

# WHAT IS A STROKE?

We answer your questions



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## Introduction

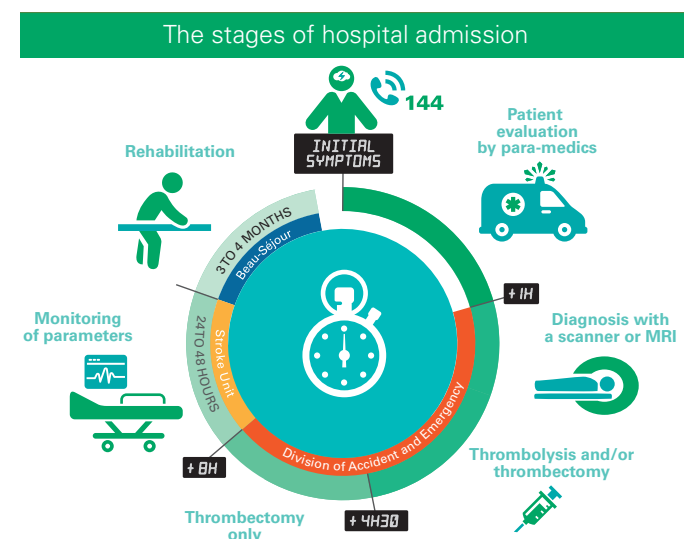
If you have had a stroke or a transient ischemic attack (TIA), this booklet is for you. It explains the various stages of your medical care upon your arrival in the emergency room.

This booklet covers both strokes and TIAs since they share the same warning signs, causes, and risk factors.

However, rehabilitation during the acute phase while in the hospital only applies to you if you have after-effects following your stroke.

You will receive advice on cardiovascular risk factors if necessary during interviews with the healthcare team in order to complete the information contained in this booklet. Do not hesitate to share this booklet with your loved ones and if you have any questions, to address them to the healthcare team.

The purpose of the attached questionnaire is to determine how much you know about the disease. A nurse will go through the answers with you to clarify the issues still unclear.



# What is a stroke and what is a TIA?

## What is a stroke?

It is a sudden disruption of the blood flow which provides oxygen to your brain. In 80% of cases, a stroke is due to the occlusion of a blood vessel by a blood clot (ischemic stroke). Less frequently (20% of cases), it is caused by the rupture of a vessel, which results in a cerebral haemorrhage (haemorrhagic stroke).

A stroke is also called a “cerebral attack”, or even a “cerebral infarction”. In the event of a stroke, the symptoms persist and a brain injury is visible most often upon a radiological examination (scanner, magnetic resonance imaging).

## What is a TIA?

A Transient Ischemic Attack (TIA) is caused, in the same way as an ischemic stroke, by the presence of a blood clot that temporarily obstructs the cerebral blood flow. In the case of a TIA, the symptoms usually last less than an hour and no brain injury is visible upon the radiological examinations.



### INFO

When a stroke occurs, every minute counts, because the faster the treatment is initiated, the better the chances of recovery.

## ! ATTENTION

The warning signs described below suggest a cerebral attack even if they disappear in a few minutes. They must be taken seriously and urgent hospitalisation is required. Call 144 immediately: an ambulance will safely and quickly transport you to the hospital for a prompt treatment.

## What are the Warning Signs?

The onset of a stroke or of a TIA is sudden/brisk: the signs most often appear in just a few seconds or a few minutes, and more rarely in a few hours. The stroke causes deficits that vary depending on the region of the brain that is affected:



Motor (hemiplegia) and sensitive disorders: muscle weakness of one side of the body (face, arm, leg), feeling of numbness.



Language and speech: difficulties in articulating and inability to recall words. Uttering of incomprehensible phrases. Change in comprehension, even for simple questions.



Vision problems: brief loss of sight in one eye, double vision.



Balance disorders and dizziness: feelings of being on a boat.



Unusual, persistent headaches.

# Diagnosis and treatment

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## How to diagnose a stroke or a TIA?

In the Emergency Care Unit, the neurologist, the brain specialist, prescribes several examinations to determine the cause of the cerebral attack and to locate the affected area.

**CT-Scanner:** this examination, a kind of an X-ray of the brain, confirms if you have had a stroke. It indicates the type of stroke you have suffered: an ischemic stroke caused by a blood clot or a hemorrhagic stroke (cerebral hemorrhage) caused by bleeding.

**MRI (Magnetic Resonance Imaging):** this uses a magnetic field system to create cross-sectional images. This enables «abnormal» tissues to be differentiated. The MRI also detects small lesions and helps to refine the diagnosis.

## Additional examinations

**Doppler Ultrasound:** the ultrasound examination is used to measure blood flow speed which shows if an artery has narrowed. The arteries in the neck and those inside the brain are visualized.

**Echocardiography:** this examination performed using ultrasound shows the contours and the inside of the heart. A probe (a sensor) is moved across the surface of the chest, and the image is displayed on the computer.

**The holter or the R-Test:** this examination is performed to record the activity of your heart for a total period of 24 hours (or 7 days for the R-Test) to detect cardiac rhythm disorders. A small box connected to electrodes is placed on your chest for 24 hours and you write on a sheet your activities (walking, meals, sleep, etc.) and when you feel palpitations.

**Neuropsychological examination:** a neuropsychologist or a speech therapist will assess your language, your understanding and your memory abilities in particular through tests (drawings, writing). These tests last an average of two hours and are repeated if needed.

## What is the appropriate treatment?

The vital functions (oxygen, blood pressure, body temperature) and neurological functions (check for language ability, strength, sensitivity) are monitored immediately. Your treatment is then adapted to your specific situation and the cause of the stroke.

**Thrombolysis** consists in injecting a powerful drug into a vein in order to dissolve the clot which is clogging one of your vessels. This treatment is only possible within the first 4.5 hours after the onset symptoms and depending on your condition.

**Thrombectomy** is the extraction of the blood clot clogging a vessel inside the brain. This procedure requires the introduction of a catheter in the groin area, which is then guided up to the clogged artery. The clot is then extracted using a stent (a small cylinder often used to unblock the coronary arteries) that holds it in its mesh. The stent is then removed.

**Drugs or medical treatment** such as platelet inhibitors which prevent the formation of blood clots (aspirin for example) or anti-coagulants are also administered as the case may be.

Depending on your needs and your risk factors, the healthcare team will provide you with advice at the end of your hospital stay or during your rehabilitation treatment. The treatment that began during your stay in hospital must be continued on a long term basis to optimize your chances of recovery and should not, under any circumstances, be stopped without consulting your doctor.

## A team of specialists

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### Neurovascular Unit

After your arrival in the Emergency Room, you will be transferred to the Neurovascular Unit, where several specialists work closely together to optimally organise your rehabilitation. Your treatment is determined by **neurologists**. They can meet with your family by appointment.

Assistance with your hygiene and comfort care is provided by **nurses and the orderlies** on a 24/7 hours basis. They are the ones who welcome you in the unit and assist you according to your possibilities and lifestyle. They make sure the treatments are applied and control the evolution of your medical condition and physiological parameters.

**A nurse specialising in rehabilitative care** may also intervene, if you or your loved ones feel the need to be given more assistance, or if you experience difficulties in respect to the image you have of yourself (hemiplegia, deficit, disability).

**The social worker** helps you choose a rehabilitation centre or set up the rest of your treatment (housekeeping help, home care, etc.) after discharge.

**The physiotherapist** focuses on your mobility and comfort: positioning, respiratory therapy, learning how to move, body positioning, learning how to walk again.

**The occupational therapist** performs assessments (motor, sensitivity and autonomy in your everyday life). He/she provides and adapts the auxiliary equipment (wheelchair, brace, etc.). He/she assesses whether your place of living requires any changes.

After assessing your cognitive ability, **the neuropsychologist/speech therapist** will propose a course of rehabilitation suited to your needs and will follow your progress.

If necessary, the **speech therapist** specialized in swallowing will take care of this problem.

If required, the **dietician** will perform a full nutritional evaluation and adapt the meals.

## Your daily routine in hospital

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### Rehabilitation and Recovery

Rehabilitation begins as soon as your medical condition allows it. It depends on the severity of your damages (hemiplegia, hemiparesis, memory problems, difficulty swallowing, etc.) and increases in intensity as your condition improves.

It begins in the Neurology Unit and can continue, if needed, in a rehabilitation centre. It aims at the restoration and/or maintenance of your autonomy, that is of your ability to manage all the tasks of daily living.

Your participation and your motivation are very important to achieve the goals set for your rehabilitation. These are discussed and developed together with you. Do not hesitate to ask questions and the help of the team throughout.

Depending on the level of damage to the brain, the after-effects will be of a greater or lesser severity. They may be mobility and sensory related, but they can also affect the balance, coordination, vision, and memory. Problems of language, understanding and difficulties in articulating are also possible. These deficits are sometimes temporary or may slowly regress. However, this period may last several months, but all the resources available are deployed to facilitate your recovery.

### Diet and Nutrition

If you can eat and drink effortlessly, we will adapt your meals to your taste (indicate to the nurse the foods you don't like).

You may experience difficulties in eating (difficulties chewing or swallowing). In this case, a meal of a different texture (chopped, mixed food) is offered. The recovery of swallowing evolves differently depending on your stroke. A dietician is available to determine together with you the most appropriate food.

If your food goes down the wrong way (to the lungs instead of the stomach), you may develop respiratory problems or a pulmonary infection (pneumonia). Measures are needed:

- ▶ for the false passage of liquids (water, coffee, etc.), a thickening powder should be added in order to change the texture.
- ▶ for false passage of solid foods, the nurse will provisionally install a probe from the nose to the stomach through which a balanced liquid diet corresponding to your calorie needs is introduced. As soon as possible, you will return to feeding by mouth.

### Tips for a Better Diet

- ▶ Make yourself comfortable, in a seated position, back straight, head straight or slightly leaning forward.
- ▶ Eat a little food at a time, by placing the food on the best side of the mouth and tongue.
- ▶ Eat slowly and don't speak when eating.
- ▶ Remain seated for a moment after your meal.

## Elimination

A stroke may create difficulties when urinating. As a general rule rehabilitation will enable a good recovery. If you have a urinary catheter installed, it will be removed as soon as possible.

A period of hospital bed rest may cause constipation.

### Tips to improve elimination

- ▶ Drink according to the medical prescription, preferably throughout the day.
- ▶ Monitor your stools. Ask the nurse for a laxative if you feel you need it.
- ▶ Keep a urinal or a pan nearby.

## Mobility

Mobility is defined as moving a limb or a joint and starts on arrival in the unit with frequent changes of position, and the proper bed sitting position. Generally after 48 hours you will be able to gradually get up.

With the help of physiotherapists, occupational therapists and other healthcare professionals, a learning process then begins with the main objective being the maximum recovery of lost or damaged functions. This rehabilitation will last for several weeks depending on the deficits.

The recovery of the muscle strength and balance varies from one person to another. Sensitivity may be less and you may experience pain. Most of the recovery after a stroke occurs in the months following the incident.

Before the end of your hospital stay, if necessary, an occupational therapist will visit your home to assess the facilities to be installed. It is a good opportunity for you and your loved ones to inquire about the help for which you qualify.

### Tips for Better Movement

- ▶ Follow the instructions given by the healthcare team (bed rest, do not stand up by yourself, etc.).
- ▶ Make sure you have a comfortable position in your bed and in your chair. If you do not feel comfortable, ask the team for help. Use the equipment at your disposal (cushion, wheelchair).
- ▶ Touch and massage the affected upper limb to stimulate it.
- ▶ Check the temperature of water or food with the unaffected hand.

## ? DID YOU KNOW?

In the brain, the two hemispheres are involved in different mental functions. In addition, each hemisphere is connected to the opposite part of the body: if something touches the left side of your body, the information will go to the right side of your brain, and if you catch a thing with your right hand, the order comes from the left side of your brain.

### Communication

If the stroke affected the left side of the brain, you may suffer from language disorders which manifest themselves through difficulties of expression - such as difficulty articulating (dysarthria) or speaking (aphasia) - understanding, writing, reading.

A speech therapist will evaluate your communication skills and help you recover damaged functions if necessary. He/she will also help you maintain and stimulate the existing functions and establish other ways to communicate.

Your loved ones are invited to give you time to say a few words to express yourself. They will use simple sentences, using a normal and adapted language, and they will not answer in your place.

#### Tips for Better Communication

- ▶ Take your time to speak.
- ▶ Use short sentences.
- ▶ Use gestures to make yourself understood.
- ▶ Talk to one person at a time in order to facilitate the conversation.

### Emotions

You are going through a difficult time and your emotional reactions are also changed by the brain damage. This can translate into increased aggression or irritability, crying, or mood swings which occur without any reason.

These normal effects can be added to your concerns about your physical appearance or your future ability to regain a normal life and a fulfilling sex life. Be assured, an adjustment period is necessary, and your perceptions will change as your rehabilitation progresses.

#### Tips to better manage your emotions

- ▶ Share your emotions. All emotions are acceptable and verbalising them can help you.
- ▶ Open up to others, ask for help.

### Family

A stroke, the hospitalisation and the rehabilitation are difficult times for you and your loved ones. The recovery requires a lot of physical effort and courage. Most people and their families find the inner strength required to adapt to these changes. The healthcare teams are also there for your loved ones who need it.

## Returning home

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Returning home may seem complicated. Rest, the continuation of physiotherapy and occupational therapy (sometimes speech therapy) will help you make progress with the presence of your loved ones.

Do not hesitate to call the Institution genevoise de maintien à domicile (imad) or other associations (see page 24) that are in contact with people who have had a stroke or who are experiencing the same difficulties in their recovery.

### Call 144

If you ever experience symptoms such as

- ▶ mobility and sensory disorders
- ▶ language and speech disorders
- ▶ vision problems
- ▶ balance problems and dizziness
- ▶ unusual headaches,

you should take these warning signs seriously.

Call 144 immediately: an ambulance will quickly take you to the hospital, because the sooner the treatment is started, the better your chances of recovery.

## The risk factors

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The aging of the vessels play a role in the occurrence of a stroke. However, more than one third of cases are due to atherosclerosis (also called arteriosclerosis). This disease, which affects mainly the large and medium-sized arteries, progresses slowly.

Age and hereditary predisposition are two risk factors that you cannot change. However, you can modify the following factors.

### High Blood Pressure

Arterial hypertension is the main risk factor of a stroke. When the arterial walls are constantly subjected to high pressure, they harden and thicken. Furthermore, under the effect of blood pressure, the artery walls weaken and this may cause bleeding (hemorrhagic stroke).

Arterial hypertension exists when the upper value (systolic) of the tension is equal to or greater than 140 mm Hg (millimetres of mercury), or the lower value (diastolic) is equal to or greater than 90 mm Hg after repeated measures.

### What you can do

- ▶ Regularly check your blood pressure to detect a possible arterial hypertension (especially pregnant women and those taking oral contraceptives).
- ▶ Lose a few pounds if you are overweight.
- ▶ Eat less salt by replacing it with spices.
- ▶ Keep your alcohol consumption to a minimum.
- ▶ Take physical exercise on a regular basis.
- ▶ Include periods of rest and relaxation in your life.
- ▶ If your doctor prescribed you an anti-hypertensive drug (which lowers the blood pressure), take it regularly and never stop taking it without asking.

### ? DID YOU KNOW?

Atherosclerosis is characterised by the accumulation of substances (mostly fats) on the wall of the arteries which then form plaques reducing the diameter of the blood vessels.



## Smoking

Because smoking impairs the oxygenation of the body organs in the vascular walls, smoking promotes atherosclerosis and, consequently a stroke. Three to five years after quitting smoking (depending on the number of cigarettes you smoked), the stroke risk is similar to that of a non-smoker.

If you are unable to do this on your own then our team will help you during your hospital stay or you can ask a healthcare professional to contact our specialist smoking cessation consultancy. After your admission, call ☎ 022 372 95 37 to make an appointment.

## Cholesterol

A natural and vital component of our body, good cholesterol (or HDL cholesterol) has a protective effect on the blood vessels. Bad cholesterol (or LDL cholesterol) gradually builds up on the walls of the vessels fostering arteriosclerosis.

The HUG's dieticians will advise you so you can adjust your eating habits. If this proves insufficient, your doctor will prescribe medication for you that will reduce the rate of blood lipids.

## Diabetes

Diabetes is caused by a deficiency or resistance to the hormone, insulin. Insulin enables the sugar content in blood to nourish the cells. When there is resistance to insulin, sugar (glycemia) in the blood increases, eventually resulting in fats metabolism disorders and vascular lesions.



### TIP

Fact sheets on risk factors are available from the nurses.

## Overconsumption of alcohol

Excess alcohol increases blood pressure and the risk of a stroke. In addition, alcohol disrupts the production of the liver clotting factors and increases the risk of a hemorrhagic stroke.

### What you can do

- ▶ If you are a woman, limit your daily consumption to 1 drink (wine, beer, etc.).
- ▶ If you are a man, limit your daily consumption to 2 drinks (wine, beer, etc.).
- ▶ If you are unable to do this on your own talk to the nurse or the doctor. Get help from specialists: For HUG's addiction unit, call ☎ 022 372 95 37.

## Stress

Stress accelerates heart rate and thus blood pressure. It is also associated with smoking, alcohol consumption and weight gain. It is therefore another risk factor for vascular diseases.

## Sedentary Lifestyle

The lack of physical exercise increases the risk of coronary heart disease, diabetes and colon cancer. It also decreases the level of good cholesterol that has a protective effect. Conversely, exercise keeps the heart pumping, promotes good blood circulation, and activates the metabolism.

## Overweight

Excess body weight increases blood pressure. In addition, it increases the risk of excess cholesterol and of diabetes.

## Contraceptive Pills

Œstro-progestatif contraceptives may increase the stroke risk, especially if associated with smoking, hypertension or migraines, or with overweight.

### What you can do

- ▶ Stop smoking.
- ▶ Lose weight.
- ▶ Consider using another method of contraception.
- ▶ Check the other risk factors.

## Heart Problems

Certain heart diseases, such as cardiac arrhythmias, heart attacks or valvular lesions, can be the cause of a stroke. In fact, they favour the formation of blood clots.

### What you can do

- ▶ Decrease one or other of your risk factors.
- ▶ Follow the treatment recommended by the doctor.
- ▶ See the doctor for the slightest problem: when you are having palpitations, pain in the chest (especially when exercising), difficulty in breathing.

## Sleep Apnea Syndrome

More than 50% of people who have had a stroke also suffer from sleep apnea syndrome. It manifests by permanent snoring and is accompanied by respiratory pauses, most often described by the spouse. The resumption of breathing is loud. This syndrome is caused by fatigue, weight gain, age and enlarged tonsils.

Repeated apnea causes a decrease in blood oxygenation. This decrease has serious repercussions on health as it leads to the development of high blood pressure and therefore to a higher stroke risk. The diagnosis of apnea syndrome is made by recording the respiratory functions during sleep.

### What you can do

- ▶ Consult your doctor to determine whether you are indeed suffering from sleep apnea syndrome.
- ▶ Lose weight if you are overweight, sleep on one side, avoid drinking alcohol or taking sedatives at night.
- ▶ Try a mechanical treatment: a Continuous Positive Airway Pressure device (CPAP), or a mandibular advancement device.
- ▶ Choose maxillofacial surgery.

## Different causes of strokes

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Strokes may have various causes and require appropriate treatment:

### Large blood vessel disease

This causes the narrowing of the main arteries which supply blood to the brain. They are caused by cholesterol plaques that can break, form clots, and migrate to the brain. The arteries the most often affected are the carotid and vertebral arteries (at the neck level). Occasionally, the narrowing occurs at the level of the vessels that are inside the brain.

In most cases, the treatment is based on medication (such as aspirin) which lowers the cholesterol (statins). A follow-up ultrasound exam is provided. If there is a high risk of recurrence or major narrowing, surgery or possibly stenting (a small cylinder also used on the heart's arteries) may also be considered.

### Small blood vessel disease

This leads to obstructions at the level of all the small arteries of the brain. It is a major cause of a stroke, sometimes without you even realizing it and is visible from an MRI. In most cases, the treatment is based on medication that thins the blood (such as aspirin) and which lowers cholesterol (statins).

As arterial hypertension is often the main cause of small vessel disease, an anti-hypertensive treatment is often provided.

The small vessels disease is accompanied in some cases by an artery rupture which results in a cerebral hemorrhage.

### Cardiac Embolism

This often causes a stroke and frequently results from atrial fibrillation. This form of abnormal heart rhythm may go unnoticed (there are no symptoms). A preventive treatment with an anti-coagulant drug is then prescribed.

### Aortic or vertebral artery dissections

These are also one of the causes of a stroke, especially in young patients. These are tears of a wall: a hematoma forms in the vessel that clogs and causes a stroke. Very often, these dissections manifest through pain on the back of the neck and, as a general rule, are followed by the occurrence of a stroke in a few days.

### The Foramen Ovale

This small orifice, which is located at the level of the wall separating the two atria (the chambers of the heart), normally closes at birth. However, in 25% of people, the foramen ovale does not close and sometimes causes strokes in young patients. It seems that when a clot forms in a vein (for example, thrombosis in one leg), which may then migrate to the brain through the foramen ovale. The risk factors are the same as for venous thrombosis (travel by plane, prolonged bed rest, oral contraception, history of thrombosis in the family).

In this case, it is recommended, following a discussion within a multidisciplinary meeting, to percutaneously close this passage (through cardiac catheterisation).

### Unknown Origin

No cause was identified despite all the examinations which were carried out. Other additional examinations are therefore required.

A follow-up out-patient consultation within three months is recommended in all cases.

# Glossary

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## **Aphasia**

Difficulty to speak, express oneself, read, write or understand what others are saying.

## **Apraxia**

Difficulty to voluntarily perform already learned movements.

## **Ataxia**

Difficulties to coordinate one's movements.

## **Autonomy**

Ability to perform your one's daily activities.

## **Cerebral ischemia**

Lesion of the brain tissue caused by a poor blood supply.

## **Daily activities**

Daily life activities such as feeding, eliminating, moving, walking, washing, caring for oneself, etc.

## **Diplopia**

Double vision.

## **Dysarthria**

Difficulties to form or articulate words.

## **Dysphagia**

Difficulty swallowing.

## **Hemianopsia**

Loss of vision in half of the visual field, meaning that the person sees half of the image.

## **Hemineglect**

Loss of consciousness of one half of the body or of a part of the space (as if it did not exist).

## **Hemiparesis**

Weakness on one side of the body.

## **Hemiplegia**

Paralysis of one side of the body.

## **Neurologist**

Doctor specializing in diseases of the brain and of the nervous system.

## **Neuropsychologist**

Psychologist specializing in cognitive functions (memory, language, attention, etc) and their possible attainment after a stroke. He/she performs an assessment and recommends a recovery strategy.

## **Re-education**

Program of activities to restore the normal use of a body function or limb.

## **Rehabilitation**

All the activities which promote the recovery of the body functions affected by the stroke in order to find the best possible autonomy.

## **Spasticity**

Involuntary increase of the muscle tone. This contraction creates a resistance to movement.

## **Stroke**

Cerebrovascular accident (also called cerebral apoplexy or cerebral infarction) is the interruption of blood supply to the brain. The nerve cells in the affected area receive too little or no oxygen at all. They are damaged and die if the blood flow is not restored within minutes.

## **Swallowing**

Action of swallowing.

## **TIA**

Transient ischemic attack, neurological deficit which lasts in general less than an hour, and with no lesions visible to the x-ray examination (MRI of the brain).

## **Urinary incontinence**

The inability to control the bladder which is causing urinary leaks.

# Practical Information

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## Stroke Center HUG

Dr Emmanuel Carrera  
Hôpitaux universitaires de Genève  
Rue Gabrielle-Perret-Gentil 4  
1211 Genève 14  
☎ 022 372 83 10  
➤ <http://hug.plus/neurologie-vasculaire>

## Swiss Cardiology Foundation

Schwarztorstrasse 18, 3000 Berne 14  
☎ 031 388 80 80  
➤ [www.swissheart.ch](http://www.swissheart.ch)

## FRAGILE Switzerland

Association pour les traumatisés  
cranio-cérébraux  
Rue du Bugnon 18, 1005 Lausanne  
☎ 021 329 02 30  
➤ [www.fragile.ch](http://www.fragile.ch)

## Association France AVC

Allée la Grosse Pierre 34  
F-74940 Annecy-le-Vieux  
☎ +33 450 23 37 57  
➤ [www.franceavc.com](http://www.franceavc.com)  
[Franceavc74@orange.fr](mailto:Franceavc74@orange.fr)

## Association genevoise des aphasiques (AGEVA)

Dany Hersperger  
Case postale 143, 1258 Perly  
☎ 022 759 19 36  
[edecuyper@agence84.ch](mailto:edecuyper@agence84.ch)

## Association «Un Brin Créatif»

Bd St-Georges 34, 1205 Genève  
☎ 076 548 61 81  
➤ [www.unbrincreatif.ch](http://www.unbrincreatif.ch)

## Communauté suisse de travail pour l'aphasie

Habsburgerstrasse 20, 6003 Lucerne  
☎ 041 240 05 83  
➤ [www.aphasie.org](http://www.aphasie.org)  
[info@aphasie.org](mailto:info@aphasie.org)

## Institution genevoise de maintien à domicile (imad)

Av. du Cardinal-Mermillod 36  
Case postale 1731, 1227 Carouge  
☎ 022 420 20 20

## Clinical nurse specialising in rehabilitation care

Sandrine Jonniaux  
Hôpitaux universitaires de Genève  
Rue Gabrielle-Perret-Gentil 4  
1211 Genève 14  
☎ 079 553 32 99

## Centre de ressources pour personnes cérébrolésées

Rue du Val Vert 18, F-74600 Seynod  
☎ +33 450 33 08 90  
[centreresources.74@gmail.com](mailto:centreresources.74@gmail.com)

## Informational videos

### CVAs

➤ <http://tinyurl.com/AccidentVasculaireCerebral>

### Rehabilitation after a stroke

➤ <http://tinyurl.com/ReeducationAVC>

### Symptoms and warning signs of a stroke

➤ <http://tinyurl.com/SymptomesAVC>

*This brochure, tested with patients, has been created by the stroke Center and Health Care Directorate with the collaboration of the multidisciplinary work group in conjunction with the GIPP (information group for patients and family members) of HUG.*