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WELCOME TO THE STROKE CENTER

We are pleased to have cared for you during your stay at Renown Health. Renown Institute for Neurosciences is here to help you recover after your stroke, restore your mobility and elevate your quality of life.

At the Renown Institute for Neurosciences, we treat brain and neurological diseases and disorders with focus and passion using an effective blend of skill, expertise and technology. We are the only institute of our kind in the region to earn a Gold Seal of Approval by the Joint Commission.

Renown offers a highly skilled team of multi-disciplinary stroke experts who utilize breakthrough technologies and leading-edge therapies in treating stroke. Our experienced stroke team includes physicians, nurse practitioners and physician assistants, along with specially trained nurses, therapists and case managers to develop individualized care plans to best meet the needs of our patients.

Superior technology, such as bi-plane angiography, allows our highly skilled doctors to stop a stroke in its tracks. With this technology, they are able to see three-dimensional views of the brain and navigate a catheter (a thin flexible tube) directly to the stroke site, allowing them to remove a clot, deliver a clot-busting drug or seal off an aneurysm.

Our nurses take pride in providing comprehensive, professional and patient-focused care. But we can only provide the best care possible with your help – you play a key role in a successful recovery. Our goal is to involve patients in every step of the process to help them achieve a higher level of function, independence and wellness. Your family can become an integral part of the recovery process. If they are available, your family can assist you in various ways to ensure a positive and speedy recovery.

In a continuing effort to provide the best care to our patients, Renown Institute for Neurosciences Stroke Center is conducting research to develop methods of evidence-based care to stroke patients based on their outcomes following discharge from the hospital. The information provided will allow the Stroke Center to follow-up with you and answer any questions. In addition, they offer monthly stroke support groups for patients and caregivers to provide education and support.

Thank you for trusting us to assist you in your recovery.

Best regards,

J. Ivan Lopez, MD, FAAN
Director, Stroke Center
Renown Institute for Neurosciences
THE FACTS ABOUT STROKE

What is a stroke?
A stroke is similar to a heart attack except that it occurs in the brain. Blood and oxygen are cut off to the brain cells that control everything we do: from speaking, to walking, to breathing. Strokes can happen in several ways:

- The most common way is that a blood clot or a fatty deposit (plaque) builds up and blocks a blood vessel. This is called an ischemic stroke; 85 percent of strokes are ischemic.
- The second type of stroke is hemorrhagic. This stroke occurs when a blood vessel ruptures and bleeds into the tissue around the brain. There are two types of hemorrhagic stroke: intracerebral hemorrhage caused by a ruptured blood vessel within the brain and subarachnoid hemorrhage which is bleeding on the surface of the brain between the brain and skull.

What causes an ischemic stroke?
There are several causes of ischemic stroke. A blood clot that forms in another part of the body, such as the heart or other large arteries can travel to the brain and cause what is called an embolic stroke. Sometimes fatty deposits (plaque) clog a blood vessel and block or significantly reduce the blood flow causing a stroke. This is called a cerebral thrombosis. Low blood flow caused by the heart failing to pump enough blood to the brain (sometimes due to dehydration or another cause of low blood pressure) can also cause a stroke. This systemic hypoperfusion is the least common cause for stroke.

What causes a hemorrhagic stroke?
Hemorrhagic strokes occur when blood vessels rupture and bleed into the brain. Blood vessels rupture due to hypertension, bleeding disorders, illegal drug use (amphetamines or cocaine, for example) or vascular disorders. Some patients have strokes that are caused by a weakened blood vessel that balloons and then bursts (aneurysm) or they have a cluster of abnormally formed blood vessels (arteriovenous malformation) that bleed.

How do you find out what type of stroke you had and what caused it?
The team of healthcare providers caring for you will order several tests which help diagnose the type of stroke you had and help determine the cause of the stroke. Examples of these tests include magnetic resonance imaging (MRI), carotid doppler or ultrasound tests, echocardiograms and laboratory tests. Your doctor or another member of your care team will discuss these results with you and your stroke caregiver. Many patients will be discharged from the hospital with additional testing required. It is important to follow up with a member of the stroke team or your primary care doctor to complete your stroke plan of care and determine the appropriate treatment. In some cases, the exact mechanism for a stroke cannot be determined; however, your healthcare provider can still make recommendations to avoid future strokes.

WARNING SIGNS OF STROKE
There are five warning signs to help you identify if you or a loved one may be having a stroke:

1. Sudden numbness or weakness of the face, or on one side of the body
2. Sudden confusion, trouble speaking or understanding
3. Sudden vision problem such as seeing double or only half, or blindness in one eye
4. Sudden trouble walking, dizziness, loss of balance or coordination
5. Sudden severe headache with no known cause
RISKS FACTORS FOR HAVING A STROKE

Everyone has some risk of having a stroke. Some risk factors cannot be controlled, but there are many that you can control. It is never too early, or too late, for you and your family to adopt healthy eating habits, including regular exercise and proper diet, to help manage these factors.

Risk factors that cannot be controlled:

- Age: over age 55
- Gender: men are at a higher risk than women
- Race/ethnicity: African-Americans and Hispanics have an increased risk of stroke
- History: having suffered a prior stroke indicates a predisposition to another stroke

Risk factors that can be controlled through lifestyle modifications and/or medications:

- High blood pressure
- Diabetes
- High cholesterol
- Heart disease
- Physical inactivity
- Obesity
- Cigarette smoking
- Alcohol and drug abuse

TIA (Transient Ischemic Attack)

A TIA is an event that is similar to a stroke, but is temporary and does not cause permanent brain damage. It occurs when a blood vessel is blocked for only a short amount of time and resolves on its own.

Even though the symptoms may disappear after a few minutes to hours, a TIA is a strong predictor of a future stroke. For those that have had a TIA, risk of having an actual stroke within the next three months could be as high as 1 in 6. Risk of stroke in the next five years may be around 1 in 8.

A stroke is more dangerous than a TIA because the disruption in blood flow to the brain causes brain damage and can result in permanent disability or death. If you have experienced a TIA, it is important that you seek medical care and take necessary measures to decrease your chance of a future stroke.

RENOwn INSTITUTE FOR NEUROSCIENCES

Renown Institute for Neurosciences is Nevada’s first Joint Commission certified Primary Stroke Center. A highly skilled team of stroke experts utilize leading-edge therapies in treating stroke. The experienced team includes doctors, physician assistants and nurse practitioners. These clinicians along with specially trained nurses, therapists and case managers work together to develop individualized care plans to help patients recover after stroke, restore mobility and elevate quality of life.

Renown Institute for Neurosciences is here to provide follow up after stroke or TIA, offering treatment for brain and neurological diseases and disorders using an effective blend of skill, expertise and technology. It is not uncommon for the cause of a stroke or TIA to be undetermined at the time of hospital discharge. Additional testing may be required;
therefore, we recommend that you follow up with a member of the stroke team to complete your stroke plan of care and determine the appropriate treatment. Risk factors for stroke and recommendations to avoid future strokes will be provided at this time.

**Stroke Support Group**

The Stroke Support Group meets monthly to help patients, families and caregivers respond to the stress of a stroke and learn about the recovery process in a supportive, open environment. Attendees can enjoy camaraderie, moral support and sharing of information and advice from each other and guest speakers. Call 775-982-2954 for more information.

**Directions to Renown Rehabilitation Hospital, the location for Stroke Support Group meetings**

1495 Mill St. • Reno, NV 89502
775-982-3500 • renown.org

**Driving Directions to Renown Rehabilitation Hospital:**

- Exit at Mill Street (exit 68)
- From US 395 northbound, turn left. From US 395 southbound, turn right.
- Cross Kietzke Lane
- Turn right into the parking lot.
TREATMENTS

Dissolving Blood Clots (Thrombolysis)
Tissue plasminogen activator (tPA) is a drug that is used to dissolve blood clots and unblock arteries, commonly used for ischemic strokes (strokes caused by a blood clot or a clogged blood vessel). Since its approval in 1996, tPA has been given to more than 200,000 acute ischemic stroke patients. IV-tPA (when the drug is delivered through an IV) has been approved to be given within the first 3 hours after the beginning of stroke symptoms. However, in research trials, it has been found to be effective up to 4.5 hours after the onset of symptoms. Some patients are not able to receive this medication because they do not arrive at the hospital soon enough, or they may have another contraindications, such as uncontrollable high blood pressure or because they are at high risk for bleeding.

IA-tPA (when the drug is administered directly into the clot) can be given up to 6 hours after the onset of stroke symptoms. Using state-of-the-art technology, skilled interventional neuroradiologists can operate a special X-ray called biplane angiography. In this procedure, a catheter is navigated through the blood vessels to the site of the blockage in the blood vessel (from a clogged blood vessel or a blood clot). Once there, the clot busting medication is released directly onto the clot.

Removing Blood Clots (Mechanical Thrombectomy)
For stroke patients who are not candidates for tPA, there may be another option. A procedure using the MERCI (Mechanical Embolus Removal in Cerebral Ischemia) Clot Retriever removes blood clots, restoring blood flow to the brain. A tiny corkscrew-shaped device is guided through an artery to the site of the blockage where it can be used to grab a clot for removal.

Treating a Hemorrhagic Stroke
Using biplane angiography, a catheter is navigated from the thigh to the site of the ruptured blood vessel. Once there, the rupture can be sealed off.

MEDICATIONS

Medicine may help reduce stroke risk. In addition to those that treat high blood pressure, drugs are also available to control high cholesterol and treat heart disease. There are also blood thining medications that can interfere with blood’s tendency to form potential stroke-causing blood clots.

BLOOD THINNING MEDICATIONS

Antiplatelet Medications
Platelets are blood cells that aid in the ability of blood to clot and prevent bleeding. When the body has a cut, scratch, bruise or bleed, platelets begin sticking together at the site to form a clot and stop the bleeding. When the blood becomes too thick, the potential for developing a clot that leads to a stroke or heart attack increases.

Antiplatelet medicines keep the blood thin and prevent blood clots from forming by inhibiting the blood platelets ability to stick together. There are several different antiplatelet drugs including aspirin, Plavix® and Aggrenox®.

Aspirin (acetylsalicylic acid, ASA)
Aspirin is used as a pain reliever, fever and inflammation reducer and inhibits the formation of platelets to keep blood from clotting. Aspirin is also the least expensive and longest lasting antiplatelet drug available. The dosage varies from 30 to 325 milligrams per day, and is usually between 81 milligrams (baby aspirin) and 325 milligrams (maximum-strength). The dose is not the same for everyone and depends on the patient’s condition and the doctor’s decision. Do not adjust your dose without first talking to your doctor. The idea that “if one is good for me, two or three would be better” is wrong and can cause complications. Since aspirin can irritate the stomach, it should be taken with food or a full glass of milk or water. The purpose of the aspirin is to thin your blood, but as a result your body’s ability to stop bleeding is lessened. If you have blood in the urine, stools, or around the gums when eating or brushing your teeth, bleeding from the nose, or easy bruising, consult your doctor about changing your prescription.
Plavix (clopidogrel)

Plavix is similar to aspirin in that it decreases the body’s ability to clot blood. Potential bleeding effects are also similar, so watch for blood in the urine or in the stools, bleeding around the gums, bleeding from the nose, or bruising easily. Plavix comes in 75-milligram dosages. It should be taken once a day, usually in the morning. It can be taken with or without food. Do not adjust the dose of your medication or stop taking Plavix without speaking with your doctor.

Aggrenox (dipyridamole)

Aggrenox is a combination of 25 milligrams of aspirin and 200 milligrams of extended release dipyridamole. The aspirin portion works the same as described above, whereas the dipyridamole works by preventing platelets, blood cells and vessels from using adenosine (another chemical that aids in clot formation). To be effective, they must be taken together as one capsule. It is taken twice a day (once in the morning and once at night) with or without food, and must be swallowed whole. Do not crush or chew it. Watch for excessive bleeding similar to aspirin and Plavix. Severe headaches may develop after starting Aggrenox, but tend to decrease and go away over time as the body adjusts to the drug. Talk to your doctor about taking an over-the-counter pain reliever (such as Tylenol®) when starting this medication.

Anticoagulants

Anticoagulants are a stronger group of blood thinning medications. They make it harder for clots to form or keep existing clots from enlarging in your blood vessels. It is important that you follow your doctor’s instructions and take these medications only as directed.

Signs of Adverse Effects

Because one of the signs of too much blood thinning is bleeding, you should be aware of the signs and symptoms of internal bleeding. Call your doctor or go to the ER if you have any falls or injuries while taking anticoagulants.

Call your doctor right away if you experience any of these signs or symptoms:

- Excessive bleeding from your gums while brushing
- Frequent and severe bruising
- Nose bleed for no reason
- Dark or bloody urine
- Black or tarry stools or obvious blood in your stools
- Unusual bleeding

Coumadin® (warfarin)

Coumadin is a blood thinner that is used to prevent harmful clots from forming or enlarging. The medication works by decreasing the amount of active clotting factors in the bloodstream. Coumadin comes in the form of a pill that must be taken once a day at the same time each night. The amount you take may vary depending on how much your blood thins. Therefore, it will be necessary to have frequent blood tests. Never take more or less Coumadin unless specifically directed by your doctor. Patients who forget to take their dose, should not take double the dosage the next day, but take the regularly prescribed dose. Missing only one dose will not cause a clot to form. Missing more than one dose may cause problems; while taking more than the prescribed dose may cause bleeding.

Aspirin, aspirin-containing and nonsteroidal medications can all INCREASE the effect of Coumadin and should be avoided unless prescribed by a physician. Inform all your doctors that you are on Coumadin and consult your pharmacist before taking any over-the-counter medication.

Diet may also affect the way Coumadin works. It is important to maintain a steady well-balanced diet. Too many dark green leafy vegetables on consecutive days may alter the prothrombin time (a screening used to see how long it takes for blood to clot). Speak to your pharmacist about foods to avoid while taking Coumadin or ask your doctor about a consultation with a nutritionist if you are unsure what foods will interact with your Coumadin.

Pradaxa® (dabigatran)

Pradaxa is a newer anticoagulant. This medication works by decreasing the amount of thrombin in your blood thereby preventing harmful clots from forming.
Pradaxa is typically dosed at 150 milligrams twice a day, except in some patients with significant kidney disease who will take a smaller dose. Some studies suggest that Pradaxa may be more effective than Coumadin in preventing recurrent stroke. However, Pradaxa has the same bleeding risk; therefore signs of excessive bleeding should be immediately reported to your physician.

You should go the ER if you develop frank rectal or GI tract bleeding while taking Pradaxa. Unlike Coumadin, Pradaxa does not have any food interactions and does not require blood draws for monitoring. Because of this benefit, many patients find it is an easier medication to take compared to Coumadin.

Newer Anticoagulants
There are several newer anticoagulants that have recently been FDA approved or are expected to be available very soon. They thin the blood in a manner similar to Pradaxa and are as effective as Coumadin at preventing recurrent strokes. All anticoagulants carry a significant bleeding risk and patients and their caregivers should discuss with their doctor the benefit of reduced incidence of stroke, with the increased risk of life-threatening bleeding, associated with these medications.

HEALTH INSURANCE & BILLING
Medicare and most private insurance policies will provide coverage for rehabilitation following a stroke. The exact services and time periods covered vary from policy to policy. Skilled nursing care, speech, occupational and physical therapy, and medical social work are services usually covered for inpatient and outpatient rehabilitation and in-home rehabilitation.

Medicare and most insurance policies do not cover maintenance care, which is ongoing personal care and supervision often needed by stroke survivors. Few insurance policies cover custodial care in the home or in a skilled nursing hospital. Descriptions of the levels of care available to stroke survivors indicate whether the services are considered rehabilitative or maintenance, that is, whether or not the services are generally covered by Medicare and/or private insurance.

Private Health Insurance
If you have a private health insurance policy through your employer and/or your spouse’s employer, contact the employer’s human resources department or contact your insurance company directly. Many private insurance companies now have case managers to help you understand your coverage.

Government-Funded Health Insurance
Medicare is a federal health insurance program administered through the Social Security Administration. It is available to most Americans age 65 or over. However, if you are under age 65 and disabled, you may be eligible for benefits. Contact Social Security at 800-772-1213 for location branches in northern Nevada. You will be automatically enrolled in Medicare after you get disability benefits for two years.

Medicare has two parts – hospital insurance and medical insurance. Hospital insurance helps pay hospital bills and some follow-up care. The other part of Medicare, medical insurance, helps pay doctors’ bills and other services. This coverage is available for a monthly premium. Most people have both Medicare options parts.

If you receive Medicare, have low income and few resources, your state may pay your Medicare premiums and, in some cases, other “out-of-pocket” Medicare expenses and co-insurances. Contact Social Security and ask for the leaflet, Medicare Savings Programs (CMS Publication No. 10126-S).

Renown Health Billing
If you have questions regarding your insurance or hospital billing, please call the business office at 775-982-4130.

Billing for Services
After your hospital stay, you may receive separate bills from the hospital, radiology and pathology departments, and each doctor. Please contact your insurance company if you have questions regarding coverage and participating providers.
WHAT TO EXPECT FOLLOWING A STROKE

**Right-Brain Stroke**
- Paralyzed or Weak Left Side
- Spatial-Perceptual Deficits
- Quick, Impulsive Behavioral Style
- Memory Deficits

**Left-Brain Stroke**
- Paralyzed or Weak Right Side
- Speech-Language Deficits
- Slow, Cautious Behavioral Style
- Memory Deficits

**Effects Caused by a Stroke**
Your brain controls your physical and mental capacities, including how you move, think, feel, and behave. Depending on the location and severity of the stroke, it may affect any or all of these abilities. These effects include weakness on one side of the body (hemiparesis), inability to move or feel one side of the body (hemiplegia), aphasia, dysphagia, dysarthria, and emotional and cognitive changes.

**Right Versus Left Hemispheres**
Symptoms are dependent on the side of the brain where the stroke occurs. The right hemisphere controls the movements and sensations on the left side of the body and is involved with creativity, musical and artistic talents, and spatial orientation, our natural ability to maintain our body orientation and/or posture in relation to the surrounding environment (physical space) at rest and during motion. The left hemisphere of the brain controls...
how the right side of the body moves and feels. It is also involved with scientific problem solving, understanding what we read and hear, number skills, and reasoning. Most of the speech and language processing occurs in the left brain hemisphere.

**APHASIA**

One of the common disabilities of stroke is aphasia. This is an impairment of language, affecting the production or comprehension of speech and the ability to read or write. Aphasia is always due to injury to the brain – most commonly from a stroke. Brain injuries resulting in aphasia may also arise from head trauma, brain tumors or infections.

Aphasia can be mild or can be so severe that communication with the patient is almost impossible. It may affect a single aspect of language use, such as the ability to retrieve the names of objects, the ability to put words together into sentences or the ability to read. More commonly, multiple aspects of communication are impaired, while some channels remain accessible for a limited exchange of information.

**TYPES OF APHASIA**

**Global Aphasia**

This is the most severe form of aphasia and is applied to patients who can produce few recognizable words and understand little or no spoken language. Global aphasics cannot read or write. Commonly seen immediately after the patient has suffered a stroke, global aphasia may rapidly improve if damage is not extensive. With greater brain damage, severe and lasting disability may result.

**Broca’s Aphasia**

This form of aphasia occurs when speech output is severely reduced and limited to mainly short utterances, of less than four words. Vocabulary access is limited in persons with Broca’s aphasia, and their formation of sounds is often laborious and clumsy. The person may understand speech and be able to read relatively well, but could be limited with respect to writing.

**Wernicke’s Aphasia**

In this form of aphasia, the ability to grasp the meaning of spoken words is chiefly impaired; while the ease of producing connected speech is mostly intact. Therefore Wernicke’s aphasia is referred to as “fluent aphasia.” It is important to note, however, that speech is far from normal. Sentences do not hang together and irrelevant words intrude, sometimes to the point of jargon, in severe cases. Reading and writing are often severely impaired.

**How to communicate with someone who has aphasia:**

Patients with aphasia typically receive speech therapy while hospitalized and following discharge. A speech therapist will provide tips and home exercises that will expedite the individual recovery process and improve communication with loved ones. It is also helpful to remember to accept imperfect speech or grammar, and avoid overcorrecting if the idea is apparent. Focus on tone of voice, body language, and the context to help determine meanings. Speak slowly, but naturally, using simple and direct wording, and asking yes or no questions. It is also imperative to be patient and relaxed while communicating. Allow extra time to process the information or formulate a response. Help with a word the patient appears to be stuck thinking of, by asking what it looks like, where it is found and what it is used for.

**DYSPHAGIA**

Dysphagia is a disorder that affects the ability to swallow. It occurs in up to 65 percent of stroke patients; if not identified, it can lead to poor nutrition, pneumonia and increased disability.

Pneumonia caused by aspiration is one of the common problems associated with dysphagia. Aspiration occurs when food or liquid enters the airway and lungs instead of the esophagus, which could lead to pneumonia. Normally aspiration elicits a violent cough, but a stroke can reduce this sensation. This means that the stroke survivor may not be aware that the substance has entered their airway/lungs, thereby increasing the risk for developing pneumonia.

Speech-language pathologists are trained to test swallowing and will evaluate how well the mouth muscles move, listen to the voice box to see how well it is working, and give food or liquid to the patient to test their ability to swallow. Based on these results, the speech
pathologist will determine the best treatment plan and will continually assess the patient’s progress and determine when it is safe to advance to more normal foods.

It is not uncommon for patients who have swallowing difficulties to have a percutaneous endoscopic gastronomy (PEG) tube placed. The tube is placed into a patient’s stomach through the abdominal wall to provide a means of feeding when unable to swallow due to stroke or when oral intake is not adequate. This nutritional support can be temporary or permanent, depending upon the progression of the patient. It is important to remember that a PEG tube provides nutritional support; however, it does not reduce the risk that the patient will develop pneumonia due to an inability to manage oral secretions.

**DYSARTHRIA**

Dysarthria is an impairment that can affect several different facets of speech. It is caused when the brain is damaged causing muscles to become weak, move slowly, or not move altogether. The condition can alter the quality and volume of the voice, the ability to speak at a normal rate and rhythm, and the precision of speech sounds (pronunciation), which is recognized as slurred speech. Severity and specific problems differ from patient to patient – depending on stroke location and seriousness. A speech therapist can provide many simple strategies that improve the likelihood that a person with dysarthria will be understood.

**Hemiparesis, Hemiplegia and Hemispatial Neglect**

Weakness on one side of the body (hemiparesis) or inability to move one side of the body (hemiplegia) is common after a stroke. Some patients may also have the inability to process and perceive stimuli on one side of the body (hemispatial neglect). These deficits make it difficult and in some cases, impossible for patient’s to live and care for themselves independently. Dependence upon loved ones for daily living activities (bathing, cooking, driving, etc.) is a difficult adjustment for patients and their caretakers. These deficits also increase the risk of falls and injury. While hospitalized, every precaution will be taken by the nursing staff to avoid falls and patients will typically begin receiving physical therapy and/or occupational therapy. These therapists may recommend walking aids or medical equipment (such as a shower chair) that will reduce the chance of falls and make it possible for many patients to return home with caregiver assistance. Most patients with deficits will continue therapy upon discharge either through acute inpatient rehabilitation or outpatient therapy. The most significant portion of stroke recovery occurs within the first six months following a stroke; however, recent studies have shown that patients can and will continue to recover beyond this timeframe if therapeutic exercises are continued at home.
EMOTIONAL CHANGES

Emotional reactions may fluctuate following a stroke. You may react with understandable sadness, whereas others may react with cheerfulness. Responses may even fluctuate this way on a day-to-day or week-to-week basis.

- **Biological Changes**: These changes can cause emotional lability, also called “reflex crying,” which results in rapid mood changes, crying or laughing that doesn’t match the person’s mood, and crying or laughing that lasts longer than seems appropriate. Post-stroke depression can also occur and has characteristics of hopelessness, feelings of sadness, and changing in eating, sleeping, and thinking.

- **Psychological Changes**: These changes are natural in the sense that they are a function of adjusting to the changes brought on by a stroke. Some of the common reactions include frustration, anger, anxiety, apathy, depression, sadness, and lack of motivation.

Talk to your doctor about your mood and how you are feeling. In many cases, patients may benefit from medication or a referral to a psychiatrist.

Coping with emotional changes:
- Learn to talk to yourself in a positive way.
- Allow yourself to make mistakes.
- Give yourself credit for the progress you’ve made.
- Celebrate the large and small gains.

Find people who understand what you are going through. Stroke support groups are a great resource for this. Renown Institute for Neurosciences offers a monthly Stroke Support Group. For more information, call 775-982-6201, or contact your local hospital(s) for available stroke support groups in your area.

COGNITIVE CHANGES

Cognitive changes are changes in thinking that occur after stroke and include memory problems, dementia, and difficulty solving problems.

Left hemisphere strokes can affect short-term memory as well as difficulty learning new information. Caretakers may have to repeat things and remind the patient of things over and over. This can be frustrating for caretakers as well as patients.

Right hemisphere stroke patients are more likely to have mixed up memories – confuse a sequence of events or have mistaken details about an event. Struggles with problem solving and increased impulsiveness are also more likely. Most challenging for caretakers is being unaware of a stroke person’s deficits. These patients will forget they cannot walk without assistance and suddenly stand up and attempt to walk across the room.

Patients with changes to thinking may have decreased attention, be more easily distracted or lose the ability to inhibit inappropriate behavior. Some patients have a deficit called perseveration in which they are unable to move off a topic of conversation or stop a particular behavior.

The good news is that through cognitive therapy (provided by speech and occupational therapists in both the inpatient and outpatient settings) many patients regain these skills or develop compensatory coping strategies. Some patients benefit from more formal memory testing available through a neuropsychologist. These test results can be helpful if it is safe to drive or perform job responsibilities.
Reducing chances of having another stroke is simple: follow doctor’s suggestions about diet, exercise and weight loss, and take medications as directed. It is important to follow up with a neurologist. Renown Institute for Neurosciences has several stroke specialists committed to helping understand and reducing your risk of a recurrent stroke. By understanding the basis for these decisions, you’ll be better able to follow the suggestions and make informed choices.

About 795,000 American have a new or recurrent stroke each year. On average, a stroke occurs every 40 seconds. Every 4 minutes, someone dies from a stroke. It is the fourth leading cause of death and the leading cause of disability in the United States. After a stroke, survivors tend to focus on rehabilitation and recovery, but preventing another stroke is also a key concern for both stroke survivors and people who have had transient ischemic attacks (TIAs). Up to a third of people who have a TIA are expected to have a stroke. It is never too late to make lifestyle changes to reduce the chances of suffering a recurrent stroke.

### Percentage of Recurring After First Stroke

- **30 Days**: 3% to 10%
- **1 Year**: 5% to 14%
- **5 Years**: 25% to 40%

### Reducing the Risk for a Stroke: Controlling Risk Factors

Everyone has some risk for stroke. A few stroke risk factors are beyond your control. There is an increased risk with people over the age of 55, males, African Americans, Hispanics and people with a family history of stroke. If you have one of these risk factors, it is even more important that you learn about the lifestyle and medical changes you can make to reduce your chance of stroke.

**Medical risk factors**: High cholesterol, diabetes, high blood pressure, heart disease, atrial fibrillation and carotid artery disease are all factors that increase stroke risk and can be controlled.

**Lifestyle risk factors**: Smoking, being overweight and drinking too much alcohol are all lifestyle risk factors. You can control these lifestyle risk factors by quitting smoking, exercising regularly, watching what and how much you eat and limiting alcohol consumption.

### Blood Pressure

Blood pressure is the measurement of the force your blood exerts on blood vessel walls as it travels through your body. Optimal blood pressure in people over the age of 18 is 120/80 or lower. The first number, called the systolic pressure, is the force exerted as your heart beats. The second number is called the diastolic pressure and is a measure of the force exerted on the vessel walls when your heart is at rest. Hypertension is one of the most common causes of stroke and is also the most treatable risk factor.

It is important to know your blood pressure. If it is high, work with your doctor to keep it under control. High blood pressure is a leading cause of stroke because it adds unnecessary stress on the walls of the blood vessels, causing them to thicken and deteriorate. High blood pressure also has the potential to speed up several forms of heart disease. When blood vessel walls thicken, cholesterol or other fat-like substances can break away from artery walls and block an artery. Weakened vessels due to stress-induced deterioration can rupture leading to a brain hemorrhage.

Have your blood pressure checked at least once each year – more often if you have a history of high blood pressure. High blood pressure can be controlled through diet, exercise, a wide range of medication, or a combination of all three.

### High Cholesterol (Hyperlipidemia)

Cholesterol is a fatty substance and a vital component for all living tissue. However, too much cholesterol in the blood can cause it to build up in the vessel walls resulting in narrowing and hardening of the arteries. Cholesterol can’t dissolve in the blood. It has to be transported to and from the cells by carriers called lipoproteins. Low-density lipoprotein, or LDL, is known as bad cholesterol and is responsible for the plaque that builds up on the vessels.
High-density lipoprotein, or HDL, is known as good cholesterol. It is thought to carry cholesterol back to the liver where it can be processed, to remove excess plaque from arterial walls, slowing the buildup. These two types of lipids, HDL and LDL, along with triglycerides make up your total cholesterol count. Know your cholesterol number. If it is high, work with your doctor to control it.

Lowering your cholesterol may reduce your risk for stroke. Often, high cholesterol can be controlled with diet, exercise and lipid-lowering drugs called statins. Avoid high cholesterol foods like egg yolks, fatty meats, butter and cream.

Diabetes
Diabetes is a condition in which sugar (glucose) stays in the bloodstream instead of entering into the body’s cells to be used as energy. This results in a persistently high blood glucose level that can damage many body systems over time. Diabetes increases the risk for developing serious health conditions including atherosclerosis (hardening of the arteries), heart problems, circulatory and nervous system problems and kidney disease. Diabetes is a lifelong condition, but it can be managed through diet, lifestyle changes and medications including insulin and oral medication. As long as the blood sugar levels are kept within an accepted range, the risk for developing serious medical conditions is reduced.

Cardiovascular Factors
Ask your doctor if you have circulation problems. If so, work with him or her to control them. Fatty deposits can block the arteries that carry blood from your heart to your brain. This kind of blockage can cause a stroke. There are several different cardiovascular factors that can block an artery to the brain:

- **Carotid Stenosis:** The carotid arteries travel up each side of the neck and supply blood to your brain, a common site for atherosclerosis, and when they become damaged by a fatty buildup of plaque inside the wall, it may become blocked by a blood clot.

- **Sickle Cell Anemia:** This is a genetic disorder that predominately affects African-Americans and Hispanics. Sickled red blood cells are less able to carry oxygen to the body’s tissues and organs. In addition, these cells have a tendency to stick to blood vessel walls, which can block arteries to the brain and cause a stroke.

- **Peripheral Vascular and Coronary Artery Disease:** These two conditions are similar in that they both involve narrowing and hardening of the arteries caused by a buildup of plaque made of excess cholesterol, calcium and other substances. Peripheral vascular disease involves the arteries that supply blood to the legs, abdomen, pelvis, arms or neck. In an affected leg artery, the leg muscles do not receive enough blood, especially during increased activity. This inactivity can cause decreased leg strength and function, poor balance when standing, cold and numb feet or toes and sores that are slow to heal. Coronary artery disease affects the arteries that supply blood to the heart itself. The plaque buildup causes poor blood flow, which can deprive the heart muscle and lead to chest pain. When a clot forms over the plaque it results in a heart attack.

- **Atrial Fibrillation:** A leading cause of strokes in patients over 80 years of age, atrial fibrillation is considered the most common form of cardiac arrhythmia (irregular heartbeat). During atrial fibrillation your atria (upper chambers of the heart) beat too fast and inefficiently, causing the blood to pool in these chambers. This blood can form clots, which could break loose, travel to the brain and cause a stroke. Symptoms of atrial fibrillation include a racing, uncomfortable or irregular heartbeat, weakness and difficulty exercising, dizziness, sweating, and chest pain or pressure. The heartbeat may return to normal on its own, or it may require medicine or electric shock. Stronger blood thinners called anticoagulants are often needed to prevent stroke and heart complications.

- **Heart Failure:** Heart failure is a condition caused by the ventricles’ inability to pump blood effectively. It is usually caused by damaged sustained from long-term high blood pressure, coronary artery disease, heart valve problems, a heart attack or other
conditions. Heart failure can be ongoing (chronic) or sudden (acute). Symptoms include shortness of breath while at rest, with mild exertion, or while lying down, or shortness of breath that wakes a person from sleep; leg swelling; and fatigue, dizziness or fainting. Over time, these symptoms may progressively get worse until they are always present.

**Smoking**
Smoking is an important risk factor for stroke. Not only could you become one of the more than 450,000 deaths smoking causes each year, almost one-fifth of deaths from heart disease are a result of smoking. Regardless of how much or how long you have smoked, your risk for stroke and heart disease begin to drop as soon as you quit. In time, your risk will be about the same as if you have never smoked.

People interested in quitting smoking can contact Renown Health Management Services to join their Quit Tobacco Program at 775-982-5073.

**Alcohol**
If you drink alcohol, do so in moderation. According to the American Heart Association, moderation is considered to be no more than two drinks per day for men and no more than one drink per day for women. Remember that alcohol is a drug. It can interact with other drugs you are taking and is harmful if taken in large doses.

**Diet**
Diet is important in regulating and controlling several stroke and heart disease risk factors. Diets high in saturated fat, trans fat and cholesterol can raise blood cholesterol levels. Other diets high in sodium can contribute to increased blood pressure and those with excess calories can contribute to obesity.

A diet rich in fruits and vegetables is high in vitamins, minerals and fiber, and low in calories. Eating a variety of fruits and vegetables may help control weight and blood pressure. Unrefined whole-grain foods contain fiber that can help lower blood cholesterol and help you feel full, which may help you manage your weight. Eat fish at least twice per week. Recent research shows that eating oily fish containing omega-3 fatty acids (salmon, trout, herring) may help lower your risk of death from coronary artery disease.

As you make daily food choices, base your eating pattern on these recommendations:

- Choose lean meats and poultry without skin and prepare them without added saturated and trans fat.
- Select fat-free, 1 percent fat, and low-fat dairy products.
- Cut back on foods containing partially hydrogenated vegetable oils to reduce trans fat in your diet.
- Cut back on foods high in dietary cholesterol. Aim to eat less than 300 milligrams of cholesterol each day.
- Cut back on beverages and foods with added sugars.
- Choose and prepare foods with little or no salt. Aim to eat less than 1,500 milligrams of sodium per day.
- Follow the American Heart Association recommendations when you eat out, and keep an eye on your portion sizes.

**Obstructive Sleep Apnea (OSA)**
OSA causes periodic pauses in breathing during sleep. Sleep apnea can cause changes in blood vessel function and may be a contributing factor to high blood pressure and cardiovascular disease. Tell your doctor if you or your caretaker have noticed snoring or gasping for breath during sleep. You many need a sleep study to rule out OSA.

**Exercise and Physical Activity**
Stroke is a leading cause of long-term disability in the United States. Consequently, stroke survivors are predisposed to inactive lifestyles limiting their activities of daily living and increasing their risk for falls. In addition, this lack of activity may contribute to an increased risk for a recurring stroke.

The severity of the stroke correlates to the magnitude of both physical and neurological limitations, which differs from patient to patient. Due to variations in pre-stroke
condition and risk factors, there is no set guideline for acceptable physical activities. Recent studies indicate yoga may improve balance and motor function in stroke survivors.

Goals for exercise programs include:
1. Preventing complications of prolonged inactivity
2. Decreasing recurrent stroke and cardiovascular events
3. Increasing aerobic fitness

A program designed to meet these goals while minimizing risk should be discussed with your physician prior to beginning any physical activity program.

Benefits
Physical activity is proven to improve both mental and physical health. According to the American Heart Association, for each hour of regular exercise you get, you’ll gain about two hours of life expectancy, even if you don’t start until middle age. Becoming more active can lower your blood pressure by as much as 4 to 9 mm Hg (millimeters of Mercury), which is the same reduction in blood pressure delivered by some antihypertensive medications. Moderate exercise, such as brisk walking, for as little as 30 minutes a day is all it takes to obtain the proven health benefits:

- Improves self-image and energy levels
- Improves anxiety, depression and anger
- Improves muscle tone and muscle strength
- Improves circulation, which reduces the risk of heart disease
- Enhances your immune system
- Helps prevent bone loss
- Promotes enthusiasm and optimism
- Reduces coronary heart disease in women by 30–40 percent
- Reduces the risk of stroke by 20 percent in moderately active people and by 27 percent in highly active ones
- Decreases the risk of developing cancer
- Helps in the battle to quit smoking
- Helps you fall asleep faster and sleep more soundly

Keep in mind that even if you do not have 30 straight minutes to exercise, three 10-minute periods of activity are almost as beneficial to your overall fitness as one 30-minute session. It’s also a good idea to spend some time outdoors. Sunlight on your skin helps your body produce vitamin D, which brings many added health benefits.

Tips for a Healthy Road to Recovery:
Ask your doctor or pharmacist to make a “medication map.” This map helps you integrate your medicine into the way you actually live. It allows your doctor to determine if the timing and combinations are okay. Additionally it:

- Organizes all medicines into a daily schedule
- Helps you make sure to take them at the ideal times
- Gives a final check for any drug interactions
- Separates any medicines that should not be taken together

Be sure to:
- Check expiration dates
- Never order medication over the Internet without a prescription, and do not automatically trust information you get from the Internet. Appropriate information has references and at least a byline of a reputable person. If you find information that troubles you, talk to your pharmacist or doctor before you act on that information.
- Never take prescription drugs on the advice of friends or neighbors because your symptoms are “just like theirs.” Drug therapy must be individualized.
- Ask your doctor if you should be taking any vitamins or minerals.
- Use a pillbox or dosing calendar so you can check off each dose as you take it. This is especially helpful if you have trouble keeping track of whether you’ve taken your medicine.
- When refilling a prescription, check to be sure that the drug in the bottle is the same as the drug in your
original supply. If it’s different, ask your pharmacist to explain the difference. (Generic drugs from different manufacturers often vary in size, shape, color, etc.).

- If you take medicines prescribed by more than one doctor, check the generic names for duplicate drugs with different brand names. This could cause serious overdoses. If you’re not sure, ask your pharmacist to help.

- Ask what the goals of any treatment are and how long it will take to reach them.

- Always ask that the prescription include both the name of the drug and the diagnosis for which the drug is taken.

- Always keep follow-up appointments with your doctors and for laboratory tests.

- Make a list of all of your medications including vitamins and herbal supplements. Keep this list in your wallet or purse so that it will always be available for you to give to your medical team.
**TIPS FOR STROKE CAREGIVERS**

Most stroke patients will require a caregiver to help ease them back into daily living. Below are some tips for caregivers to help you not only take care of the patient, but also take care of yourself.

**Stroke Support Group**

Renown Institute for Neurosciences has a Stroke Support Group that meets monthly to help patients, families, and caregivers respond to the stress of a stroke and learn about the recovery process in a supportive, open environment. Attendees can enjoy camaraderie, moral support and sharing of information and advice from each other and guest speakers. Call 775-982-2954 for the schedule and more information.

**Pace yourself**

As a caregiver, you have to be realistic about what can and can’t be controlled. You can’t control the fact that your loved one has a chronic or progressive disease or the impact of that disease, but you can control how you respond to the situation. The first step is taking ownership of your caregiver role and admitting that it might be a long-term job. This acknowledgement allows you to plan and seek help. The National Family Caregivers Association has reported that this simple shift in attitude can have a profound impact on your situation.

The next step is to understand the scope of long-term care giving. If you don’t pace yourself, you’re going to be worn-out before the job is done. A lot of people throw themselves into a care-giving frenzy that quickly leads to emotional and physical burnout. Set your pace and accept the reality that you will need help along the way. The earlier you understand pacing and start asking for help, the better you and your loved one will do.

Fight negative or unrealistic thinking. Your attitude can be the biggest barrier to taking care of yourself and doing the best job for your loved one. Remind yourself that you’re a caregiver; you need to stay healthy; you have rights too; and that you will do the best you can but may have to find help for certain things.

**Communicate with Your Loved One**

Effective communication with someone you love that is disabled for medical reasons or has a progressive illness is often difficult. Follow these guidelines and your care-giving experience will be more rewarding for both you and your loved one.

- **Be understanding** – You have to know the other person to respond appropriately to their needs. They may have changed on the outside, but they are still the same person inside. Keep that in mind at all times. Remembering who that person is helps you approach care-giving responsibilities in a more personal and intimate manner.
- **Alternate rhythms** – Caregiving involves modifying your behavior in response to the circumstances and to each other in your new roles. You’ll find a better balance by giving and taking.
- **Alter personal boundaries** – Both you and your loved one must be flexible about your personal boundaries. You will both have to compromise. Your loved one is going to have to accept help, and you are going to have to adapt to spending more time in the role of giving.
- **Patience** – This goes both ways. You must have patience with each other to get through this healing process successfully.
- **Trust** – You have to have faith in your ability to be a caregiver. Your loved one has to trust you as a caregiver, regardless of the roles you played before the illness.
- **Authenticity** – No matter how stressful the role, if you approach caregiving as something you do from your heart, it will make the task easier. If your loved one senses that you’re doing the job because you want to, they’ll be more cooperative and more willing to work out the compromises that will keep you healthier and happier throughout the process.
• **Responsiveness** – This doesn’t mean you have to jump every time your loved one calls. It means you need to be sensitive to subtle nonverbal cues and respond to your loved one as the person they were before becoming the patient.

• **Participation** – Your loved one’s responses, no matter how simple, open the door for you to more accurately understand what they need, or how much they need. Try to help your loved one transcend despair and find meaning in the situation. Help them feel comfortable about communicating their feelings to you, then have the courage to tell them how you feel.

• **Competence** – Learn all that you can about your loved one’s condition and demonstrate that you are competent to make decisions about their care. They will relax and become more compliant with the regimens you develop to give them the best care and organize your responsibilities.

• **Commitment** – Sometimes you have the job whether you wanted it or not. But if it’s yours, commit to it. If you’re constantly fighting the idea that you’ve become a caregiver or if you resent it, you and your loved one will both suffer.

• **Being present** – Don’t get caught in the trap of just trying to get it all done and working around your loved one. Take the time to notice what’s in their eyes and tone of voice. Communicate with touch and words while getting things done. They’ll feel more comfortable, less frightened and less like a burden to you.

• **Nonjudgmental** – Both you and your loved one have to practice being nonjudgmental. You’re both learning a new way to live. You have to accept that both of you are going to make mistakes.

• **Hope** – An attitude of hope will help your loved one and remind you that your life must go on no matter how the situation develops. A positive outlook can be infectious for your loved one. Patients often live up to the expectations of the caregiver, whether positive or negative.

• **Teamwork** – Learn to work with your loved one, healthcare professionals and any others that are involved in the caregiving as a team. It builds confidence, streamlines effort and keeps everyone pitching in without feeling threatened or overburdened.

• **Courage** – You’re leading your loved one into unknown territory. It can be frightening, but you have to have the courage to go forward as best you can and seek help when you need it. You also must have the courage not to be bullied and to take time out to care for yourself.

**Help Yourself**

To do the best for your loved one, you must be in the best possible health yourself. That means getting professional help and following doctors’ orders for your mental and physical health. It also means keeping your energy level up and reducing your risks by eating a balanced, nutritious diet, getting regular physical activity, avoiding tobacco and doing things you enjoy.

One of the most important things you can do for yourself and your loved one is to take time and space for yourself. This has to be a conscious action that you take every day, no matter how simple it is. If you don’t learn how to take a timeout, your frustration is going to boil over. You’ll be less productive and your relationship with your loved one will suffer.

• Find a way to take a 10-15 minute walk a couple of times a day, even if it’s just around the yard.

• Choose a space in the house that is your quiet space where you can go, take a few deep breaths, close your eyes, read a book, pray, meditate, listen to music, write in your journal, talk to a friend on the phone or just rest quietly for a few minutes.

• Schedule your timeouts. Choose a time when your loved one is typically sleeping, eating, watching a TV program or seems to be at their best during the day.

• Insist on these moments in a gentle way and reward your loved one when you’ve refreshed yourself.
Stress can affect eating habits in different ways. Some people will eat anything they can get their hands on. Others tend to go into a starvation mode and not eat much at all. These are both normal reactions as our bodies behave differently when we are chronically stressed. However, neither of these responses will help relieve stress or contribute to a healthy body and mind. Maintaining good nutrition habits is tough for anyone, but especially difficult for a caregiver. Often your loved one is on a special diet or has a particularly selective appetite. There may be other family members to feed, and your time and energy are certainly limited. But you still have to eat right. Good nutrition is a habit that you have to consciously cultivate. It begins at the grocery store. Start buying foods that benefit your body and mind.
STROKE RESOURCES

Books:
- “The Stroke Recovery Guide” by the National Stroke Association
- “Strokes: What Families Should Know” by Elaine Shimberg
- “Coping With Aphasia” by John G. Lyon
- “The Family Guide of Surviving Stroke and Communication Disorders” by Dennis C. Tanner

Magazines:
- Stroke Smart
  9707 E. Easter Lane, Englewood, CO 80112
  $12/yr. (National Stroke Association)

- Stroke Connection
  1-888-4-STROKE (1-888-477-7653)
  FREE (American Stroke Association)

Online:
- National Stroke Association: Stroke.org
- American Stroke Association: StrokeAssociation.org
- Stroke Family: StrokeFamily.org

Stroke Family Warmline:
The Warmline is a team of three people who answer calls from stroke survivors and their families, providing support and helpful information or just a listening ear. Although everyone at the American Stroke Association’s national call center is qualified to answer questions about stroke, the Warmline team members have some particularly special experience; either they or a family member are stroke survivors. Call 1-888-4-STROKE (1-888-478-7653) to reach the Warmline team.

Exercise Your Right (Living Will)
Upon admission to the hospital you will be asked if you have an advance directive. If you do, please bring copies of the documents to the hospital with you so it can become a part of your medical record. Advance directives are not a requirement for hospital admission. Renown Health also offers assistance in creating advance directives if you would like to have one prepared. You have the right to formulate an advance directive (or living will) and to appoint a surrogate to make healthcare decisions on your behalf to the extent permitted by law. Renown Health will honor all patients’ advance directives, regardless of the range of medical conditions or procedures.

What are advance medical directives?
Advance directives are a means of communicating to all caregivers the patient’s wishes regarding healthcare. If a patient has a Living Will or has appointed a Health Care Agent and is no longer able to express his or her wishes to the doctor, family or hospital staff, the medical center is committed to honoring the wishes of the patient as they are documented at the time the patient was able to make that determination.

There are three different types of Advance Directives:
- Living wills are written instructions that explain your wishes for health care if you have a terminal condition or irreversible coma and are unable to communicate.
- Appointment of a health care agent (sometimes called a medical power of attorney) is a document that lets you name a person (your agent) to make medical decisions for you, if you become unable to do so.
- Healthcare instructions are your specific choices regarding use of life sustaining equipment, hydration and nutrition and use of pain medications.
Directions to Renown Institute for Neurosciences

Driving Directions to Renown Institute for Neurosciences

- Exit at Glendale/E. 2nd St. (exit 67)
- From I-580/US 395 northbound, turn left
- From I-580/US 395 southbound, turn right
- Cross Kietzke Lane
- Turn left at Pringle Way
- Valet parking is available for a nominal fee at the 2nd Street Entrance
- Self-parking is available in 2nd Street Parking

Directions to Renown Regional Medical Center

Driving Directions to Mill Street Parking from US 395

- Exit at Mill Street (exit 68)
- From US 395 northbound, turn left
- From US 395 southbound, turn right
- Cross Kietzke Lane
- Turn right into the Renown Regional Medical Center campus
- Follow the signs to parking or proceed to self-parking on the right
Renown Institute for Neurosciences
75 Pringle Way
Center for Advanced Medicine C, Suite 401
Reno, NV 89502
775-982-2970 • renown.org/neuro