994). Afterwards they help the patient cope with her psychological problems in hospital and later in everyday life.

## CONCLUSIONS

The approach to treatment and rehabilitation of patients with stroke in Great Britain is complex, complicated and holistic, but there are advantages and disadvantages to such an approach. Firstly, there would seem to be an ideal situation for rehabilitation, but sometimes even this does not work to the uttermost and does not allow the patient be as independent as before the stroke. This kind of work as a multidisciplinary team protects members of staff from being independent and making wrong decisions. On the other hand, it also blurs the overall responsibility for the patient, because everybody is responsible for everything. Finally, the costs of such treatment are very high, so it is difficult for less rich and developed countries to follow this pattern. Many people consider HCAs as very useful and helpful members of auxiliary staff, as well as APRs, with their new role of helping patients to shorten their time in hospital by giving them more opportunity to practice their new skills and regain their independence to such an extent when they are ready to be discharged home.

Apart from the rehabilitation of people with strokes, the Stroke Association (SA) also popularizes prevention guidelines ([www.stroke.org](http://www.stroke.org)). There is some useful information here which may help to educate the public regarding the prevention of stroke:

- it is important to know one's own blood pressure and keep it under control;
- one should find out if one has atrial fibrillation (AF) – an irregular heart rhythm that may increase the risk of stroke;
- those who smoke should stop;
- alcohol should be consumed only in moderation;
- the cholesterol level should be monitored;
- diabetes increases the risk of stroke seriously;
- everyday activities and exercises are crucial;
- a lower fat and lower salt diet protects from stroke;
- check with a physician any circulation problems, which also increase the risk of stroke.

- if any stroke symptoms are noticed (see the FAST test above; fig. 2), immediate attention is required, because the first 24 hours are crucial for the patient's survival, health, and the duration of further treatment.

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