Subarachnoid Hemorrhage (SAH)

What is a subarachnoid hemorrhage?
A subarachnoid hemorrhage (SAH) is bleeding into the area around the brain called the subarachnoid space. The most common cause of SAH is a ruptured brain aneurysm (a bulging of a weakened blood vessel). There are less common causes as well.

SAH is a life threatening condition. It is important to understand the seriousness of this type of brain injury so you can understand the decisions that are made by your health care team. Up to one-third of patients die before getting medical care. Of the patients who do get to a hospital, one-third are at high risk of death from this injury or related swelling of the brain. Survival and outcomes are strongly related to how sick the patient is when he or she arrives to the emergency room. Outcomes are much better when the patient is cared for in a major medical facility.

What are the signs and symptoms of a subarachnoid hemorrhage?
When an aneurysm ruptures, blood rapidly enters the fluid in the brain called cerebrospinal fluid (CSF), and causes an increase in intracranial pressure (pressure inside the skull). The onset of symptoms is abrupt. The hallmark symptom of SAH is a headache almost always described as the “worst headache of my life.” Other symptoms may include decreased wakefulness, seizure, nausea, vomiting, and a stiff, aching neck. If any of these are present, call 911 immediately.

How is a subarachnoid hemorrhage diagnosed?
A CT scan is the standard for assessing bleeding in the brain. This scan can detect blood present in the brain almost immediately. If the diagnosis of SAH is made, you will be admitted to the neuro-surgical intensive care unit for proper treatment. Once stabilized in the ICU, you may go for a test called an angiogram. This is a test in which dye is injected through a special catheter inserted into a groin artery. The doctors watch how the dye follows the blood flow through the brain and look for an aneurysm that may be causing the SAH.

What are the risk factors for a subarachnoid hemorrhage?
• Family history of SAH – First degree relatives (mother, father, sister, brother, children) of SAH patients should talk with their doctors about screening for aneurysms
• Genetics (i.e., a gene or chromosome that may predispose you to the development of SAH)
• Cigarette Smoking – This is the most important preventable risk factor
• High Blood Pressure (especially when combined with cigarette smoking)
• Estrogen Deficiency – Post-menopausal women not receiving estrogen replacement therapy are at greater risk than premenopausal women

What are the complications of a subarachnoid hemorrhage?
• Hydrocephalus – A buildup of cerebrospinal fluid in the brain leading to an increase in intracranial pressure. This is because the brain’s drainage system gets clogged by the blood and toxins released from the injury.
• Seizures – These may be caused by the irritation of brain tissue by blood. They may also indicate that an aneurysm has bled again.
• Vasospasm – This is the most serious of the complications. Vasospasm is a narrowing of the blood vessels in the brain that is caused by irritation from blood in the space around the vessels. It is the leading cause of death and disability after SAH. The symptoms of vasospasm look like a stroke. Treatment of vasospasm is difficult, so prevention is very important.
How is a subarachnoid hemorrhage treated?
Patients with an aneurysm are typically taken to surgery for an aneurysm clipping. This is a process by which the neurosurgeon removes a portion of skull to gain access to the blood vessels in the brain. He then locates the aneurysm and places a surgical clip around the base of it, depriving it of blood flow. A special monitoring device may be placed in the brain in order to monitor intracranial pressure. This monitor can also allow the bedside nurse to drain fluid from the brain to decrease intracranial pressure. The neurosurgeon then replaces the portion of the skull, and the patient returns to the ICU for close monitoring.

What can I expect in the ICU?
In the ICU, the patient’s vital signs are monitored continuously. The bedside nurse performs neurological checks hourly. This includes asking questions and having the patient perform simple tasks on both sides of his/her body. During these neurological checks, a light is shined into the patient’s eyes to see how the pupil (the black part of the eye) reacts. These neurological checks are performed around the clock and can become bothersome to patients and families because of the lack of sleep. However, this is the most important way of monitoring how a patient is doing while in the ICU.

The breathing tube may remain in place after surgery if the patient is not awake enough to protect his/her airway. A temporary feeding tube may be placed to provide nutrition if the patient is unable to swallow. Other important measures taken in the ICU include strict blood pressure control, control of intracranial pressure, and subarachnoid precautions. These precautions include strict bedrest, pain control, and the maintenance of a quiet, nonstimulating environment.

Throughout the hospitalization, patients can expect to receive multiple medications. Some of these include Nimotop to prevent vasospasm, stool softeners (straining to have a bowel movement increases intracranial pressure), antiseizure medications, and medication to prevent stomach ulcers that are common in the hospitalized patient. Elevated intracranial pressure is treated by removing fluid via the drain that was placed in surgery, giving steroids to decrease swelling in the brain, and/or Mannitol, a highly concentrated medication given through an IV to act as a sponge in the brain and remove excess fluid. Pain medication is given as needed for patient comfort without oversedating the patient. Narcotic pain medications typically cause sleepiness. Since sleepiness is part of the neurological assessment, this makes it difficult to distinguish between a neurological change and too much pain medication.

As soon as the patient is neurologically stable, therapies start to help the patient return to a state of independence. These include physical, occupational, and speech therapies. Our social worker is usually involved early in the hospitalization to help with discharge planning and any other patient and family concerns. Chaplain services are available at anytime for patient and family support. Your nurse will coordinate these services. Your nurse is available at any time to answer your questions and address your concerns.