

Krembil Neuroscience Aneurysm and AVM Booklet



UHN

Dear patient and family:

Welcome to our new AVM and aneurysm package. The Krembil Neuroscience Centre is committed to offering high quality patient care and education. We have heard from patients that they would like more education and information after they leave the hospital. This package was developed by dedicated staff in order to provide you and your family with education and follow-up care upon discharge from our hospital.

Information about the brain, your procedure, your recovery and general questions will be found in this package. They are to be read at your leisure. Upon your discharge from the hospital your goal is to recover from the hospital stay and return to normal daily living activities.

Please feel free to contact the support group network or another member of your health care team if you have any further questions or concerns.

On behalf of the Krembil Neuroscience team, we wish you success in your recovery.

Regards,

Dawn Tymianski and Pam McFarlane

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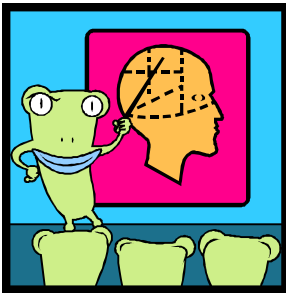
Understanding your Nervous System and Brain

Commonly Asked Questions



How does our brain work?

- As humans we are able to think, feel, reason and remember what it is that we need to do during the day. We are able to make our muscles move when we want, lift our foot if we step on a nail, cry, laugh, see, hear, dance, and respond to danger.
- Our brain and all of its connections are like a series of highways. These highways transmit information about our environment and how we should respond to what is going on in our world in the best way.



Cool facts: the total number of highways used in our brain to send information is between 150-180,000 kms!
Our brains total surface area is 2.5 square feet.

Can you give me an example?

- *What if you touch the stove when it is hot and burn your finger?*

Somehow, you need your brain to tell you that your finger hurts so that you will move your hand away from the hot stove in the fastest time possible.



Think about how this occurs. There is a train track made of nerve fibers that runs all the way from your finger to your brain. Let's pretend that the pain sensation from your finger is the passenger on the train. This passenger has an urgent message to carry to the brain. The train quickly travels up your arm to your spinal cord and then to your brain. Other passengers are picked up along the way. These passengers also carry messages that your brain needs in order to respond to the urgent message from your finger. These may include messages from

the arm muscles, from the eyes about where the stove is, from your leg muscles about where you are standing and so forth. Once this train enters the brain, it stops at a central relay station. At this station, every passenger is sent on various "train tracks" to the areas in the brain where they must deliver their messages. The brain then processes all the messages brought by the various passengers and sends its own messages back on the same nerve fibre "train tracks".

"Pull your hand away from the stove!"

"Step back away from the heat!"

"Look at your finger!"

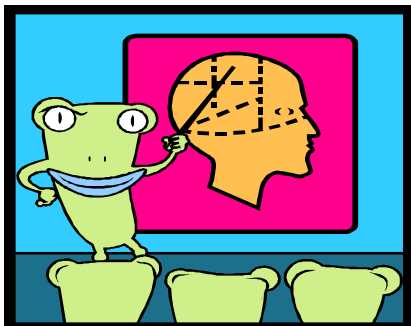
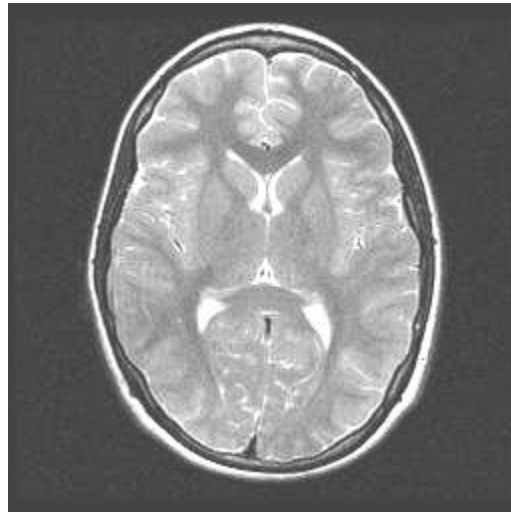


How fast does this system work?

- This occurs in a fraction of a second. Your hand would be off the stove, you would be waving it around, before you would have the chance to say, “Ouch !!”.

- **What does my brain look like?**

In the average adult, the brain weighs about 3 pounds and is about the size of 2 fists. It is grey in colour, feels like firm custard to the touch, and is divided into two halves. The 2 sides look very similar to each other and some functions, such as muscle movement, can be found on both sides. There are some functions that are found in only one side of brain. Your speech centers, for example, are found only in the left side of your brain.



Cool facts: our brain weighs about 1000 times more than a hamster's, about 100 times more than a rabbit's, but about $\frac{1}{4}$ that of an elephant!

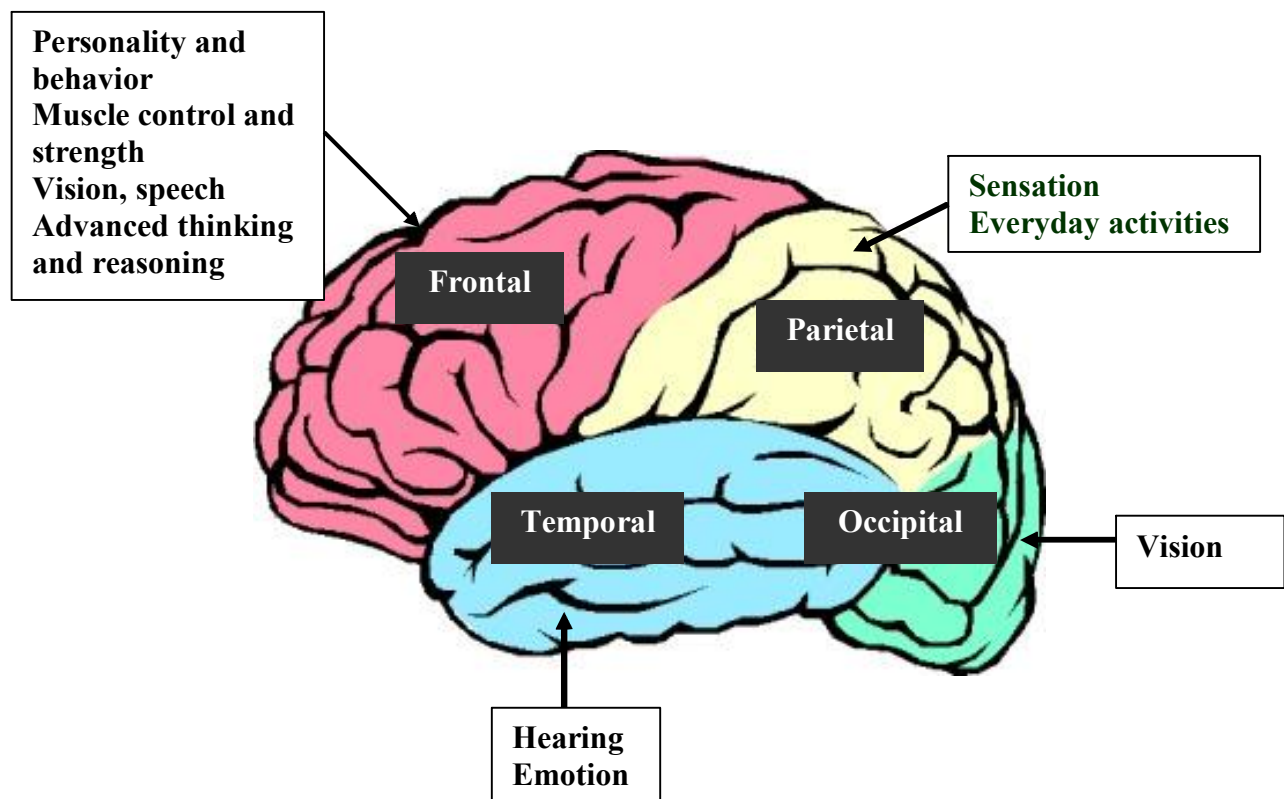


The outside of the brain, known as the 'grey matter' is what allows us to be awake, alert and aware of our environment. The deep structures known as 'white matter' are like the train tracks, which send information around in the brain.

- Deep structures in our brain maintain our hormonal balance, appetite, and temperature and tell us when we should feel danger.

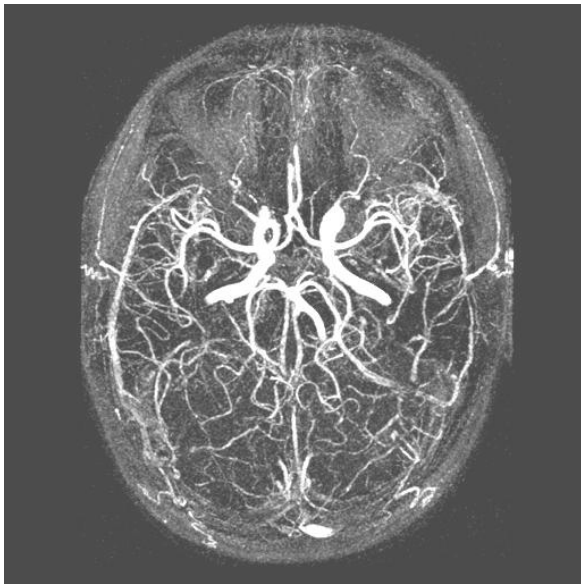
What does the brain do?

- The brain is divided into 4 different lobes. The diagram below gives a very brief description about the main function of the different lobes.



How does our brain receive its oxygen and nutrients?

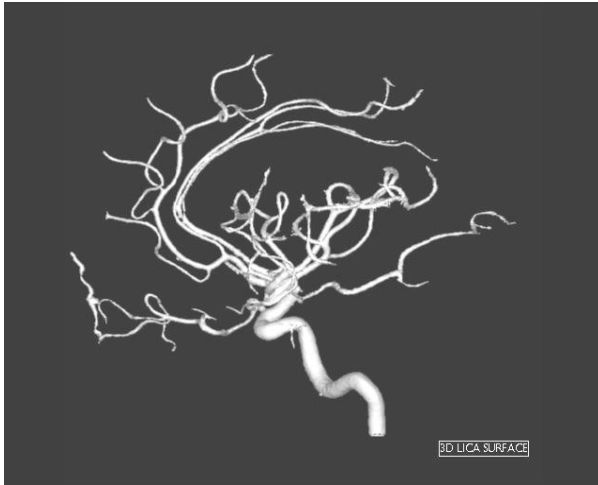
- To keep the brain working, it requires a blood supply. The brain receives about 750 ml of blood per minute. Pumped from the heart, the brain receives its blood from 3 main arteries, one on each side of the neck and one from the spinal cord. These 3 arteries join together to form a circle to supply the brain with all of its nutrients. The circle allows the brain to continue to receive blood even if one of the arteries is not working properly. The veins take away the waste products and return them to the heart.



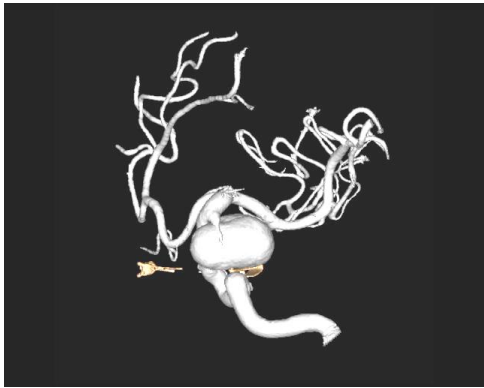
The blood vessels in this picture are white.

Do all of our blood vessels look alike?

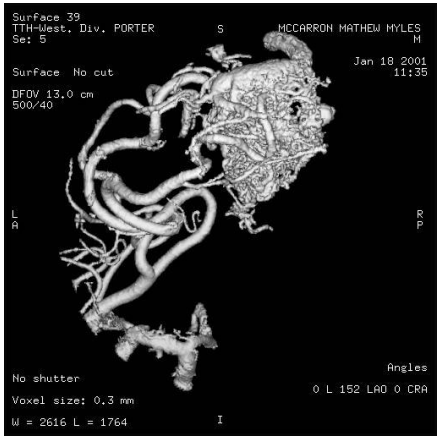
- No. Although we are mostly supplied with the same ones, in some people they can be shorter or longer, curlier or straighter than others. Or, some may not be present at all.



Normal blood vessels-
shown in white.



Aneurysm: is a
swelling of the
wall of the
blood vessel.



**Arteriovenous
malformation:** is a
tangle of arteries and
veins.

Thoughts and Feelings

- Recovery from any illness involves more than nerves and muscles. The emotional part of recovery is just as important and can often be very challenging. Sudden illness and prolonged physical recovery often trigger strong emotional responses, even from people who would never consider themselves “emotional “. Similarly, family members and caregivers may react with unexpected emotions and feelings when a loved one becomes ill. It is important to understand these normal responses and to become familiar with them. Some patients and family members find that working through the emotional responses and stresses can be rewarding in the long run.

Understanding Grief:

- Intense feelings during recovery are very normal. After all you have just experienced a traumatic and sudden illness. Your life has been turned upside down. Often many things that are important to you are on hold. Your family and friends are also upset which can make things worse for you.

In the early stages of recovery there are two three common emotional responses to illness:

- **The Blues:** You may feel sad, have low energy or motivation, feel tearful or want to be alone. Feeling sad or “down” is very common and a normal human response to trauma. It is part and parcel of the healing process.
- **Fear:** There are often concerns about whether or not your life will ever return to normal, worry about how your family is coping, concerns about finances, concerns about how you look or whether or not your brain is healing properly. These concerns are often made worse if you have physical challenges, seizures, headaches or memory problems. Your medications may make you feel different than your normal self. As your recovery progresses and your life starts to get back on track, you should start to feel less anxious and fearful.

- **Anger:** Of course you are going to wonder “Why Me?” “Why Now?” You may feel short-tempered and irritable. Feeling angry at caregivers and loved ones who are closest to you is very common. Sometimes they seem to expect too much of you. Sometimes they are afraid to leave you alone or trust you to do things that you feel you can do yourself. Try to be patient both with yourself and with your loved ones. They are also likely experiencing various degrees of sadness, anxiety and anger. They are partners with you in recovery.
- Of course besides the “big three” listed above, patients may also experience disbelief, confusion, loneliness, frustration, resentment, panic, bitterness... the list goes on.
- All of these emotional responses are common for someone who is grieving. Grief is a normal reaction to loss. Loss is something experienced by anyone who has a health crisis.
- It’s important to understand that the mind also needs to heal and that trying to push away or deny these normal emotions will just prolong the healing process and cause more emotional problems in the long run.